Final Report

INTELLIGENT TRANSPORTATION SYSTEM (ITS)

Chicago Area Transportation Study

Northeastern Illinois Strategic Early Deployment Plan

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Chicago Area Transportation Study (CATS) was formed in 1955 to develop the first comprehensive long-range transportation plan for the northeastern Illinois region. Since then the CATS has been designated by the governor of Illinois and northeastern Illinois local officials as the metropolitan planning organization (MPO) for the region.

The Policy Committee is the metropolitan planning organization for northeastern Illinois. It plans, develops and maintains an affordable, safe and efficient transportation system for the region, and provides the forum through which local decision makers develop regional plans and programs.

This document was prepared by the Chicago Area Transportation Study sponsored by the agencies on the Policy Committee. The report has been financed in part by the U.S. Department of Transportation, Federal Highway Administration and the Federal Transit Administration and authorized by the State of Illinois.

Final Report

NORTHEASTERN ILLINOIS
STRATEGIC EARLY DEPLOYMENT PLAN FOR
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Prepared for: **Chicago Area Transportation Study**

Consultant Team: **TransCore/JHK**
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1. INTRODUCTION

This Strategic Early Deployment Plan (SEDP) provides a blueprint for the integrated deployment of Intelligent Transportation Systems (ITS) in northeastern Illinois. The SEDP is needed to support the integration of the numerous ITS actions underway and to insure that future projects contribute to the effective use of transportation technologies. The SEDP includes a list of recommended projects as a Deployment Action Plan and identifies the funding needed to implement this plan.

This report describes the process and products of the SEDP. It contains inventory data and a review of transportation issues and regional needs; consideration of regional goals and objectives; development and evaluation of user service priorities for ITS; a description of ITS technologies; a discussion of regional architecture and the regional integration strategy; identification of a long range vision for ITS; development of immediate actions; and a Deployment Action Plan of proposed ITS projects.

The SEDP has been prepared under the direction of the Chicago Area Transportation Study (CATS) Advanced Technology Task Force. The Advanced Technology Task Force (ATTF) includes the broad range of stakeholders with responsibilities for the development, operation, and management of the multi-modal transportation system serving northeastern Illinois. These include highway and transit interests; local, county, regional, and state implementing agencies; enforcement agencies; emergency service providers; public and private organizations, and business and public interest groups as shown in Table 1-1.

- Illinois Department of Transportation (IDOT)
  - ITS Program Office
  - Transportation Systems Center (TSC)
  - Communications Center (ComCenter)
  - Emergency Traffic Patrol (ETP)
- Regional Transportation Authority (RTA)
- Chicago Transit Authority (CTA)
- Metra
- Pace
- Chicago Department of Transportation (CDOT)
- County Transportation Agencies
  - Cook County Highway Department
  - Lake County Division of Transportation
- Local Governments
  - DuPage Mayors and Managers Conference
- Illinois State Toll Highway Authority (ISTHA)
- Illinois State Police
- Chicago Fire Department
- Academic and Research Organizations
  - University of Illinois at Chicago
  - Argonne National Laboratories
- Private Sector Representation Through ITS-Midwest
- Consulting Organizations
- Business and Public Interest Groups.

Table 1-1: SEDP Stakeholders

Development of this Strategic Early Deployment Plan has been unusual in that there is nothing "early" about deploying ITS in the region in the 1990s. The northeastern Illinois region has enjoyed the benefits of what is now known as Intelligent Transportation Systems (ITS) for over thirty-five years. Furthermore, the region has been diligent in continually pursuing enhancement and expansion of these transportation solutions over the years. Most recently, the Gary-Chicago-Milwaukee Priority Corridor initiative has been a strong impetus to ongoing ITS deployment. In fact, every one of the five sponsors of the project - CDOT, IDOT, ISTHA, RTA, and CATS - has one or more ongoing ITS initiatives even as the SEDP project is approaching completion.

Given this unusual circumstance, the role of the SEDP has evolved to address the integration of what is becoming a mature ITS infrastructure, rather than defining that infrastructure from the ground up. This can be seen most readily in the substantial inroads the region has made towards achieving the vision for ITS described in Section 7 and in implementing the Deployment Action Plan. This SEDP is intended to further advance this vision for regional technology applications.

With the current momentum of ITS programs in the northeastern Illinois region, a bright future for ITS is assured. To quote one state DOT Commissioner, "The day we finish with ITS, we will have lost our vision." That certainly applies to northeastern Illinois. As new technologies become available to help solve current and future challenges in transportation, northeastern Illinois will be poised to apply them. Even ongoing operations and maintenance must be carefully considered for all ITS deployments. Given the initiatives currently underway and those identified in the Deployment Action Plan and the supporting components of the SEDP, the region has accomplished a true strategic plan for a contemporary, integrated, and regional intelligent transportation solution for northeastern Illinois.

2. EXISTING CONDITIONS, REGIONAL NEEDS, AND ITS ACTIVITIES

This section examines the regional transportation system in northeastern Illinois. The principal characteristics of the system are briefly described and current transportation issues affecting the region are discussed. The plan for system development is highlighted and ongoing ITS activities are summarized.

2.1 EXISTING TRANSPORTATION SYSTEM

Current transportation system developments (short and longer range improvement programs) have been inventoried to identify how issues and future travel needs will be addressed. In some situations, issues may continue to persist and regional growth may cause travel demand to exceed the development of increased or enhanced system capability. These findings have been of particular interest for this SEDP in that the issues may represent conditions that can be effectively addressed by ITS measures.

2.1.1 Physical Attributes

The regional transportation system is truly multi-modal (see Figure 2-1); the public transportation system is very substantial and serves a significant share of travel demand. Overall system characteristics are:

- The freeway/tollway system was developed with an emphasis on a radial configuration centered on downtown Chicago. This is still true, except that circumferential highways have developed: initially, the Tri-State Tollway (I-294), and within the last 10 years a second circumferential highway was initiated (I-355), but it only exists in DuPage County with a short extension through northwest Cook County (via the IL 53 corridor). Compared to other regions (such as Los Angeles or even Dallas or Minneapolis), the Chicago region has a relatively small number of miles of freeways/tollways.

- The fixed-guideway public transportation system also has a radial configuration focused on downtown Chicago. There are 9 radial transit lines operated by the Chicago Transit Authority (CTA). Seven of these are interconnected, offering through train services. There are 11 radial commuter rail lines: 10 operated by Metra and one by the South Shore Railroad. This system does not currently have any circumferential elements or interline connections outside of the Chicago central area.

- The arterial system within the City of Chicago is a complete grid, with major arterials every half-mile. The grid configuration continues into the suburban counties, where arterials are typically spaced every two to five miles.

Within the framework of these overall system attributes, there is a series of other, more specific characteristics that help define the transportation system:

- Pavement widths on the highway system are modest.
  - Freeways/tollways are mostly 6 lanes. The exceptions are the 8-lane central section on the Tri-State Tollway; the 8 lanes plus 2 express lanes on the Kennedy Expressway south of the Edens junction; and the 12-lane Dan Ryan Expressway (divided into four parallel sections).
  - Major arterials are mostly 4 traffic lanes (plus turn lanes). There are some 6-lane streets, but very few 8-lane streets.
- The highway system does not have restricted-use lanes (e.g., high occupancy vehicle or HOV lanes). Planning policy has given priority to encouraging use of the fixed-guideway transit system.

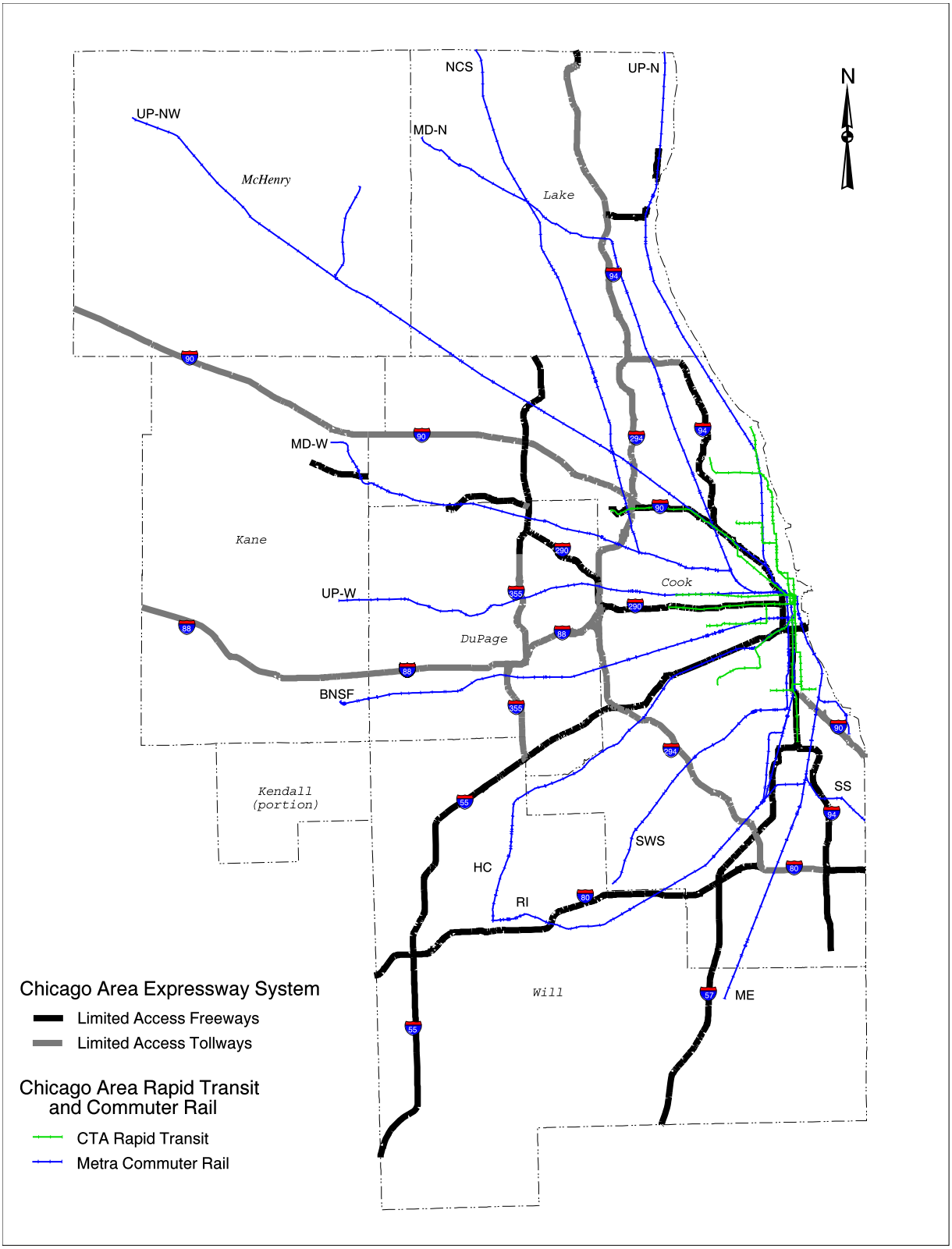

Figure 2-1: Multi-Modal Regional Transportation System

- Two river corridors, the Des Plaines River and the Fox River, affect system configuration (especially of arterial streets) and limit traffic capacity. The former affects north-south and east-west system elements in the south (Will County) and south central, central, and northwest (Cook County) sectors. The latter affects east-west elements in the far west sectors (McHenry County and Kane County).
- Suburb-to-suburb transit is provided by Pace. The system focuses most service in the portions of the suburban counties adjacent to Cook County, i.e., the east half of DuPage County, south edge of Lake County, and all of suburban Cook County. Four local route configurations provide community-level bus service in Waukegan, Elgin, Naperville/Aurora, and Joliet. The expanding suburban areas at the edge of the region have little bus service.
- There is an extensive park-and-ride system in the region, connected mostly to the commuter rail system at most of the system's 200 stations. Pace does not have many park-and-ride facilities. The CTA rapid transit system has some facilities; terminal stations with a modest amount of parking include the Howard station (Red and Purple Lines); O'Hare and River Road (Blue Line); Des Plaines (Blue Line); Midway (Orange Line); Davis Street in Evanston and Wilmette (Purple Line). Except for the Cumberland Avenue station on the Blue Line, major parking facilities do not exist at other rapid transit stations. Also, there is little terminal parking for the Green Line and Red Line at 95th Street. The rapid transit system has been created for CTA bus feed and walk-in traffic.
- The public transportation system provides the maximum accessibility to the Chicago Loop. Commuter rail terminals and rapid transit stations concentrate access in a relatively small geographic zone. As such, this system serves longer-distance line-haul trips, but does not serve shorter-distance trips within the growing Chicago central area.

In addition to the above attributes of the regional highway and transit systems, there are two other highly notable elements: the airports and the freight system.

- Chicago-O'Hare and Midway airports are very large operators of intercity travel. They also function as magnets for many other trips. O'Hare is a major presence in the system, directly affecting northwest Cook County and northeast DuPage County. Midway has a similar (though lesser) presence in southwest Cook County.
- Chicago continues to enjoy a favorable geographic position relative to the U.S. domestic freight rail and truck system, as well as international linkages. Significant rail linkages between eastern and western railroads occur in the western and southern areas of Cook County. There are over 28 major intermodal yards in the central, southwest, and south areas of Chicago and suburban Cook County.

2.1.2 Land Use and Development

Along with the regional transportation system, the pattern and character of land use and development are critical to an understanding of transportation conditions. Several major characteristics help define the Chicago region:

- As an older region, the urban portions exhibit high development densities. Chicago is still a city that has a "walking scale." The suburban portions are not at this density but are typical of most suburbs (i.e., low density), with a scale that relates to auto usage.
- The Chicago central area is by far the most dominant node in the six-county region, as measured by building space, employment, visitor population, range of activities, etc.
- Because the central area is on the lakefront, the city and region have no east side. The land use and transportation systems extend west, north, and south. This promotes longer trip lengths and focuses travel demand on fewer radial corridors.

Within this overall configuration, other more specific attributes include:

- The growth markets for the Chicago central area include office (F.I.R.E. land uses per standard S.I.C. codes), convention/tourism, cultural, and retail.
- Besides the central area, there are other major development concentrations:
  - Major public event centers: McCormick Place complex, White Sox Park, Wrigley Field, Soldier Field, Navy Pier, Great America, Dyche Stadium, Welsh-Ryan Arena, United Center, Rosemont Horizon, and UIC Pavilion.
  - Major regional shopping areas with contiguous growth: Woodfield, Oak Brook, Vernon Hills, Naperville/Aurora, Gurnee Mills, Orland Park, Brickyard, and Ford City.
  - Major institutional centers (educational and/or health care): Illinois Medical District, Northwestern University (Evanston), Northwestern Memorial Hospital, West Suburban Medical Center, Illinois Institute of Technology with Mercy and Michael Reese Hospitals, Loyola University, DePaul University, University of Illinois at Chicago, Northeastern Illinois University, Governor's State University.
- Certain suburban high-growth corridors have emerged during recent years, attracting development and generating significant travel demand: I-88, O'Hare-Elk Grove Village, Woodfield, Lake-Cook Road, Tri-State Tollway north, Naperville/Aurora/IL 59, Randall Road, I-55 at I-355, Vernon Hills (IL 60 and IL 21), and Gurnee Mills (IL 132).
- Within the City of Chicago, there are high-priority industrial corridors receiving significant attention and showing growth potential: near north area (River corridor, Goose Island), Cicero Avenue corridor (north and south sides), and Calumet corridor/Lake Calumet area.
- There is evidence of significant "leap-frog" development in which new development is occurring in various rural areas or remote suburban locations. This development does not represent the normal contiguous extension of the urbanized area, but jumps farther out. Such locations include southern Wisconsin (Kenosha County and Racine County), McHenry County, Kane County, Kendall County, and even Boone County (along I-90) and northeast DeKalb County. These patterns are workable because there has been substantial growth in the suburban job market, and the transportation system provides reasonable service from remote locations to the urbanized areas.
- As a result of growth in air travel demand, and the anticipated future growth, a third regional airport has been proposed for a location in eastern Will County near Peotone just east of I-57. The scale of this airport would be such to stimulate substantial growth in the south suburban area.

2.2 TRANSPORTATION ISSUES AND SYSTEM DEVELOPMENT

From a travel demand perspective, the region's growth has resulted in travel conditions that are becoming more congested and less productive. Overall, data indicates a rising level of congestion. Table 2-1 summarizes a roadway congestion index for 1996. The congestion index for the Chicago region increased 25% during this period. Compared to 49 other regions, northeastern Illinois was ranked with the third worst congestion, up from fifth worst in 1992. Congestion is estimated to cost the regional economy and residents over $4 billion annually in travel delay, wasted fuel, and lost productivity.

Table 2-1: 1996 Congestion Index for 50 Major Regions

Population Group	Urban Area	Roadway[1] Congestion Index	Rank	Freeway/Expressway		Principal Arterial Street	
				Daily VMT[2] (000)	Daily VMT/[3] Ln-Mile	Daily VMT[2] (000)	Daily VMT/[3] Ln-Mile
Vlg	Los Angeles, CA	1.57	1	117,700	21,205	85,000	6,695
Vlg	Washington, DC-MD-VA	1.43	2	33,370	18,185	18,900	7,840
Lrg	Miami-Hialeah, FL	1.34	3	11,500	16,665	17,260	7,190
Vlg	Chicago, IL-Northwestern, IN	1.34	3	45,200	17,155	38,010	6,995
Vlg	San Francisco-Oakland, CA	1.33	5	43,300	17,390	14,860	6,255
Lrg	Seattle-Everett, WA	1.27	6	22,100	16,870	8,350	5,405
Vlg	Detroit, MI	1.24	7	29,690	15,960	28,300	6,315
Lrg	Atlanta, GA	1.24	7	35,010	16,060	13,750	6,250
Lrg	San Diego, CA	1.23	9	28,980	16,235	10,000	5.525
Lrg	San Bernardino-Riverside, CA	1.22	10	16,280	16,530	11,200	5.210
Lrg	Las Vegas, NV	1.20	11	5,570	15,260	3,500	6,540
Vlg	New York, NY-Northeastern, NJ	1.18	12	93,500	14,475	56,850	7,280
Med	Tacoma, WA	1.18	12	4,805	16,015	2,750	4,700
Lrg	Portland-Vancouver, OR-WA	1.16	14	9,610	14,670	5,300	6,625
Lrg	Phoenix, AZ	1.14	15	13,200	15,085	18,700	5,575
Lrg	Denver, CO	1.12	16	14,900	14,325	11,650	5,990
Lrg	Minnespolis-St Paul, MN	1.12	16	22,900	14,495	7,220	5,685
Lrg	San Jose, CA	1.11	18	17,320	13,910	10,000	6,580
Vlg	Houston, TX	1.11	18	35,150	14,555	12,400	5,290
Lrg	Dallas, TX	1.11	18	27,030	14,495	10,705	5,325
Med	Memphis, TN-AR-MS	1.11	18	5,725	14,315	6,100	5,650
Med	Honolulu, HI	1.10	22	5,685	13,375	2,030	7,960
Vlg	Boston, MA	1.09	23	22,170	14,305	15,500	5,160
Lrg	Baltimore, MD	1.09	23	20,300	14,000	10,100	5,690
Lrg	New Orleans, LA	1.09	23	5,450	12,825	5,225	6,785
Lrg	Sacramento, CA	1.07	26	10,750	13,030	8,400	6,460
Lrg	Cincinnati, OH-KY	1.07	26	13,865	13,935	4,655	5,475
Vlg	Philadelphia, PA-NJ	1.07	26	21,385	12,255	23,000	6,865
Med	Tampa, FL	1.06	29	5,010	12,845	5,485	6,200
Lrg	St Louis, MO-IL	1.05	30	23,700	13,165	12,740	6,140
Med	Louisville, KY-IN	1.04	31	9,200	13,235	3,850	5.835
Med	Austin, TX	1.03	32	7,270	13,220	3,900	5,570
Lrg	Ft Lauderdale-Hollywood-Pompano Beach, FL	1.03	32	10,250	13,310	6,850	5,230
Lrg	Milwaukee, WI	1.03	32	8,300	13,280	6,500	5,200
Med	Tucson, AZ	1.02	35	1,650	10,315	4,600	6.135
Lrg	Cleveland, OH	1.02	35	16.020	13,080	6,520	5,435
Lrg	Fort Worth, TX	1.01	37	14,875	12,825	6.115	5,635
Med	Albuquerque, NM	1.09	37	3,600	12,415	5,020	5,580
Lrg	Columbus, OH	1.01	37	10,980	12,765	3,945	5,890
Med	Nashville, TN	1.00	40	8,880	12,420	6.100	5,920

Table 2-1: 1996 Congestion Index for 50 Major Regions (con't)

Population Group	Urban Area	Roadway[1] Congestion Index	Rank	Freeway/Expressway		Principal Arterial Street	
				Daily VMT[2] (000)	Daily VMT/[3] Ln-Mile	Daily VMT[2] (000)	Daily VMT/[3] Ln-Mile
Med	Omaha, NE-IA	1.00	40	2,870	9,895	4,070	7,140
Med	Indianapolis, IN	1.00	40	10,800	12,345	6,700	6,175
Med	Salt Lake City, UT	1.00	40	6,950	12,635	2,950	5,730
Med	Jacksonville, FL	0.99	44	8,000	12,905	6,800	4,890
Lrg	San Antonio, TX	0.99	44	13,275	12,705	6,375	5,290
Med	Charlotte, NC	0.98	46	4,980	12,295	3,450	5,565
Lrg	Norfolk, VA	0.96	47	6,700	10,985	5,470	6,590
Med	Providence-Pawtucket, RI-MA	0.96	47	7,330	11,825	4,720	5,755
Med	Hartford-Middletown, CT	0.93	49	7,300	11,495	3,940	5,710
Sml	Eugene-Springfield, OR	0.92	50	1,165	10,590	850	6,540
Lrg	Orlando, FL	0.91	51	7,640	10,685	7,660	5,715
Med	Oklahoma City, OK	0.91	51	8,500	11,335	4,830	5,365
Sml	Harrisburg, PA	0.88	53	4,045	10,505	1,980	6,285
Sml	Salem, OR	0.88	53	1,025	10,790	1,290	4,870
Sml	Allentown-Bethlehem-Easton, PA-NJ	0.87	55	2,820	9,725	2,575	6,060
Med	Rochester, NY	0.87	55	5,300	10,930	1,120	6,220
Lrg	Pittsburgh, PA	0.85	57	10,310	8,700	11,770	6,230
Sml	Spokane, WA	0.84	58	1,285	10,360	2,460	4,475
Lrg	Kansas City, MO-KS	0.81	59	16,930	10,105	5,840	5,125
Sml	Albany-Schenectady-Troy, NY	0.81	59	4,850	9,150	3,240	6,000
Med	El Paso, TX-NM	0.80	61	3,970	10,445	3,630	3,945
Sml	Brownsville, TX	0.79	62	280	9,335	550	4,400
Sml	Boulder, CO	0.79	62	440	8,800	515	5,150
Med	Fresno, CA	0.78	64	2,000	8,335	2,470	5,430
Lrg	Buffalo-Niagara Falls, NY	0.78	64	5,750	9,350	5,095	4,850
Sml	Corpus Christi, TX	0.78	64	2,550	9,625	1,815	4,655
Sml	Beaumont, TX	0.76	67	1,200	10,435	700	2,915
Sml	Colorado Springs, CO	0.74	68	2,265	8,710	1,880	4,700
Sml	Laredo, TX	0.73	69	415	7,545	660	4,890
Sml	Bakersfield, CA	0.68	70	1,600	8,000	2,310	3,950
	70 area average	1.14		14,353	12,729	9,129	5,753
	Very large area average	1.29		49,052	16,165	32,536	6,522
	Large area average	1.08		14,982	13,548	8,603	5,844
	Medium area average	0.98		5,991	12,130	4,226	5,774
	Small area average	0.80		1,842	9,505	1,602	4,992

Notes:
1. See Roadway Congestion Index equation.
2. Daily vehicle-miles of travel.
3. Daily vehicle-miles of travel per lane-mile.

Source: TTI Analysis.

Vlg — Very Large urban areas - over 3 million population
Lrg — Large urban areas - over 1 million and less than 3 million population
Med — Medium urban areas - over 500,000 and less than 1 million population
Sml — Small urban areas - less than 500,000 population

Capacity problems exist in a substantial number of townships that comprise the urban core of the region. The worst conditions tend to extend from the Chicago central area northwest to the O'Hare area and beyond into northwest Cook County.

As highway system congestion has occurred, it might be expected that the public transportation system would show substantial growth in ridership. This has not been the case. Commuter rail service has enjoyed some growth, but other transit modes have lost market share. Table 2-2 illustrates this trend, which is one of the most significant conditions for the region.

As a close corollary to the increasing travel demand and congestion on the road system, the region's air quality has also diminished to the point where it has reached non-attainment status for ozone by USEPA under the 1990 Clean Air Act Amendments. Northeastern Illinois has been designated as a severe ozone non-attainment area. The implication is that transportation development efforts must incorporate actions to achieve compliance with the air quality standards. Such compliance or conformity is a significant test for planning and programming transportation improvements.

Within the general situation described thus far, there are a variety of more specific transportation issues, as outlined below:

- The freeway/tollway system experiences chronic and serious congestion in many locations. The sectors or locations with the most serious conditions include:
  - Eisenhower Expressway/I-88/I-294 junction.
  - Kennedy Expressway/Edens Expressway junction.
  - "Hubbard's Cave"/Kennedy-Ryan segment in the central area.
  - Tri-State Tollway south of Kennedy to I-55.
  - Northwest Tollway/Kennedy Expressway/O'Hare junction.
  - Eisenhower Expressway/Dan Ryan Expressway interchange.
  - I-80/94/Borman Expressway.
- Congestion is widespread on the major arterial system (the IL 62 bridge at Fox River and North Avenue and IL 83 in DuPage County are examples).
- Major delays occur at many toll booths. The most serious occur at the Deerfield, Oakbrook, Ogden, and O'Hare plazas. In some cases, plazas have been widened substantially, but the roadway downstream of the plazas cannot accept any more peak-hour traffic. Because of these major delays, the Deerfield toll plaza has been removed, and separate toll booths have been installed at various on/off ramps along the system.
- Besides growth in traffic volumes, some sections of the freeway/tollway system have significant lane imbalance, wherein basic lanes (excluding auxiliary lanes) inbound to a major junction exceed the number of lanes outbound. Notable locations are sections on the Kennedy Expressway up and down stream from the express lanes, the west end of the Eisenhower Expressway, and the south end of the Calumet Expressway and Tri-State Tollway. In these cases, the inbound lanes outnumber the outbound by one lane each direction. With peak hour traffic at saturated conditions, this means that outbound sections have a drop in level of service and speed.

Table 2-2: Public Transportation Ridership Trends

	Yearly Ridership (in thousands)				*Percent Change*
CTA	***1986***		***1998***		
Blue Line - O'Hare	17,573		16,215		-8%
Blue Line - Douglas	4,634		2,959		-36%
Blue Line - Congress	6,762		5,560		-18%
Blue Line - Dearborn Subway	11,526		8,811		-24%
Purple Line - Evanston	4,859		2,869		-41%
Yellow Line - Skokie	819		652		-20%
Brown Line - Ravenswood	8,056		11,193		39%
Red Line - Howard	27,190		28,676		5%
Red Line - State Street Subway	12,013		11,479		-4%
Red Line - 95th/Dan Ryan	16,019		14,883		-7%
Green Line - Lake	8,097		4,632		-43%
Green Line - South Elevated	9,673		2,774		-71%
Orange Line - Midway	---		7,111		---
Loop Elevated Stations	15,400		14,468		-6%
Total CTA Rapid Transit:	142,621		132,282		-7%
Total CTA Bus Ridership:	487,851		291,740		-40%
Total CTA Ridership[A]:	**630,472**	*86%*[B]	**424,022**	*79%*[B]	**-33%**
METRA	***1986***		***1998***		
Union Pacific - North	6,284		8,228		31%
Union Pacific - Northwest	8,729		9,201		5%
North Central Service	---		964		---
Milwaukee District - North	4,139		6,253		51%
Burlington Northern Santa Fe	11,980		14,067		17%
Union Pacific - West	6,756		6,886		2%
Milwaukee District - West	4,384		6,210		42%
South Shore	2,948		3,656		24%
Electric	11,029		11,501		4%
Heritage Corridor	406		350		-14%
SouthWest Service	1,046		1,476		41%
Rock Island District	6,790		8,596		27%
Total Metra Ridership[A]:	**64,491**	*9%*[B]	**77,388**	*14%*[B]	**20%**
Pace	***1986***		***1997***		
Total Pace Ridership[A]:	**36,100**	*5%*[B]	**37,900**	*7%*[B]	**5%**
Regional Transit Use[A]:	**731,063**		**539,310**		**-26%**

Notes: [A] *Summary values are approximate as ridership can vary depending upon evaluation approach.*
[B] *Percentage of Regional Transit Use during the year*

CTA trends were significantly effected by changes in service during the 1990's, such as rail line configuration changes in the Loop area, the addition of free transfer stations and reductions in bus service.

- Because of the chronology of freeway development and basic perceptions of urban travel, there are some missing connections along the Edens Expressway corridor, largely involving movements to and from the north: no connection to the westbound Kennedy Expressway; incomplete interchanges at Willow Road, Dundee Road, and the Edens Spur; Edens Spur to the southbound Tri-State Tollway. There is also a missing connection between the Tri-State Tollway and I-57. These conditions result in traffic diversion to the arterial street system.

- There are "gaps" in the major arterial street system that limit accessibility and cause traffic concentrations on available routes. These gaps represent situations where the regular spacing of major highways is interrupted, i.e., there is a lack of a major road to serve travel demand. These gaps exist in north-central Will County (U.S. Route 45 to IL 53), west DuPage County (I-355 west), west Lake County (IL 83/U.S. Route 45 west), and along the Indiana/Illinois state line.

- Because of the concentration of truck traffic in some areas, there are vehicle classification conflicts (auto versus truck). Most notable of these are on I-80/94/Borman, Dan Ryan Expressway, and Stevenson Expressway. Truck trips are generated by many land uses not directly accessible to major highways. Substantial truck trips "filter" through the street systems because of the lack of good intermodal connectors. This is particularly significant with regards to access to major intermodal yards.

- Within the City of Chicago, there are many vertical clearance problems at overpasses that effect truck circulation and access. These result in longer trip lengths/times and cause traffic impacts in non-industrial land use areas.

- Because of the large number of at-grade railroad crossings and the high levels of both rail and vehicular traffic, significant operational and safety issues exist throughout the region. Some crossings, such as the Union Pacific Railroad crossing of Irving Park Road just east of York Road, are notorious for the extent of rail crossing traffic delay. Many such conflicts exist along the major rail corridors, which fan out from the center of Chicago.

- Some of the rail corridors entail joint use of tracks between commuter trains and freight trains. As freight activity has increased, there are increasing operational conflicts.

Beyond these system-related issues, there are others, more associated with operations:

- There are various serious accident locations. The IDOT High Accident Location Identification System (HALIS) for 1995 was used to identify locations that are "accident prone" within the six-county region. The high accident locations are identified based on one or more of the following criteria: (1) the number of accidents exceeds the critical frequency, (2) the rate of accidents per annual average daily traffic (AADT) exceeds the critical rate, and (3) the equivalent property damage (EDPO) exceeds the critical EDPO. Table 2-3 identifies the high accident locations on state roadways (excluding interstates) in which all three criteria are met. Table 2-4 identifies the top 10 accident locations (excluding interstates) based on frequency in the six-county region. During the two year period 1995 to 1996, traffic fatalities have increased on the state's roadway system, as shown in Table 2-5. Statewide traffic fatalities rose about 3 percent, from 677 fatal accidents in the first six months of 1995 to 697 accidents for the same period in 1996. The six-county Chicago region experienced a 10.3 percent increase in fatal accidents, from 321 in 1995 to 354 in 1996.

Table 2-3: High Accident Locations - Where all Criteria (Frequency, Rate, EDPO) are Met

County	Route	Location	City	Frequency	Rate	EDPO
Cook	US 6	Vincennes Road (at RR)	S. Holland	9	0.899	1.890
Cook	US 12	Ridgeland Ave.	Oaklawn	46	1.899	2.539
Cook	US 12	Bridge at Chicago Ship Yard	Willow Springs	11	0.689	1.449
Cook	US 12	Bridge at I-55	Hodgkins	13	1.300	1.079
Cook	US 14	Rohlwing	Palatine	16	2.350	2.560
Cook	US 20	Segment near Villa Olivia Golf Course	Bartlett	17	16.289	4.529
Cook	US 41	Division to LaSalle	Chicago	88	6.569	1.779
Cook	US 41	LaSalle to IL 64	Chicago	73	10.489	1.770
Cook	US 41	IL 64 to S. of Fullerton	Chicago	24	3.970	1.420
Cook	US 41	IL 64 (Exit Ramp)	Chicago	10	0.329	1.500
Cook	US 41	North and South of Fullerton	Chicago	49	5.779	1.920
Cook	US 41	Fullerton (Exit Ramp)	Chicago	69	8.449	1.250
Cook	US 41	US 45 (Entrance Ramp)	Chicago	19	3.140	1.579
Cook	US 41	North and South of Belmont	Chicago	61	6.109	1.479
Cook	US 41	Bridge at Belmont	Chicago	15	0.500	1.529
Cook	US 41	Aldine to Hawthorne	Chicago	22	3.159	1.640
Cook	US 41	Park (Exit Ramp)	Chicago	25	3.930	1.840
Cook	US 41	NB US 41 Entrance Ramp IL 19	Chicago	60	4.050	1.779
Cook	US 41	South of Montrose	Chicago	36	5.409	1.920
Cook	US 41	North and South of Wilson Ave.	Chicago	31	3.529	2.840
Cook	US 41	US 41 Next to Sheridan Ave.	Chicago	18	9.569	1.500
Cook	IL 19	Park Blvd. (FAU 2958)	Streamwood	23	3.989	2.430
Cook	IL 19	Jensen Blvd.	Hanover Park	8	13.729	3.630
Cook	IL 50	147th (IL 83)	Midlothian	44	2.029	2.199
Cook	IL 53	North at Algonquin	Rolling Meadows	20	5.239	2.100
Cook	IL 53	South of Kirchoff	Rolling Meadows	20	3.600	1.500
Cook	IL 53	Euclid Interchange	Arlington Heights	32	4.939	1.689
Cook	IL 53	US 14 Interchange	Palatine	22	3.260	1.590

County	Route	Location	City	Frequency	Rate	EDPO
Cook	IL 53	Palatine Interchange	Palatine	28	6.439	2.460
Cook	IL 72	Busse Rd. (IL 83)	Elk Grove Village	47	2.409	2.960
Cook	IL 83	Waverly Ave.	Midlothian	9	1.270	1.890
Cook	STM 18	Bridge Near Linden Ave.	Wilmette	9	2.800	1.560
Cook	STM 18	Bridge at Wilmette	Wilmette	13	4.050	2.149
Cook	STM 18	Bridge at Central	Wilmette	14	4.359	1.640
Cook	STM 18	Bridge at Lake Ave.	Wilmette	10	3.109	1.800
Cook	STM 18	Bridge at Tower	Winnetka	8	2.489	2.000
Cook	Shermer Rd.	Just South of Willow	Glenview	21	16.880	2.810
Cook	STM 120	Quinten Rd.	Palatine	20	9.289	2.497
Cook	STM 162	Sanders Rd.	Prospect Heights	34	2.970	2.090
Cook	IL 83	Plainfield (FAU 1551)	Willowbrook	17	0.709	3.119
DuPage	IL 83	63rd Street (FAU 1518)	Willowbrook	21	0.879	2.100
DuPage	IL 83	NB Exit Ramp (55th)	Hinsdale	21	5.449	2.239
DuPage	IL 83	16th (FAU 1948)		24	1.198	2.398
DuPage	IL 83	Segment IL 64 to FAU 17	Elmhurst	32	5.930	1.529
DuPage	IL 25	US 20 (Bus 8120)	Elgin	27	2.500	2.630
Kane	IL 97	North of Freeman		6	4.960	4.500
Kane	US 6	Gougar Road (FAS 1294)		12	3.039	3.329
Will	IL 7	IL 53 (FAP 132)	Lockport	38	2.420	2.760
Will	IL 50	Margaret St.	Monee	10	11.180	5.199

Source: IDOT High Accident Location Information System, 1995.

Table 2-4: Top 10 Accident Locations on State Roadways in the Chicago Region

County	Route	Location	City	Frequency	Rate	EDPO
Cook	US 41	Leavitt to Broadway	Chicago	121	13.579	1.750
Cook	IL 64	Central Park to Washtenaw	Chicago	118	14.80	1.720
Cook	IL 43	Forest Preserve to Argyle	Harwood Heights	116	10.14	1.579
Cook	IL 19	California Ave.	Chicago	108	14.550	1.390
Cook	IL 43	Barry to Grace	Chicago	108	11.699	1.539
Cook	US 12	Lake-Cook Road	Palatine	98	5.819	1.340
Cook	IL 64	Ridgeland to Parkside	Chicago	95	8.699	1.270
Cook	IL 64	I-90/94 to Chicago River	Chicago	94	31.750	1.189
Cook	IL 50	127th	Alsip	92	7.390	1.949
Cook	IL 64	Chicago River to Ogden	Chicago	90	20.089	1.479
Cook	US 41	Ped. Underpass (IL 64)	Chicago	88	6.569	1.779

Source: IDOT High Accident Location Information System, 1995.

Table 2-5: Number of Fatal Accidents in 1995 and 1996[a]

	State-wide	Chicago Region	Percent Change
1995	677	321	3.0
1996	697	354	10.3

[a]Data for the first six months of 1996.

- Congestion on weekends and during special events occurs regularly, notably at the following locations.
  - Spring/summer/fall weekend recreational travel demand at the Wisconsin border and north along I-94, U.S. Route 41, and U.S. Route 12, and at the Indiana state line.
  - Special event traffic in the Chicago central area for athletic and cultural events.
- There are weather impacts on operating conditions, especially during the winter, and the change in roadway conditions due to the micro-climate associated with "lake effects" of Lake Michigan.
- There is a general absence of an area-wide traffic control system (significant differences from county to county).

- There are significant impacts on transit operations and its attractiveness to riders.
  - The October 95 school bus/railroad train accident has resulted in serious trade-off issues between commuter train speed and grade crossing safety.
  - Expansion of commuter station parking is thwarted by conflicts with local communities.
  - The financial condition of transit operators is very insecure.
  - There are rising concerns about safety and security.
- Community attitudes are causing a shift in priorities that may cause more traffic problems on arterial streets. Local traffic management and traffic calming programs are diverting traffic back onto the arterial street system. Simultaneously, there is a reluctance to prohibit curb parking on arterial streets. This is leading to an ever-increasing conflict over street functions.
- Attitudes also concern the public response to the non-attainment air quality status. Initially, this would have been a highly visible issue because of the mandated "Employee Commute Options Program." Because the latter was eliminated as a requirement, air quality-induced changes in traveler behavior are minor. This has become an invisible issue, except for environmental advocate groups and the limited awareness during ozone action days.

Besides the functional issues above, there is a growing problem relative to financial resources for maintaining and developing the transportation system. Recent analysis by both public and private organizations describe serious funding shortfalls for all transportation modes.

One of the serious outcomes of this situation is deferred maintenance and rehabilitation. The amount of existing infrastructure is substantial. The need for rehabilitation funding has become a very large amount. The overall issue is sustainability of the system.

2.2.1 Travel Growth Outlook

During the past two decades, the primary trends in regional growth and travel demand can be summarized as:

- Increasing overall population with decreases in the City of Chicago and Cook County, but increases in the other five counties. Specific data summarizing these trends is provided in Table 2-6.
- Increasing overall employment with decreases in the City of Chicago, but recent increases in suburban Cook County and all other counties. Specific data summarizing these trends is provided in Table 2-7.

Table 2-6: 1970-1990 Regional Population and Household by County

TOTAL POPULATION			
Area	**1970**	**1980**	**1990**
Chicago	3,369,357	3,005,072	2,783,726
Suburban Cook	2,124,409	2,248,558	2,321,341
Cook	5,493,766	5,253,628	5,105,067
DuPage	487,966	658,858	781,666
Kane	251,005	278,405	317,471
Lake	382,638	440,388	516,418
McHenry	111,555	147,897	183,241
Will	247,825	324,460	357,313
NE Illinois	6,974,755	7,103,636	7,261,176

Sources: Data were obtained from four different publications of the U.S. Department of Commerce, Bureau of the Census: 1990 Census of Population and Housing, Population and Housing Unit Counts, Illinois, March 1993.

TOTAL HOUSEHOLDS			
Area	**1970**	**1980**	**1990**
Chicago	1,137,854	1,093,409	1,025,174
Suburban Cook	628,181	785,708	854,314
Cook	1,766,035	1,879,117	1,879,488
DuPage	138,251	222,014	279,344
Kane	74,642	93,729	107,176
Lake	102,947	139,715	173,966
McHenry	33,083	49,078	62,940
Will	70,688	103,071	116,933
NE Illinois	2,183,646	2,488,724	2,619,847

Sources: Bureau of the Census, U.S. Department of Commerce data, as reported in Data Bulletins 88-1 and 91-3, Northeastern Illinois Planning Commission, May 1988 and November 1991, respectively.

Table 2-7: 1970-1990 Regional Employment by County

EMPLOYMENT (JOBS)			
Area	**1970**	**1980**	**1990**
Chicago	1,884,000	1,555,600	1,473,200
Suburban Cook	836,300	1,121,100	1,302,100
Cook	2,700,300	2,676,700	2,775,300
DuPage	146,400	293,100	530,700
Kane	103,300	118,300	145,300
Lake	116,400	160,700	228,500
McHenry	36,300	46,600	65,500
Will	82,500	91,000	99,400
NE Illinois	3,185,000	3,386,200	3,844,700

Source: Report prepared for CATS by the Research Services Department, Northeastern Illinois Planning Commission, June 1996.

- Increasing vehicle miles of travel at a rate faster than population or employment growth. Specific data about regional travel trends is as follows (Sources: Illinois Department of Transportation and the Metropolitan Planning Council):
  - 1980 96,000,000 vehicle-miles
  - 1989 124,000,000 vehicle-miles (+30%)
  - 1993 135,000,000 vehicle-miles (+9%)
- Decreasing volume of transit ridership by all modes. Specific data about regional transit and commuter rail ridership, based on Regional Transportation Authority data, is as follows:
  - 1980 810,000,000 riders
  - 1990 650,000,000 riders (-20%)
  - 1995 537,000,000 riders (-17%)

  Metra and Pace have shown some small gains; the decrease is primarily in CTA ridership. CTA ridership was approximately 86% of the 1980 level in 1990. By 1995, it had decreased to 80% of the 1980 level. Data from 1996 through 1998 indicates a slight rebound in transit ridership.

These general trends could extend into the future. In fact, the Chicago region is experiencing increasing growth. The record level of residential building permits in Chicago, the increase in office occupancy rates (city and suburbs), the very low hotel vacancy rates in the Chicago central area, and other changes are signs of significant growth. Recent forecasts for the region for the year 2020 show substantial increases. The six-county regional population will increase from 7.3 million to well over 9 million by the Year 2020. Employment is expected to increase from 3.8 million (1990) to 5.3 million by 2020.

The increases in travel demand will likely be observed most dramatically at the outer edges of the urbanized development areas. Increases of 50 percent or more will be prevalent around the entire collar county area. These trends lead to a significant debate within the regional community. The outward extension of urbanized land use produces a need for more infrastructure including transportation. Such potential causes some constituencies to advocate an “in-fill” development strategy including a City of Chicago perspective to maintain its share of regional population and employment.

These forecasts reflect two basic development scenarios, i.e., with and without a new third regional airport in eastern Will County. The future growth anticipates a decreasing share of regional population and employment in the City of Chicago. The City of Chicago had 38% of the regional population and employment in 1990. By Year 2020, this will drop to 32% to 34%; the higher share would be associated to the scenarios without a new airport. The suburban counties will have a 5 to 6% increase in the share of regional population and employment.

As noted, one of the major development variables will be the presence of a third regional airport in eastern Will County. Forecasts indicate a changed distribution in regional growth if this facility is built. Southern Cook County and eastern Will County would experience more growth and corresponding travel demand. These increments would be very large and would have a major impact on the transportation system.

Regional growth would also occur in intercity travel, as considerations for the third airport indicate. Travel in the O'Hare and Midway areas would also increase accordingly. Finally, the strong Chicago regional economy would mean increases in freight movements. Increased truck and rail trips would have significant impacts on the system. Trip locations would be similar to the existing travel patterns, but with higher volumes.

2.2.2 Transportation System Development

As all of the above conditions have been occurring, a variety of agencies in the region have developed transportation improvement plans. Many projects have been implemented, others are programmed for implementation, and others are still proposals. All of these need to be developed in conformity with the Clean Air Act Amendments to address the region's air quality problems.

In the short range, major improvements will include:

1. Continued rehabilitation of the freeway/tollway system. The next major project will be the Stevenson Expressway reconstruction.
2. Major arterial capacity improvements will be developed at scattered sites in the region.
3. Toll booth enhancement projects and continued implementation of the I-PASS system.
4. Traffic signal system development in the City of Chicago and the collar counties.
5. Interchange improvement projects, add ramps, and other enhancements.
6. Commuter rail station improvements with more park-and-ride.
7. Enhancement of service on the new Metra-Wisconsin Central line.

CATS completed the 2020 Regional Transportation Plan, "Destination 2020," in November 1997. The following are some planned major improvements, and Figure 2-2, Figure 2-3, and Figure 2-4 illustrate these plans:

1. Tollway extensions in the "I-355/IL 53" corridor into Lake County and Will County; the latter extension as the South Suburban Tollway would provide access the proposed third regional airport.
2. Tollway linkage (bypass) around the west side of O'Hare linking to the Northwest Tollway, Elgin-O'Hare Expressway, and Tri-State Tollway.
3. Implementation of Strategic Regional Arterial (SRA) projects across the region; these would be staged to create linkages that would allow an "improved" high-performance arterial system to emerge.
4. Further extensions of Metra radial commuter rail lines in Lake, Kane, McHenry, and Will Counties.
5. Possible development of cross-regional, circumferential passenger rail lines, with the EJ&E as the initial candidate.
6. CTA rapid transit line additions, including the Red Line extension south and east to 103rd Street, the Orange Line south to Ford City, and a possible mid-city line in the Cicero Avenue corridor linking the Kennedy corridor and the Dan Ryan corridor.
7. The mid-city transit corridor may include special truckway elements to facilitate commercial vehicle movements between rail and intermodal yards.
8. Widening of more tollway sections to eight lanes and enhancements at toll plazas.

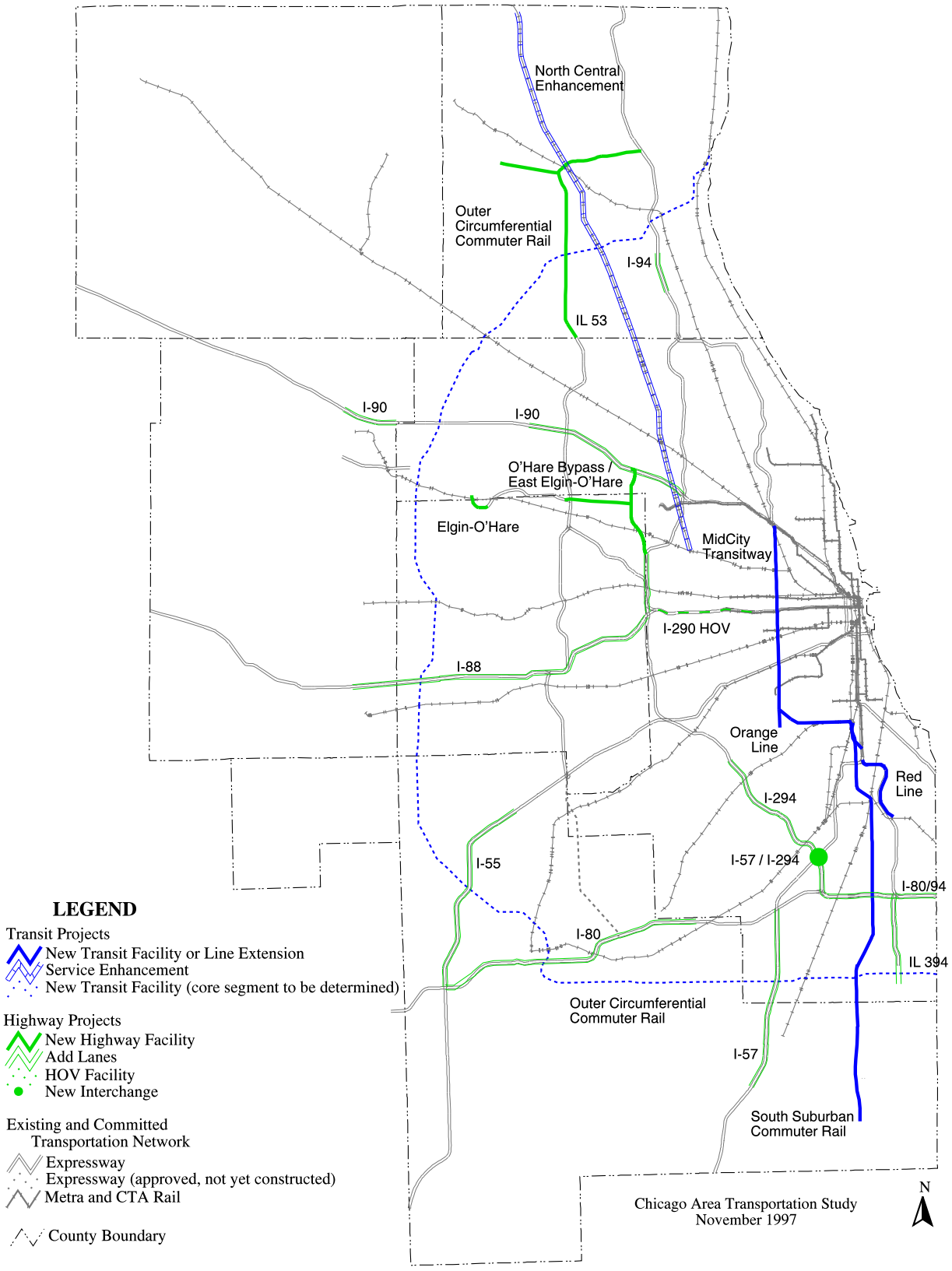

Figure 2-2: 2020 RTP Transit and Highway Projects

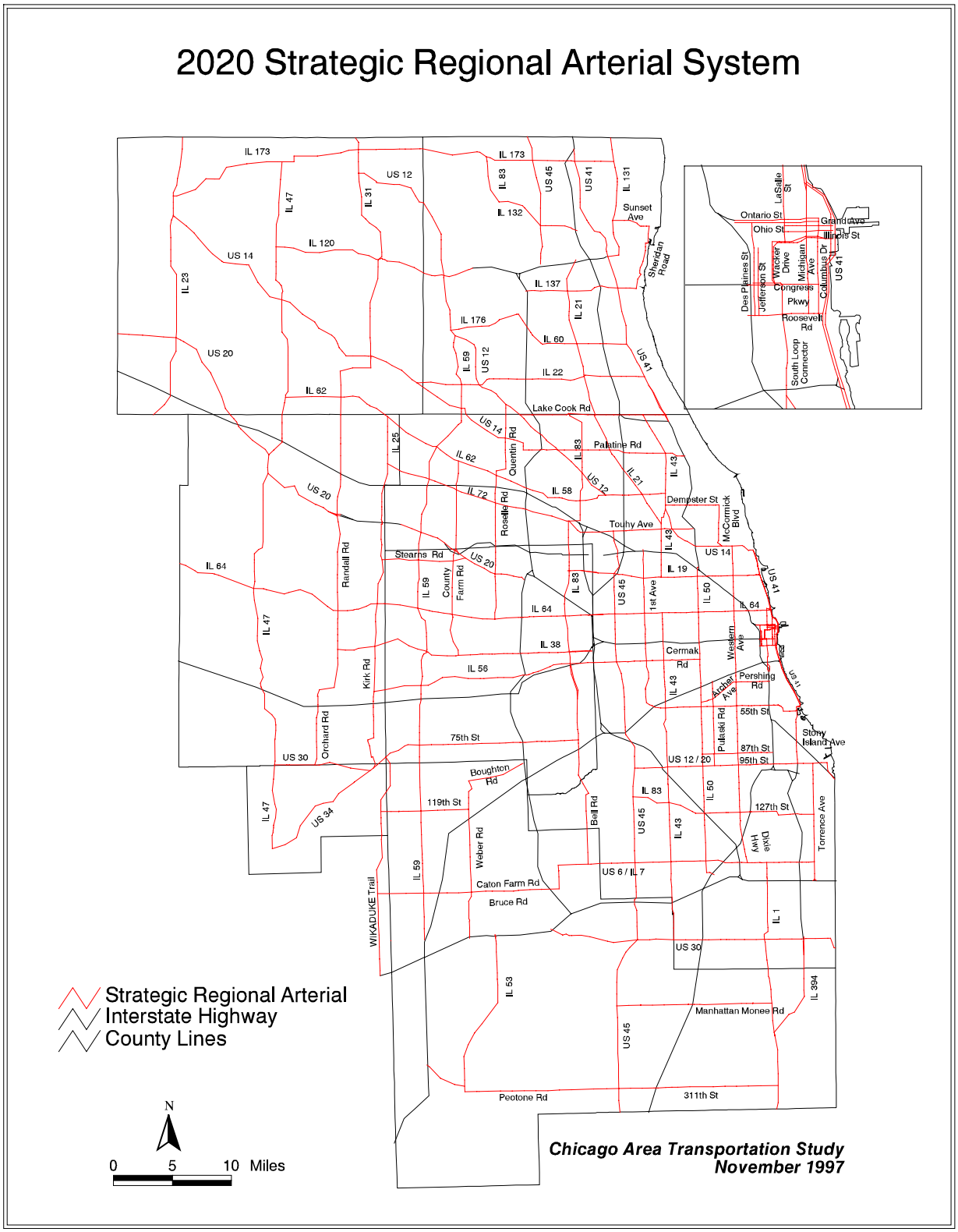

Figure 2-3: 2020 Strategic Regional Arterial System

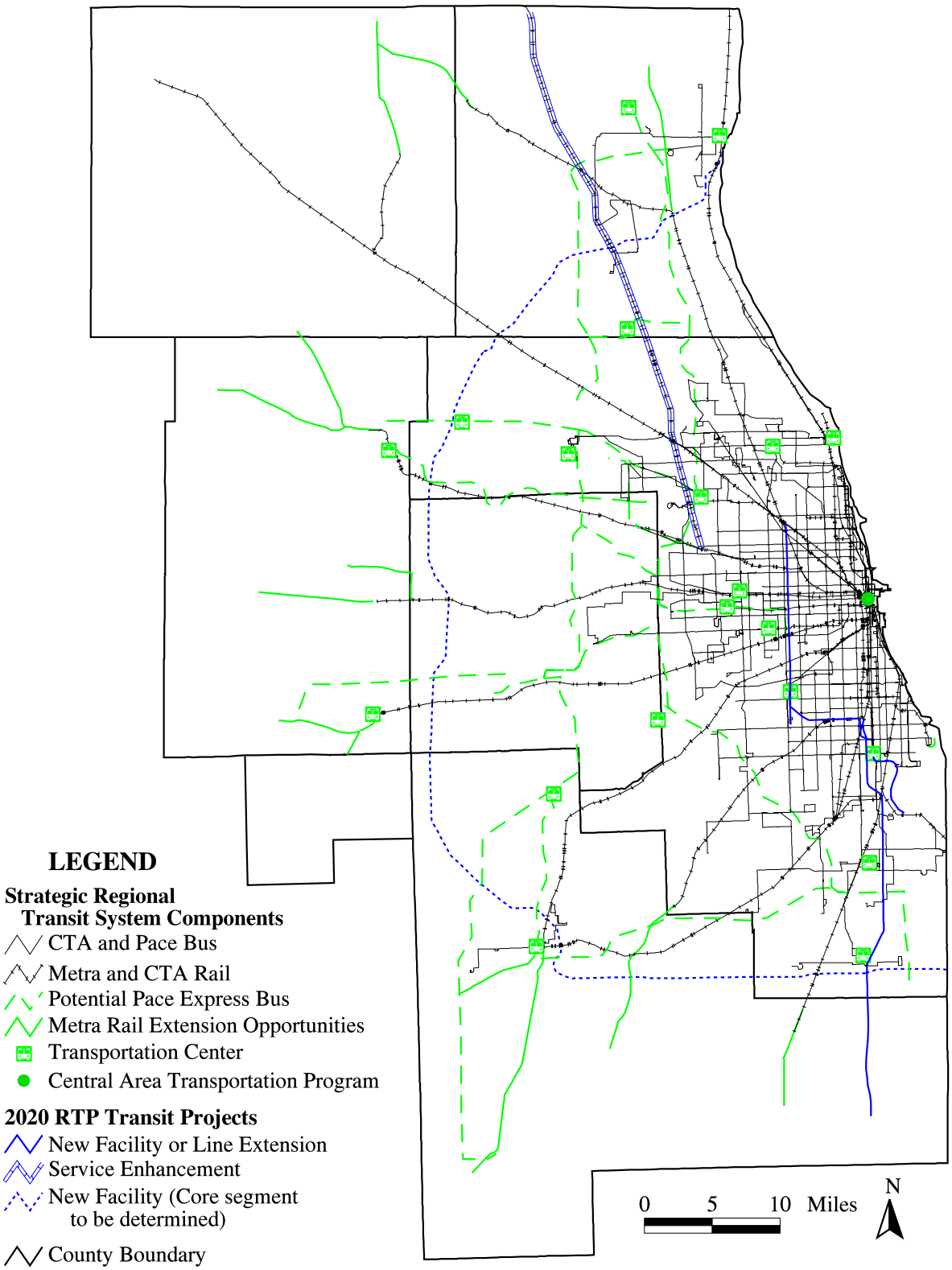

Figure 2-4: 2020 Strategic Regional Transit System Components

9. Continuation of the CTA rapid transit line/station rehabilitation projects; these would involve the Blue Line, Brown Line, and north Red Line.

2.2.3 Remaining Transportation Needs

Comparing the existing transportation issues and growth outlook with system development plans and projects indicates that transportation needs will persist. All of the issues will not be addressed by these capital improvements.

First, it is expected that there will be a financial shortfall. Many of the items included in the long range proposal list may not be financed. The added capacity, accessibility, and mobility to be developed by these substantial projects may not be available.

Second, there are various other needs that will still exist. These consequences are expected because of the increasingly complex nature of travel behavior, limitations on interagency coordination, and the nature of the planning approach.

Specific needs are addressed in Section 3.1.1- Regional Transportation Issues.

In addition to physical and operating needs, there are various institutional issues that remain. These affect the transportation system in different ways, as outline below:

- Need for increased multi-jurisdictional coordination (state, county, and municipal), especially for facilities at the subregional level of the functional hierarchy. Specific issues for potential focus are
  - incident management on the arterial system
  - integrated arterial-expressway traffic management
- Need for a more intermodal perspective in planning and design and the use of more corridor frameworks and master planning approaches, coupled with transit-oriented development concepts (e.g., need to make fundamental changes in the planning process and policies). There could be more effort made to achieve cross-modal transit fare and payment systems and expanded use of private sector transportation resources (this could even entail a more effective brokering service undertaken by a key public agency).
- Need to resolve concerns about system function: local versus regional, speed versus safety, accessibility versus traffic management.

2.3 ITS RELATED ACTIVITIES

The northeastern Illinois region has been employing ITS strategies for more than 35 years, and there is more ITS activity today in the region than ever before. As part of the SEDP development, a database was compiled to track ITS related systems and projects currently in place and underway. This section highlights some of these systems for freeway, tollway, arterial, and transit operations.

2.3.1 Freeway Systems

The IDOT TSC has been in operation for over 35 years. In that time it has expanded to include over 136 centerline miles with 2,208 detectors, 20 changeable message signs, 113 ramp meter locations, and 9 weather stations. In addition, the Department operates the Minutemen expressway service patrol,

providing over 100,000 expressway motorist assists annually. A requirements analysis has been completed and a project is currently underway to upgrade the TSC central hardware and software.

2.3.2 Toll Highway Systems

The Illinois State Toll Highway Authority (ISTHA) operates over 275 centerline miles of roadway. In 1995, they implemented their current AVI/ETC system known as I-PASS. The system is in place at 500 lanes with over 100,000 transponders or tags in use. The system is currently being expanded to include express lanes at most plazas and a projected 500,000 transponders in use by 2000.

2.3.3 Signal Systems

Many agencies in the region operate signal systems along major arterials. These agencies include the Illinois DOT and the Chicago DOT, as well as many of the region's city and county transportation agencies. Most of these signal systems are of the closed loop type with on-street masters interconnected to local intersection controllers. A dial-up telephone connection provides communication between the on-street master and a central computer. These systems are typically stand-alone and are not interfaced or integrated with the expressway traffic management elements. Currently there are two bus priority or pre-emption pilot studies underway, with one currently operational. Other projects are planned but have not yet been implemented.

2.3.4 Transit Systems

The Regional Transportation Authority (RTA) and the three service boards (CTA, Metra, and Pace) have also been proactive in the deployment of ITS. The RTA currently operates the transit Traveler Information Center. This facility provides information on all transit services to callers 20 hours per day, 7 days per week. Up to 60 operators are on duty at a given time, and the facility handles over 3.3 million calls per year. The current system is manually oriented and relies heavily on operator experience and training. The RTA is currently performing a requirements analysis for an upgrade of the system to an automated itinerary planning system.

The CTA is currently developing their Bus Services Management System /Bus Emergency Communications System (BSMS/BECS). The project includes the instrumentation of over 1,500 buses with GPS and mobile data terminals for bus management and location. The project also includes approximately 250 buses to be tested with the system for schedule adherence using bus signal priority in cooperation with Chicago DOT.

Pace is also pursuing a smart bus system with a focus toward integration of AVL for bus priority, stop annunciation, station monitors and kiosks with real time information, and connection protection. This project is authorized and is slated to start in 1999.

2.3.5 ITS Related Project Database

A comprehensive summary of the ITS related activities in the northeastern Illinois region was prepared in early 1997 and is presented in Table 2-8. This table is a sample of the total information contained in the "*ITS Related Activities*" database (current as of 1997), which also includes the name of the responsible individual in charge of each project, address information, phone numbers, etc. The database shows 72 projects with more than half of them currently operational at the time this data was assembled in 1997.

Table 2-8 : ITS Projects in Northeastern Illinois (as of 1997)

Project Name	Responsible Organization	User Service Category(ies)	Project Classification	State of Implementation	Completion/ Ready Year	Primary Project Role in ITS	Brief Project Description	Defined Project Limits
*999 Cellular Express Line	ISTHA	4A, 4C	Other ITS Related Project	Operational	Currently Operational	Incident Declaration	*999 operates under a contract with ISTHA and allows cellular users to report incidents. Operators key in relevant incident data that is also sent to the C-TIC Database and filtered. Emergency response teams are dispatched.	Northeast Illinois
911 Chicago	Chicago Police and Fire Departments	4A, 4C	Other ITS Related Project	Operational	Currently Operational	Incident Declaration	Emergency dispatch services for the City of Chicago. Currently traffic related incidents are not available outside the 911 Command Center.	City of Chicago
Automated Toll Collection (I-PASS)	ISTHA	2C	Other ITS Related Project	Operational	Currently Operational	Automated Toll Collection	Electronic transponders provided by AT/COMM receive tolls and update user accounts.	I-355 and Central Portion of I-294
Chicago Skyway Electronic Toll Collection & Construction Maintenance	Chicago Department of Streets and Sanitation	2C	Other ITS Related Project	Operational	Currently Operational	Automated Toll Collection	The Skyway has one toll plaza which currently collects tolls manually. The system will be updated in the near future with an ETC system. This system will be developed independent of the Indiana Toll Road systems and ISTHA systems.	Chicago Skyway
Corridor Transportation Information Center (C-TIC)	IDOT	All	GCM Corridor Project	Operational	1997	Information Database and Dissemination	The C-TIC is the prototype for the Gateway Traveler Information System (being developed as part of the MMTIS Project). The C-TIC stores and makes real time traveler information from a variety of sources available to the public and control systems.	GCM Corridor
Delivery Services	DHL	2D	Private ITS Systems	Operational	Currently Operational	CVO	Computer system for tracking the location of packages to better serve customers and improve quality of operations	All packages
DuCom	DuPage County	4A, 4C	Other ITS Related Project	Operational	Currently Operational	Incident Declaration	Emergency dispatch services for 28 police and fire departments in DuPage County. A new CAD system is currently being developed. Currently incidents are not available outside of DuCom.	28 Communities in DuPage County
IDOT District 1 Communications Center	IDOT	2B	Other ITS Related Project	Operational	Currently Operational	Incident Management	The COM Center is a 24 hour incident management center. System includes 11 highway advisory radio stations; 43 CCTV cameras; call in services (*123 and (312) DOT-INFO); Kennedy reversible lane (RevLac); and some off-hour TSC operations.	IDOT District 1
IDOT Traffic Systems Center	IDOT	2A, 2B	Other ITS Related Project	Operational	Currently Operational	ATMS	Manage congestion of freeways and Lake Shore Drive. System includes 2200 detection zones at ~1/2 mile spacing; 113 ramp meters; 3 CCTV cameras; ~20 variable message signs; and 24 CB radio monitoring sites.	IDOT District 1
Illinois Emergency Traffic Patrol (ETP) Service	IDOT	4A, 4B	Other ITS Related Project	Operational	Currently Operational	Incident Management	Aid in congestion mitigation, and incident detection/removal and dispatched from the COM Center. Includes 34 Emergency Patrol vehicles, 9 light trucks, 3 heavy tow vehicles, 1 crash crane, 1 tractor retriever, 1 sand spreader, and 1 heavy rescue truck.	See (1)
Interconnected Traffic Signal Systems (CDOT)	CDOT	2A, 2B	Other ITS Related Project	Operational	Currently Operational	Arterial Traffic Control	The City of Chicago operates several closed loop systems as well as a centralized MIST system at 73 intersections in the CBD. The systems optimize traffic flow through signalized intersections along arterial routes and the CBD.	See (3)
Interconnected Traffic Signal Systems (Cook County)	Cook County	2A, 2B	Other ITS Related Project	Operational	Currently Operational	Arterial Traffic Control	Cook County currently operates nine Econolite closed loop systems. The systems optimize traffic flow through signalized intersections along arterial routes.	Various Routes Throughout Cook County
Interconnected Traffic Signal Systems (DuPage County)	DuPage County	2A, 2B	Other ITS Related Project	Operational	Currently Operational	Arterial Traffic Control	DuPage County currently operates 25 Econolite closed loop systems. The County is developing an off-line 1.5 generation timing plan development tool. The systems optimize traffic flow through signalized intersections along arterial routes.	Various Routes Throughout DuPage County

Table 2-8 : ITS Projects in Northeastern Illinois (as of 1997) (con't)

Project Name	Responsible Organization	User Service Category(ies)	Project Classification	State of Implementation	Completion/ Ready Year	Primary Project Role in ITS	Brief Project Description	Defined Project Limits
Interconnected Traffic Signal Systems (IDOT)	IDOT	2A, 2B	Other ITS Related Project	Operational	Currently Operational	Arterial Traffic Control	Closed Loop Signal Systems installed on principal aretrials throughout District 1 to optimize the flow of arterial traffic. IDOT maintains timing plans through the SCAT program and actively pursues signal upgrade projects to allow for future SCAT work.	See (2)
Interconnected Traffic Signal Systems (Kane County)	Kane County	2A, 2B	Other ITS Related Project	Operational	Information not available	Arterial Traffic Control	Information not available	Information not available
Interconnected Traffic Signal Systems (Lake County)	Lake County	2A, 2B	Other ITS Related Project	Operational	Currently Operational	Arterial Traffic Control	Lake County currently operates several Econolite closed loop systems. The systems optimize traffic flow through signalized intersections along arterial routes.	Various Routes Throughout Lake County
Interconnected Traffic Signal Systems (Naperville)	City of Naperville	2A, 2B	Other ITS Related Project	Operational	Currently Operational	Arterial Traffic Control	The City of Naperville uses Econolite closed loop systems extensively. Currently all, but 11 intersections are connected to one of these systems. The system optimizes traffic flow through signalized intersections along arterial routes.	City of Naperville
Interconnected Traffic Signal Systems (Will County)	Will County	2A, 2B	Other ITS Related Project	Operational	Currently Operational	Arterial Traffic Control	Will County does not currently operate a traffic signal system.	None
Large Manufacturers/Employers	Delco Electronics	-	Private ITS Systems			Product Development	Supplying a wide variety of automotive products	Automotive industry
METRA Control Center (15th and Canal Street, Chicago)	Metra	3A	Other ITS Related Project	Operational	Currently Operational	Rail Management	80% of the track owned by Metra is monitored and controlled through the Centralized Control Center. The remaining 20% is operated through a block system. Metra owns four of their lines they operate on. The other lines are owned by freight companies.	Rock Island Rail Line; West Line; Northwest Line; and Electric Line
Northwest Central Dispatch (NWCD)	NWCD	4A, 4C	Other ITS Related Project	Operational	Currently Operational	Incident Declaration	Police and Fire dispatch agency for six communities in Northwest Suburbs. Hoffman Estates and Streamwood will join in near future. Handles traffic and non-traffic emergencies. Traffic incidents are filtered and sent to C-TIC.	Arlington Heights, Buffalo Grove, Palatine, Elk Grove Village, Mount Prospect, and Prospect Heights
Passenger Dispatch Services	Yellow Cab Co.	1B, 2D	Private ITS Systems	Operational	Currently Operational		Computer dispatch system; messages from central dispatch appear on monitors mounted inside selected vehicles	Select vehicles only
Passenger Dispatch Services	Checker Taxi	1B, 2D	Private ITS Systems	Operational	Currently Operational		Computer dispatch system; messages from central dispatch appear on GANDALF monitors mounted inside selected vehicles; also using emergency radio	Approximately half of all vehicles
Private Transit	Tri-State Coach Lines	2D	Private ITS Systems	Operational	Currently Operational		Cellular system to verbally communicate between main office and drivers in the field	All vehicles
Radio/Television Stations	WBBM News Radio 78	1A, 1B, 1C,1D	Private ITS Systems	Operational	Currently Operational		Utilizing traffic services (AAA and Metro) which supply information from surveillance cameras and IDOT computer system	Chicagoland expressways
Small Business Entrepreneurs	Curry Ice and Coal, Inc.	2D	Private ITS Systems	Operational	Currently Operational		Communication is primarily done through group meeting each evening at home dispatch headquarters. There is some use of CB radio, cellular phones, and pagers. Looked into satellite system, but no serious need exists	All vehicles
Traffic Reporting	WGN Radio	1A, 1B, 1C,1D	Private ITS Systems	Operational	Currently Operational	Information Dissemination	Utilizing surveillance cameras and aircrafts to obtain traffic information; two cameras in place with a goal of ten total this year.	
Traffic Reporting	Metro Traffic	1A, 1B, 1C,1D	Private ITS Systems	Operational	Currently Operational	Information Dissemination	Radio Broadcast Reports	

Table 2-8 : ITS Projects in Northeastern Illinois (as of 1997) (con't)

Project Name	Responsible Organization	User Service Category(ies)	Project Classification	State of Implementation	Completion/ Ready Year	Primary Project Role in ITS	Brief Project Description	Defined Project Limits
Traffic Reporting	Shadow Broadcasting Services	1A, 1B, 1C,1D	Private ITS Systems	Operational	Currently Operational	Information Dissemination	Three surveillance cameras are in place to view traffic on existing highways with a goal of ten total. Efforts are being made to expand the covered area to include Indiana.	Chicagoland expressways; future plans for utilizing Indiana surveillance cameras
Trucking Companies	Bulkmatic Transport Co.	2D	Private ITS Systems	Operational	Currently Operational	CVO	QualComm system: satellite system based in San Diego uses in-vehicle monitors to communicate with drivers	Approximately 80% of vehicles
Trucking Companies	Federal Express	2D	Private ITS Systems	Operational	Currently Operational	CVO	Computer system for tracking the location of packages to better serve customers and improve quality of operations	All packages
Trucking Companies	United Parcel Service, Inc.	2D	Private ITS Systems	Operational	Currently Operational	CVO	Computer system for tracking the location of packages to better serve customers and improve quality of operations	All packages
Trucking Companies	U.S. Postal Service	2D	Private ITS Systems	Operational	Currently Operational	CVO	Computer system for tracking the location of packages to better serve customers and improve quality of operations	Express mail only
Trucking Companies	Millis Transfer, Inc.	2D	Private ITS Systems	Operational	Currently Operational	CVO	QualComm system: satellite system based in San Diego uses in-vehicle monitors to communicate with drivers	Nearly all vehicles
Trucking Companies	Robert Hansen Trucking	2D	Private ITS Systems	Operational	Currently Operational	CVO	QualComm system: satellite system based in San Diego uses in-vehicle monitors to communicate with drivers	All vehicles
Trucking Companies	Atlas Van Lines	2D	Private ITS Systems	Operational	Currently Operational	CVO	QualComm system and thoroughbred software; also using dispatch radio	
Various Municipal Traffic Signal Systems	Various	2A, 2B	Other ITS Related Project	Operational	Currently Operational	Arterial Traffic Control	Several municipalities throughout northeast Illinois currently operate and maintain closed loop signal systems. These systems optimize traffic flow through signalized intersections along arterial routes.	Information not available
Weather Systems	Surface Systems, Inc.	1A	Private ITS Systems	Operational	Currently Operational	Weather Data		
Automated Toll collection (I-PASS 2000)	ISTHA	2C	Other ITS Related Project	Under Development	1998	Automated Toll Collection	Replacement of I-PASS with equipment from Mark IV and Denso International in the vehicle and at roadside. Upgrade will include 500 total lanes and express ETC at 24 plazas. Project includes a new TMC. Travel time data will be collected.	I-355; I-294; I-90; and I-88
Cermak Road Bus Priority	Pace	3A	Other ITS Related Project	Under Development	1997	Transit Priority	Demonstration project to evaluate the effects of bus preemption on a signal progression corridor. Currently all Pace buses on the 2.5 mile long Corridor have been outfitted with transponders and field evaluation will be conducted in the Summer of 1997.	Cermak Road
Commercial Vehicle Information Systems and Networks (CVISN)	Illinois Secretary of State Office and FHWA	2D	Other ITS Related Project	Under Development	1997	CVO	The CVISN allows data obtained from the International Registration Plan (IRP) to be available to the SAFER (Safety data records)system. The concept allows safety and registration records to be examined simultaneously enhancing enforcement.	Not defined
Constant Time Warning Device	Metra	2F	Other ITS Related Project	Under Development	2000	Railroad Grade Crossing	Installation of constant time warning devices at critical railroad grade crossings to minimize unnecessary motorist and pedestrian delay relative to slow moving trains. This project is ready to go once funding is defined.	Rock Island Line - 80th/Tinley; West Line - Belmont; North Line - Grayslake
CPP Program Area 01 - Multi-Modal Traveler Information System (MMTIS)	IDOT	All	GCM Corridor Project	Under Development	1998	Information Provision and Dissemination	Develops a comprehensive integrated and multi-modal information system to serve the needs of travelers and operators within the GCM Corridor	GCM Corridor

Table 2-8 : ITS Projects in Northeastern Illinois (as of 1997) (con't)

Project Name	Responsible Organization	User Service Category(ies)	Project Classification	State of Implementation	Completion/ Ready Year	Primary Project Role in ITS	Brief Project Description	Defined Project Limits
CTA Bus Services Management System	Chicago Transit Authority	3A, 3B, 3D	Other ITS Related Project	Under Development	1998	Transit Operations and Management	Buses equipped to communicate with centralized location for bus services management system (BSMS). Project also includes Emergency Communications Systems (BECS), CAD, active bus stop signing, connection protection and signal priority.	CTA Routes
Cubic Ticket Reader/Writer	Pace	2C	Other ITS Related Project	Under Development	1997	Transit Fare System	The Cubic unit will be comparable to the existing farebox, but will also allow for read/write transfers electronically, accept smart and debit cards, enhance data collection and accuracy and reduce intersection dwell time.	Pace Routes
Emergency Traffic Patrol – Upgrade Equipment	IDOT	4A, 4B	Other ITS Related Project	Under Development	1997	Incident Management	Retrofit 34 vehicles in the ETP fleet to provide safer and faster vehicle relocation. Automated dispatch of closest ETP vehicle. Project also includes integration with COM Center, response teams, traffic monitoring, and compatibility with INDOT and WisDOT.	See (1)
Expert Driver Model & ITS Simulator	Argonne National Laboratory	-	Other ITS Related Project	Under Development	Not defined	ITS Modeling	The ITS simulator models the Chicago Metropolitan Area and studies the affects of optimal routing and real-time information on driver behavior. Model could be used to determine ITS feasibility. Inputs include O-D, signal timing, geometrics, etc.	Chicago Metropolitan Area
GCM Corridor Program Plan	GCM Participating Agencies	All	GCM Corridor Project	Under Development	1997	Program Coordination and Development	The GCM Corridor Program Plan is the governing body of work that identifies, programs and coordinates on-going work by each of the GCM Participating agencies throughout the Corridor.	GCM Corridor
IDOT Traffic Systems Center Upgrade Study	IDOT	2A, 2B	Other ITS Related Project	Under Development	1997	ATMS	Identification of areas that can be automated and areas of integration with COM Center. Includes identification of TSC needs and design for new computers, field equipment, central hardware/software and a communications system.	IDOT District 1
Interconnected Traffic Signal Systems (McHenry County)	McHenry County	2A, 2B	Other ITS Related Project	Under Development	1997	Arterial Traffic Control	McHenry County is currently in the process of installing an Econolite closed loop systems. The system will optimize traffic flow through signalized intersections along arterial routes.	Information not available
Northeastern Illinois Strategic ITS Early Deployment Plan (SEDP)	CATS	All	Other ITS Related Project	Under Development	1998	ITS Planning	Analyze the regional transportation system needs and identify ITS technologies to meet needs in terms of user services, priorities, and market packages.	Northeast Illinois
Personal Rapid Transit	RTA, Rosemont, IDOT, FTA	3C	Other ITS Related Project	Under Development	Not defined	Transit Systems	Elevated guideways used by programmable transit vehicles (1 to 4 passengers). The passenger programs a destination at the terminal and is provided with information relative to the arrival of the next vehicle.	Rosemont Area selected for Demonstration
Pilot Study of Advisory On-Board Vehicle Warning Systems at Railroad Grade Crossings	IDOT, Metra, School Bus Companies	2F	Other ITS Related Project	Under Development	1998	Safety	Provide approximately 300 vehicles (school buses, emergency service vehicles, commercial vehicles) approaching railroad grade crossings with an on-board vehicle warning system to advise them of a train approaching or occupying the crossings.	Five Grade Crossings along Metra-Milwaukee North Line.
Electronic Itinerary Routing System	RTA	3A	Other ITS Related Project	Committed	1997	Transit Itinerary Route Planning	Automated Transit Route Itinerary Planning System. Callers are provided with best transit routes from origination point to destination. In addition to handling calls, system will incorporate kiosks, hotel cable channels and an interface to the Internet.	RTA, CTA, Metra and Pace Transit Lines
Gateway Implementation Project	IDOT	All	GCM Corridor Project	Committed	1999 to 2016	Information Database and Dissemination	Builds on work in MMTIS Project. The Gateway will serve as the information collection and distribution point for traveler information. The information will be distributed through the data pipe, Internet, PDA's, kiosks and other methods supported by VARs.	GCM Corridor
GCM Data Pipe	IDOT	All	GCM Corridor Project	Committed	1999 to 2016	System Communications	Provide a backbone communication system for transportation/support agencies in the Corridor. Phase 1 to provide network backbone to support interfaces identified in GCM architecture. Phase 2 to allow for expansion. Phase 3 to study communication method.	GCM Corridor

Table 2-8 : ITS Projects in Northeastern Illinois (as of 1997) (con't)

Project Name	Responsible Organization	User Service Category(ies)	Project Classification	State of Implementation	Completion/ Ready Year	Primary Project Role in ITS	Brief Project Description	Defined Project Limits
Hazardous Material Tracking Project	Chicago Fire Department	4B	Other ITS Related Project	Committed	1998	HazMat Control	Demonstration project to identify HazMat spills using transponders. Notification of accident will automatically be sent to Chicago 911 Center with vehicle location, HazMat cargo data, and accident details. 911 Center will contact contractor for clean-up.	City of Chicago
Integrated Fare Payment System	RTA	2C, 3A	Other ITS Related Project	Committed	1997	Integrated Transit Fare Payment System	The system will provide an automated mechanism to pay fares from point of origination to destination. System will include centralized accounting function to track transactions, collections, etc.	RTA, CTA, Metra and Pace Transit Lines
Chicago Master Signal System	CDOT	2A, 2B	Other ITS Related Project	Proposed	Not defined	Arterial Traffic Control	Development of a master signal system within the City of Chicago to provide monitoring and control capabilities from a centralized location in order to facilitate the progression of traffic on arterial streets.	Not defined
ChicagoNET	CDOT	All	Other ITS Related Project	Proposed	Not defined	Communications	ChicagoNET is a comprehensive communications system initiative within the City of Chicago to provide a broadband communication path to police, fire, library, data processing, records, and traffic control systems.	Not defined
CPP Program Area 02 - Integrated Transit System	RTA	3A, 3B, 3C, 3D	GCM Corridor Project	Proposed	2000	Transit Operations	Integrates the status and schedule systems of the transit operators and the public. It also provides dynamic capabilities to manage and ensure connections between routes and modes and will enhance capabilities of transit management system.	GCM Corridor
CPP Program Area 03 - Incident Management Programs	GCM Participating Agencies	4A, 4B, 4C, 4D	GCM Corridor Project	Proposed	2000	Incident Management	Establishes a consistent level of detection, response and operational capabilities for incident management programs.	GCM Corridor
CPP Program Area 04 - GCM Technical and Planning Support	WisDOT	All	GCM Corridor Project	Proposed	1997 to 2016	Education	Provides support services to the GCM Program. Deployment Committee will coordinate/facilitate implementation of CPP. ITS Midwest provides technical support. Outreach/public education will be provided through workshops, meetings, forums and newsletters.	GCM Corridor
CPP Program Area 05 - Traffic Management Systems	GCM Participating Agencies	All	GCM Corridor Project	Proposed	1998 to 2016	Traffic Management and Control	Develop procedures and capabilities to allow traffic and transit management centers to operate interactively.	GCM Corridor
CPP Program Area 06 – Commercial Vehicle Operations	WisDOT	2D	GCM Corridor Project	Proposed	2000 to 2016	CVO	Establish a forum to develop strategies for the development of integrated CVO in the GCM Corridor.	GCM Corridor
CPP Program Area 07 - Traffic Signal Integration	GCM Participating Agencies	2A, 2B	GCM Corridor Project	Proposed	2001 to 2016	Traffic Management and Control	Develop integrated signal control systems to improve the flow of traffic in major regional corridors within the context of the larger GCM Corridor.	GCM Corridor
CPP Program Area 08 - Vehicle Transponder Systems	IDOT	1B, 1C, 1D, 2B, 2C, 2D, 3A, 3B, 4A, 4B, 4C, 4D	GCM Corridor Project	Proposed	2001 to 2016	Vehicle Routing and Navigation	Facilitate and Coordinate an evolutionary development of transponder systems, such as currently used by commercial and transit operators to track vehicle status and automated toll collection systems.	GCM Corridor
CPP Program Area 09 - Advanced Incident Reporting and Mayday Security	IDOT	4B, 4C, 4D	GCM Corridor Project	Proposed	2001 to 2016	Incident Management & Personal Security	Develop the capability for travelers to communicate rapidly and directly with a communication service to report an accident, incident, and/or request assistance.	GCM Corridor
CPP Program Area 10 - Private/Public Partnerships	WisDOT	All	GCM Corridor Project	Proposed	1997 to 2016	Partnering	Provide a means to educate and actively involve the private sector in GCM Corridor ITS initiatives.	GCM Corridor
Pace/Transit Vehicle Management System (TVMS)	Pace, RTA	3A, 3B, 3D	Other ITS Related Project	Proposed	Not defined	Transit Operations and Management	Buses equipped to communicate with centralized location for transit vehicle management system (TVMS). Project also includes AVL, signal priority, passenger counters, fare collection, radio network, control center, passenger information, security system.	Pace Routes

Table 2-8 : ITS Projects in Northeastern Illinois (as of 1997) (con't)

Project Name	Responsible Organization	User Service Category(ies)	Project Classification	State of Implementation	Completion/ Ready Year	Primary Project Role in ITS	Brief Project Description	Defined Project Limits
Parking Management Systems	Metra	1B, 1C, 2A, 2B, 2C	Other ITS Related Project	Proposed	1999	Parking Management	This project will design and implement a system to manage parking facilities by collecting, processing and distributing static and real-time parking lot data.	Scope needs to be defined
Rail Centralized Control System Assessment	Metra	3A, 3B	Other ITS Related Project	Proposed	2000	Rail Management	Development of a completely consolidated train system to reduce commuting delays, increase capacity, improve infrastructure, reduce lack of control system uniformity, provide coherent communications system, and reduce operational inefficiencies.	Scope needs to be defined

Note (1)

Edens Expressway (I-94)
- Addison to Lake

Eisenhower Expressway (I-290)
- Wells to Laramie
- Cicero to US-45

Calumet/Bishop Ford Expressway (I-94)
- 87th to 147th

Dan Ryan Expressway
- North to 35th
- Local Lanes Lake to 55th
- Franklin Extension
- Express lanes Canalport to 71st Street
- 51st to 95th Street

Kennedy Expressway (I-90/94/190)
- US 12-45 to North
- Jackson to Lawrence
- Ohio/Ontario

Stevenson Expressway (I-55)
- Lake Shore Drive to Cicero
- Damen to 1st Avenue

Note (2) Attached

Note (3)

Closed Loop Systems	
Irving Park Road from JFK Expressway to Lake Shore Drive	Operational
Lake Shore Drive and Columbus from Monroe to Balbo	Summer 1997
Michigan Avenue from Oak to 14th	Operational
Randolph Street (near West Side)	Operational
Western Avenue	Future Corridor
Central CBD Signal System	

2.3.5.1 Identify Existing Projects

Research was conducted to identify all related ITS projects in the northeastern Illinois region. The 72 projects identified are broken down as follows:

- 14 GCM Related Projects
- 40 Other ITS Related Projects
- 18 Private ITS Related Projects

It is noted that of the 14 GCM related Projects, several can be defined as "Programs" that may actually be divided into many individual smaller projects. In that most of these "Programs" are proposed, funding and specific project commitments may have not been identified at this time.

Additionally, the Private ITS Related Projects are likely just a small sampling of all the transportation systems projects in use by private firms or agencies. For example, telecommuting is not identified and could reasonably be categorized as an ITS related project. The ability to identify all such projects and the potential benefit to the SEDP is limited. At this time, a general sampling of large to small private agencies from a wide cross range of business enterprises is included to provide the reader with an understanding of the depth of potential private partnerships. This issue has also been addressed by the Multi-Modal Traveler Information System project, conducted by IDOT and completed in 1998.

2.3.5.2 Assess Projects Applicability to the SEDP

For each project identified in Table 2-8, the following information is also included:

1. Project Name - Project identification
2. Responsible Organization - The agency responsible for the project
3. Project Classification - Category of project
4. State of Implementation - Current project status
5. Completion/Ready Year - Anticipated project completion date
6. Primary Project Role in ITS - Brief descriptor of project
7. Brief Project Description - Short project narrative
8. Defined Project Limits - Area of influence or implementation area

Each database field is discussed in the following sections.

Project Name

The project name typically refers to the recognized description of each project. In some cases, this name is documented by other resources, such as the GCM Corridor Program Plan. In other cases, the project is being proposed by the responsible agency and has not been officially recognized or funded. In these cases, the project name is more of a description used to identify the project.

Responsible Organization

This database field identifies the lead agency responsible for management of the identified project. Typically, these same agencies will also implement, operate and maintain the systems once completed. In several cases, multiple agencies are involved in the identified projects, such as the GCM work. In these cases, only the agency providing the primary leadership role is indicted in this field.

Project Classification

The "Project Classification" field represents whether the project is included as part of the GCM Corridor initiative, other publicly supported ITS related projects, or privately funded ITS systems. There are 14 "GCM Related Projects," 40 "Other ITS Related Projects," and 18 "Private ITS Related Projects."

State of Implementation

This field represents the current project status as either "Operational," "Under Development," "Committed," or "Proposed." Table 2-8 is sorted on this field. Each term is defined below:

- **Operational** - Operational projects are existing systems that are currently in operation and providing service to the public. There are a total of 37 projects identified as "Operational."
- **Under Development** - Projects identified as being "Under Development" include on-going system implementations or studies underway. It is possible for some systems to be considered both "Operational" and "Under Development." For example, the C-TIC can be considered operational in that it is currently providing service, but is also being further developed to incorporate additional information and provide a higher level of service in a broader scope. In these cases, the projects are generally classified as "Operational." Some flexibility is maintained to this rule to ensure significant emphasis is placed on the current project status.
- **Committed** - Committed projects are proposed projects that are not underway, but for which funding has been made available.
- **Proposed** - Proposed projects have been identified for future study or implementation, but project funding has not yet been identified.

Completion/Ready Year

The Completion/Ready Year is typically defined by the date in which the project will be operational or ready for the next phase of implementation. Projects that are currently in operation are so identified.

Primary Project Role in ITS

This field has been included to briefly, at a glance, identify how the project fits into the ITS programs and what types of services are, or will be, provided as a result of this work.

Brief Project Description

A project description was developed for every identified project. These descriptions are intended to be very brief and to hit only the principle project components as they affect the SEDP project. Additional detail can be obtained from the "Summary of Regional Strategic Plans Working Paper" or directly from the responsible agency. Contact information is also included in the database.

Defined Project Limits

The project limits are defined to geographically identify the affected area of each project. In some cases, the project limits are broadly defined as the northeastern Illinois region. Where possible, specific limits or technology locations are identified.

3. REGIONAL GOALS AND ITS USER SERVICE PRIORITIES

User services were developed as part of the National ITS Program Plan to emphasize the customer-oriented or needs-based focus of planning and implementing ITS projects. Technology-based solutions to transportation problems are considered and promoted because they have the potential for improving transportation safety and efficiency for the user, not merely because the technology is available. Thus, the development of user service priorities for northeastern Illinois is predicated on how ITS can provide benefits to the user (the auto driver or passenger, truck driver, shipper, transit rider, etc.). The user service plan identifies regional transportation issues and specific ITS user services that could be used in response to these issues.

The user service plan for northeastern Illinois extends at least one step beyond what is ordinarily considered in a user service plan by specifying "candidate actions." These actions lay the foundation for eventual projects recommended as part of the SEDP and reflect ideas put forward by agencies involved in the SEDP as being important to the future management of the region's traffic and transit systems. The candidate actions were generated based on the results of the user services workshop on May 20, 1997 attended by members of the Advanced Technology Task Force.

The user service plan is comprehensive in that it incorporates the planning already conducted for the GCM Corridor ITS Strategic Plan. However, the intent is that the candidate actions for the SEDP not duplicate the GCM effort. In other words, any projects that are recommended as part of the SEDP complement and expand upon projects already recommended as part of the GCM corridor.

3.1 OBJECTIVES

The objectives of the User Services Plan incorporate the regional transportation issues and the goals and objectives of the Chicago Area Transportation Study 2020 Regional Transportation Plan (RTP). Eleven major regional transportation issues related to the region's transportation system's physical and operating characteristics were identified. The 2020 Plan put forward seven goals and 39 objectives.

3.1.1 Regional Transportation Issues

Issue No. 1: Chronic and Serious Congestion on the Freeway/Tollway System

The following seven segments of the regional freeway/tollway system were identified as experiencing chronic and serious congestion:

1. *Eisenhower/I-88/I-294 Junction*
   - Serious lane imbalance at eastbound merge point of Eisenhower Expressway for northbound and southbound traffic from the Tri-State Tollway and the East-West Tollway.
   - Serious ramp capacity shortage for the northbound Tri-State to northbound I-290; this is a loop ramp that transitions from two lanes to one lane and includes eastbound to northbound East-West Tollway traffic.
2. *Kennedy/Edens Expressways Junction*
   - Lane imbalance for northbound Edens given traffic from express lanes, i.e., four lanes flowing into three lanes.
   - Major northbound weaving section in the segment from Addison Street to the expressway branch; vehicles entering on right weaving across four lanes to get to the Kennedy access lanes.

- Major southbound merge section in the segment just downstream from the expressway junction.
- No direct movement available for southbound Edens to westbound Kennedy and reverse.

3. *Kennedy/Ryan Central Area Section*
   - Substantial weaving and maneuvering for both northbound and southbound traffic from Congress interchange to Ohio/Ontario ramps.
   - Entrance ramps from left side with very short merging distances for both northbound and southbound traffic.

4. *Tri-State Tollway—Kennedy to I-55*
   - Emergence of major peak-hour commuter movement on the Tri-State Tollway from the Kennedy/O'Hare interchange to the southern suburban area; northbound in the morning and southbound in the afternoon.
   - Population growth in south suburbs (southern Cook County and northern edges of Will County) is surging; potential for significant traffic growth in the tollway corridor.

5. *Northwest Tollway/Kennedy Junction*
   - Serious lane imbalance associated with the eastbound Kennedy Expressway downstream of the Rosemont toll plaza; three lanes being fed by seven lanes of tollway, including the O'Hare connector.
   - For westbound Kennedy, the southbound ramp to the Tri-State is subject to delay.
   - The O'Hare connector (I-190) has a serious weaving/merge area just east of Mannheim Road (i.e., traffic from the Northwest and Tri-State tollways merging with Kennedy traffic, with traffic exiting and Mannheim Road weaving with O'Hare traffic).

6. *Eisenhower/Ryan Expressway*
   - The most continually congested ramp in the system is the eastbound Eisenhower to southbound Dan Ryan ramps because of limited ramp capacity and a downstream weaving section.
   - The northbound Ryan to westbound Eisenhower is congested, especially in the afternoon peak and evening period; this is a ramp capacity problem.

7. *Tri-State/Borman Expressway*
   - This section represents an overlapping of travel patterns (double-loading of a road segment) from I-80, I-94, and I-294 onto one road from the I-94 junction to the I-94/I-95 junction area in Indiana.
   - Substantial percentage of large truck traffic throughout the day.

Issue No. 2: Toll Booth Delays

- Chronic problem locations are the O'Hare/Northwest Tollway (I-90), Rosemont (I-90), and Oakbrook (I-88) plazas.
- Insufficient downstream highway capacity has also contributed to delay; these conditions exist along the Northwest Tollway in the Rosemont/O'Hare area.

Issue No. 3: Major Arterial System Congestion

Congestion occurs mostly in

- Growing outer suburbs where growth rates exceed the expansion of traffic capacity (e.g., still many two-lane roads).
- Fully developed areas where capacity improvements are not possible and demand is still high or growing (Chicago and older suburbs).

Areas of congestion include:

- IL 62 in Algonquin, including Fox River Bridge.
- North Avenue in Elmhurst/Villa Park area.
- Sheridan Road/Hollywood Avenue area in Chicago.
- 57th Street at Lake Shore Drive (Museum of Science and Industry).
- Randall Road in Kane County.
- IL 59 in the Aurora/Naperville area and the Barrington area.
- IL 60/IL 21 in the Vernon Hills area.
- U.S. Route 41 at Lake-Cook Road, IL 137
- Lake-Cook Road in the Northbrook/Deerfield/Buffalo Grove area
- Roosevelt Road in DuPage County.

Issue No. 4: Weekend and Special Event Congestion

- Similar recreation traffic surges affect U.S. Route 12 in Lake and McHenry counties, plus I-90 to the west and I-90/I-94 into Indiana and Michigan.
- Special event traffic occurs frequently for athletic and convention events in the Chicago central area (McCormick Place, Soldier Field, and United Center); events on weekdays add to normal travel demand.
- Once a year events attract very high attendance in the Chicago central area (e.g., Taste of Chicago, July 4 celebrations, Chicago Marathon, Air and Water Show). Some of these are both weekend and weekday events. These events require closing streets to vehicular traffic, which changes operations and reduces traffic capacity.

Issue No. 5: Weather Effects

- Lake effect snows are very frequent along the south shoreline of Lake Michigan and can cause hazardous road conditions.
- Similar effects (although less frequent) can occur along the west shore of Lake Michigan throughout Cook County and Lake County (Illinois).

Issue No. 6: Reduced Transit Use

- The CTA has lost 30 percent of its ridership in the last 10 years.
- There is major growth in travel markets occurring for suburban county-to-suburban county travel. Fixed-guideway transit (Metra and CTA) do not serve cross-county travel.

Issue No. 7: Increasing Constraints on Transit

As part of the lower transit share of the travel market, there are various conditions constraining transit:

- Speed is an issue at at-grade rail crossings (mostly affecting Metra).
- The primary mode of access to Metra stations is the auto, with its corresponding critical need for parking. Where stations are located in developed areas (commercial and residential), local concerns about traffic impact are restraining changes in parking supply.
- Financial conditions are bleak for all modes. The Illinois legislature did not consider new funding in its 1997 session. The CTA's service restructuring plan, now being debated, represents the need for reducing transit costs.
- The CTA has had to use resources for operating expenses that should be dedicated to capital improvements. This leads to deferred improvements and a diminishing of the quality of transit facilities. This, in turn, downgrades the environmental qualities of transit, causing escalating concerns for safety and security.
- Cross Commute - suburban and suburban commutes
- Reverse Commute

Issue No. 8: Mobility

The issue of mobility focuses around the need to improve access to employment sites. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 includes a new assistance program called "Temporary Assistance to Needy Families" that is designed to help individuals in the transition back to work. This program recognizes the need to provide safe and efficient transportation not only to jobs but to day care centers and other services that make work possible.

"Recent information from the federal Commission on Welfare to Work indicates that a lack of reasonable transportation for linking city people with suburban job opportunities is a primary concern." (Quote from Gerald Greenwald, CEO of UAL Corp and Chair of the Federal Commission on Welfare to Work, *Chicago Tribune*, June 22, 1997.)

Issue No. 9: Transportation Systems Integration

Each of the counties in the region operates its own transportation system. IDOT has its system throughout the region. Some major municipalities have their own. These systems are not linked to allow for managing travel flow through the system across jurisdictions. The issue is more than technology; it also involves local public policy. There is a need for a partnership that can address the trade-offs of regional versus local transportation priorities.

Issue No. 10: Need for Travel Information

- Being aware of traffic conditions, creating opportunities to adjust route.
- Information about special events.
- Routing advice about weekend conditions.
- Routing advice about minor construction/maintenance projects.
- Micro-climate road conditions.
- Information needs to be available when choices can be made, not after the fact.

Issue No. 11: Truck Movements

- Need for more desirable truck routes (i.e., identification of intermodal connectors and truck routes systems).
- Need special considerations for trucks in highly concentrated truck traffic areas for safety and productivity purposes.
- Low clearance problems that cause significant truck travel path diversions and can cause negative impacts on other areas (especially residential neighborhoods).
- Issue areas include:
  - Southeast Chicago/Lake Calumet area, involving Torrence Avenue, 130th Street, 103rd Street, and other arterials.
  - Midway Airport area, involving Cicero Avenue, Harlem Avenue, 47th Street, 55th Street, 63rd Street, and other arterials.
  - Chicago-O'Hare International Airport area along Irving Park Road and Mannheim Road.
  - Cicero Avenue corridor from I-55 to Grand Avenue.

3.1.2 2020 Goals and Objectives

Seven goals and 39 objectives have been identified as part of the 2020 plan. These goals and objectives were developed as the result of a thorough process which included a review of past plans, consideration of the 15 planning factors identified in the Intermodal Surface Transportation Efficiency Act, recommendations from the various CATS Task Forces, surveys, and input from a series of leader meetings and focus group meetings. They are included here to provide a framework for the consideration of ITS User Services and to ensure compatibility of the Strategic Early Deployment Plan with the Regional Transportation Plan.

1. Accessibility and Mobility

GOAL:

Provide an integrated and coordinated transportation system that maximizes accessibility and includes a variety of mobility options which serve the needs of residents and businesses in the region

OBJECTIVES:

- Develop and maintain the highway and transit system that maximizes accessibility and includes a variety of mobility options which serve the needs of residents and businesses in the region.
- Facilitate transfers among all transportation modes on existing and new facilities.
- Improve access to transit, including expanded opportunities for auto and non-motorized access.
- Enhance the attractiveness of alternatives to Single Occupant Vehicle (SOV) travel.
- Support the development and increased use of a coordinated network of non-motorized transportation facilities.
- Improve and expand transportation opportunities which serve long established travel patterns, such as suburban-to-city commute, and new and changing travel patterns including city-to-suburb and suburb-to-suburb travel.
- Improve transportation facilities important for the movement of goods, including those which provide access to intermodal freight facilities.

2. Transportation and Land Development

GOAL:

Provide a transportation system that supports existing and future patterns of land development as recommended by locally adopted land use plans and the Northeastern Illinois Planning Commission's *Strategic Plan for Land Resource Management*, as reflected in the adopted socioeconomic forecast.

OBJECTIVES:

- Encourage compact and contiguous land development patterns, including redevelopment and infill development, along existing transportation corridors.
- Encourage the balanced development of jobs and housing to reduce travel distances.
- Encourage local governments to manage land development in coordination with the provision of transportation facilities and services.
- Promote transportation right-of-way preservation through the coordination of transportation planning and land development activities.
- Promote intergovernmental cooperation for the coordination of land use and transportation developments.
- Facilitate the implementation of major system expansion projects through the use of intergovernmental agreements which promote consistent land resource and transportation system development standards.
- Encourage local governments to consider land use regulations and development strategies that support transit oriented development and design.
- Promote the planning and design of employment centers, commercial facilities, and multi-use activity centers that allow for convenient and safe transit, bicycle, automobile, and freight access and distribution.

3. Transportation System Efficiency

GOAL:

Preserves the region's transportation system and maximize its people and goods carrying efficiency.

OBJECTIVES:

- Reduce congestion and improve the efficiency of transportation facilities through the use of travel demand reduction, operation management, and other strategies.
- Enhance the operating condition of the transportation system in order to utilize its full people and goods carrying potential.
- Maintain and upgrade the transportation system in order to improve system reliability and safety.
- Increase the effectiveness of the transportation system through the use of technological improvements to increase system efficiency and capacity.
- Enhance the security of the traveling public and transported goods.

4. Environmental

GOAL:

Provide a transportation system which is sensitive to the quality of the environment and enhances our natural resources.

OBJECTIVES:

- Develop a transportation system that avoids or minimizes adverse impacts on environmentally sensitive areas, historic and cultural sites, gateways, agricultural land, recreation areas, and other valuable natural resources.
- Promote the development of a transportation system that contributes to meeting National Ambient Air Quality Standards (NAAQS), including the development and implementation of effective transportation control measures (TCM).
- Develop a transportation system that promotes energy efficiency.
- Encourage the design of transportation facilities that minimizes adverse noise and vibration impacts.
- Encourage the design and landscaping of transportation rights-of-way to reduce maintenance costs, promote regional biodiversity, improve water quality, manage stormwater, and improve aesthetics.
- Encourage the design and construction of transportation improvements in accordance with high environmental standards, such as those contained in the Northeastern Illinois Planning Commission's model ordinances regarding: a) soil erosion and sediment control; b) floodplain management; c) stormwater drainage and detention; and d) stream, lake, and wetland protection.

5. Economic

GOAL:

Provide a transportation system which fosters economic development.

OBJECTIVES:

- Develop a transportation system, including intermodal connections, that enhances the region's position as a major hub of national and international passenger travel and goods movement.
- Develop transportation improvements that promote investment in, and revitalization of, existing communities.
- Provide a transportation system that promotes economic growth, the retention of existing businesses, and the attraction of new business to the region.
- Provide a transportation system that accommodates and encourages tourism.

6. Social

GOAL:

Provide a transportation system which fosters social benefits.

OBJECTIVES:

- Expand reasonably priced travel options for the economically disadvantaged and persons without access to automobiles.
- Promote the development of a transportation system that improves travel opportunities for people with disabilities.
- Improve access to the region's natural, historic, recreational, and cultural resources.
- Minimize neighborhood disruption associated with transportation improvements.
- Provide a transportation system that serves all residents in their daily activities.

7. Financial

GOAL:

Provide for the development of a transportation system which efficiently uses financial resources and is financially attainable.

OBJECTIVES:

- Pursue all available opportunities, including innovative financing mechanisms, to fund the planning, design, construction, operation, and maintenance of the region's transportation system.
- Encourage cost-effective operating policies and capital improvements.
- Enhance opportunities for the private sector to participate in the provision of transportation facilities and services.
- Increase to the extent possible the region's share of federal and state transportation funds.

One of the crucial steps in the SEDP process is identification of appropriate user services in response to the transportation needs of the region. The National ITS Program Plan (NPP) provides detailed description of 29 user services identified by FHWA for use in ITS deployment planning. Following is a brief description, excerpted from the NPP, of several user services appropriate for the area. Although it may be possible to deploy a system that provides a single user service, in many cases, services are more likely to be deployed in combination with other services or groups which share some commonality.

3.2 USER SERVICE PLAN

The user services identified for the northeastern Illinois area are presented under the following major groups:

1. Traveler Information
2. Transportation Management
3. Public Transportation
4. Emergency Management

The services within these groups, as shown in the User Service table, may be related in a number of ways. In some cases, the institutional perspectives of organizations that will deploy the services may provide the rationale for the formation of a group. In other cases, groups may be organized around common technical functionalities. Table 3-1 presents the grouping that evolved for the SEDP. When the services are actually deployed, it is likely that services will also be mixed and matched across the groups, as well as within a group.

3.2.1 User Service Prioritization

This section of the plan provides a prioritization of the appropriate user services for the northeastern Illinois region. The purpose of the prioritization is to help identify the level of importance for each user service group. The prioritization is the first point at which user services will be associated with the regional transportation issues and 2020 goals and objectives. The prioritization is based on the following criteria:

- Degree to which each user service support regional transportation goals.
- The relationship of the user service to the transportation needs of the region.
- The need for additional projects or integration of existing projects within and between user services.

- Several evaluation factors addressing the needs and implementation feasibility of various user services.

Table 3-1: User Service Groups

ITS Group		User Services	
1.	Traveler Information	1.A	Pre-Trip Travel Information
		1.B	En-Route Traveler Information
		1.C	Traveler Services Information
		1.D	Route Guidance
		1.E	Ride Matching and Reservation
2.	Transportation Management	2.A	Traffic Control
		2.B	Demand Management and Operations
		2.C	Electronic Payment Services
		2.D	Commercial Vehicle Operations
		2.E	Emissions Testing and Mitigation
		2.F	Rail-Highway Intersection
3.	Public Transportation	3.A	Public Transportation Management
		3.B	En-Route Traveler Information
		3.C	Personalized Public Transit
		3.D	Public Travel Security
4.	Emergency Management	4.A	Incident Management
		4.B	Hazardous Materials Incident Response
		4.C	Emergency Notification and Personal Security
		4.D	Emergency Vehicle Management

Mapping of user services to the regional Northeastern Illinois RTP goals is shown in Table 3-2. Based on the results of the User Services Workshops, scores were assigned to each of the user services under each goal. A score of 5 indicates that the user service would satisfy the stated goal. A score of 1 would indicate that the stated goal is not satisfied by the user service.

Table 3-3 shows how each user service meets the eleven major regional transportation issues identified through the 2020 planning process. In addition to meeting the RTP goals, several additional criteria were considered at the User Services Workshop for further evaluation of the user services:

1. **Meets RTP Goals:** Extent to which an ITS user service meets the RTP goals overall.

2. **Implementability:** Extent to which ITS user service is likely to overcome any barriers to implementation. Possible barriers include institutional complications, political difficulties, or community objections. Financial feasibility is covered separately.

3. **Risk:** Extent to which ITS user service is likely to overcome technological risk factors. "Tried and true" ITS techniques would rate highly. Those that have not yet been proven would rate low. Political and institutional risk is covered under implementability.

4. **Financial Feasibility:** Extent to which ITS techniques are likely to be funded. Higher cost programs would not necessarily be rated lower if they are also perceived to provide higher levels of benefit. This factor represents the "willingness to pay" or the willingness of the private sector to provide the service.

Based on the results of the User Services Workshop, the user services under each group were prioritized. Summary results of the prioritization are shown below. An additional user service titled "Archived Data" was added to the National ITS Program Plan after the northeastern Illinois User Service Plan was developed. While this added user service was not considered in the User Service Workshop, the Deployment Action Plan was developed to include this emerging user service.

TRAVELER INFORMATION

1. Pre-Trip Traveler Information - Radio
2. Pre-Trip Traveler Information - Telephone
3. En-Route Traveler Information - Highway Advisory Radio (HAR)
4. Pre-Trip Traveler Information - Television
5. En-Route Traveler Information - In-Vehicle Voice
6. En-Route Traveler Information - Variable Message Sign (VMS)
7. Pre-Trip Traveler Information - Personal Computer
8. En-Route Traveler Information - Cellular Telephone
9. Traveler Service Information
10. Pre-Trip Traveler Information - Kiosk
11. Ride Matching and Reservation
12. Route Guidance
13. En-Route Traveler Information - In-Vehicle Text

TRANSPORTATION MANAGEMENT

1. Traffic Control
2. Demand Management and Operations
3. Electronic Payment Services
4. Commercial Vehicle Operation
5. Rail-Highway Intersection
6. Emission Testing and Mitigation

PUBLIC TRANSPORTATION

1. Public Transportation Management - Automated Vehicle Identification (AVI)
2. En-Route Traveler Information
3. Public Transportation Management - Signal Priority
4. Public Travel Security
5. Public Transportation Management - Fare Collection
6. Personalized Public Transportation

EMERGENCY MANAGEMENT

1. Traditional Freeway Incident Management
2. High Tech Freeway Incident Management
3. Arterial Incident Management
4. Hazardous Material Incident Response
5. Emergency Notification and Personal Security
6. Emergency Vehicle Management

3.2.2 Candidate Actions

In order to operationalize the user service plan, a series of candidate actions were identified. These actions were developed to address the existing transportation issues and 2020 goals and objectives. These solutions are complementary to the existing ITS related projects identified previously. They provide a link between the many ongoing ITS activities and the vision and projects developed through the SEDP process.

As shown in Table 3-4, many of the recommended candidate actions overlap and have an impact on several user services categories. For example, the expansion of the signal systems throughout northeast Illinois will obviously affect the transportation management user service category, but it can also have an impact on public transportation by creating the opportunity for expansion of the bus priority systems.

ITS GROUPS	ITS User Services	1 Accessibility & Mobility	2 Transportation & Land Development	3 Transportation System Efficiency	4 Environmental	5 Economic	6 Social	7 Financial	8 Safety	TOTAL
1.Traveler Information										
	A. Pre-Trip Travel Information	5	1	5	3	2	4	4	4	28
	B. En-Route Traveler Information	4	1	5	5	3	3	4	5	30
	C. Traveler Services Information	4	1	3	2	5	4	5	4	28
	D. Route Guidance	4	1	5	4	4	4	5	3	30
	E. Ride Matching and Reservation	3	3	5	5	2	5	2	2	27
2. Transportation Management										
	A. Traffic Control	4	3	5	4	1	3	4	4	28
	B. Demand Management and Operations	4	3	5	4	1	2	3	2	24
	C. Electronic Payment Services	2	4	5	3	1	1	4	2	22
	D. Commercial Vehicle Operation	3	4	5	3	1	2	3	2	23
	E. Emissions Testing and Mitigation	1	2	1	5	1	1	4	3	18
	F. Rail-Highway Intersection	1	1	3	1	1	1	2	5	15
3. Public Transportation										
	A. Public Transportation Management	4	2	5	3	4	2	4	2	26
	B. En-Route Traveler Information	4	2	2	3	2	3	5	4	25
	C. Personalized Public Transit	5	3	1	2	4	4	2	5	26
	D. Public Travel Security	3	1	1	1	3	4	1	5	19
4. Emergency Management										
	A. Incident Management	3	1	5	3	1	2	4	5	24
	B. Hazardous Materials Incident Response	1	1	5	2	1	2	4	5	21
	C. Emergency Notification and Personal Security	3	1	3	1	3	2	3	5	21
	D. Emergency Vehicle Management	1	1	2	1	1	1	3	5	15

1: Very Low
5: Very High

Table 3-2: Mapping of User Services to Northeastern Illinois RTP Goals

	Transportation Issues	User Service Groups																								
		1. Traveler Information	User Service					2. Transportation Management	User Service						3. Public Transportation	User Service				4. Emergency Management	User Service			
			A. Pre-Trip Travel Information	B. En-Route Traveler Information	C. Traveler Services Information	D. Route Guidance	E. Ride Matching and Reservation		A. Traffic Control	B. Demand Management and Operations	C. Electronic Payment Services	D. Commercial Vehicle Operation	E. Emissions Testing and Mitigation	F. Rail-Highway Intersection		A. Public Transportation Management	B. En-Route Traveler Information	C. Personalized Public Transit	D. Public Travel Security		A. Incident Management	B. Hazardous Materials Incident Response	C. Emergency Notification and Personal Security	D. Emergency Vehicle Management
1	Chronic and Serious Congestion on the Freeway/Tollway System		✂	✂		✂	✂		✂	✂	✂										✂	✂		✂
2	Toll Booth Delays										✂	✂												
3	Major Arterial System Congestion			✂		✂			✂	✂											✂			✂
4	Weekend and Special Event Congestion		✂	✂		✂			✂							✂	✂								
5	Weather Impacts		✂	✂		✂										✂									
6	Reduced Transit Use						✂			✂						✂	✂	✂	✂						
7	Increasing Constraints on Transit						✂			✂						✂									
8	Mobility		✂	✂		✂	✂			✂						✂	✂	✂							
9	Transportaiton Systems Integration					✂			✂							✂					✂				✂
10	Need for Travel Information		✂	✂	✂		✂			✂							✂								
11	Truck Movements		✂			✂						✂													
12	Construction Zones		✂	✂		✂			✂							✂					✂				✂

Table 3-3: Transportation Issues vs. User Services

	Candidate Actions	User Service Groups																								
			User Service						User Service								User Service						User Service			
		1. Traveler Information	A. Pre-Trip Travel Information	B. En-Route Traveler Information	C. Traveler Services Information	D. Route Guidance	E. Ride Matching and Reservation	2. Transportation Management	A. Traffic Control	B. Demand Management and Operations	C. Electronic Payment Services	D. Commercial Vehicle Operations	E. Emissions Testing and Mitigation	F. Rail-Highway Intersection	3. Public Transportation	A. Public Transportation Management	B. En-Route Traveler Information	C. Personalized Public Transit	D. Public Travel Security	4. Emergency Management	A. Incident Management	B. Hazardous Materials Incident Response	C. Emergency Notification and Personal Security	D. Emergency Vehicle Management
6.2.1	**TRAVELER INFORMATION**																							
6.2.1.1	Regional Information System Database		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓
6.2.1.2	Variable Message Signs								✓	✓											✓			
6.2.1.3	Gateway Database		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓
6.2.1.4	System Architecture		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓
6.2.1.5	Public/Private Partnerships		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓
6.2.1.6	Traveler Information Systems		✓	✓	✓	✓	✓																	
6.2.2	**TRANSPORTATION MANAGEMENT**																							
6.2.2.1	Regional Traffic Signal System								✓	✓						✓					✓			
6.2.2.2	Signal Timing Maintenance								✓	✓						✓								
6.2.2.3	Develop Freeway System Software								✓	✓											✓			
6.2.2.4	Ramp Metering System								✓	✓											✓			
6.2.2.5	Investigate Advanced Vehicle Detection Technologies								✓	✓											✓			
6.2.2.6	Regional Automated Toll Collection Facilities								✓	✓	✓													
6.2.2.7	Signal System Expansion								✓	✓						✓								
6.2.3	**PUBLIC TRANSPORTATION**																							
6.2.3.1	Priority Vehicle System								✓	✓						✓	✓							
6.2.3.2	Dynamic Transit Signing															✓	✓							
6.2.3.3	Non-Traditional Public Transportation															✓		✓						
6.2.3.4	Personal Security Systems																		✓					
6.2.4	**EMERGENCY MANAGEMENT**																							
6.2.4.1	Automated Incident Detection Algorithm								✓	✓											✓			
6.2.4.2	Expand Video Surveillance									✓									✓		✓		✓	
6.2.4.3	Arterial Incident Management		✓	✓					✓	✓											✓			
6.2.4.4	Diversion Route Development								✓	✓											✓			
6.2.4.5	Accident Investigation Sites																				✓			
6.2.4.6	Incident Response and Transportation Management Coordination		✓	✓		✓															✓			✓
6.2.4.7	Interagency Incident Response Coordination		✓	✓		✓															✓			✓
6.2.4.8	Legal/Legislative Issues		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓

Table 3-4: Mapping of Preliminary Candidate Actions to User Services

4. ITS TECHNOLOGIES

Technologies available to Intelligent Transportation Systems are virtually unlimited - from operations center technologies; to transit, toll, expressway and arterial systems; to surveillance methods; to traveler information solutions. To cover a significant sample of these technology alternatives, even at a cursory level, is beyond the scope of the SEDP. At the same time, boiling down these technologies to only the most commonly applied technologies or those which have already been applied in the region results in a superficial treatment of the subject.

To provide the SEDP project with the best information possible, Technical Memorandum 5 included an up to date (1997), comprehensive volume on current ITS technologies in a CD-ROM format. The CD-ROM includes both HTML and Microsoft Word versions for desktop review and hardcopy output. The technologies described on the CD-ROM are intended to help focus the potential applications in northeastern Illinois.

4.1 BACKGROUND

Technology in Intelligent Transportation Systems is somewhat of an enigma. There are a lot of "gee whiz gadgets" in ITS and many of the technologies are truly fascinating. But the SEDP must avoid technology for technology's sake. To be accepted, technology applications must demonstrate cost-effective solutions to existing or emerging transportation needs in the region.

As its name suggests, ITS is about intelligence and that intelligence is generally assumed to refer to microprocessor or machine intelligence. Indeed, many ITS systems make extensive use of such technology. In spite of this apparent focus on "smart" technologies, many of the key components of ITS are not based on machine intelligence. Freeway service patrols, for example, are not "intelligent" transportation systems, at least from a technology standpoint, but they remain some of the highest profile success stories in ITS. Similarly, operations and institutional issues, far more than technology, can directly affect the success or failure of incident management programs or regional traffic signal coordination or transit signal priority/preemption. Some would argue, with strong merit, that this intelligence – the human kind – should play the largest role in ITS.

So where does this leave technology in the sphere of ITS? For the answer, the expressway service patrol serves as a good model. The expressway service patrol is not founded on technology. However, without good communications, such as trunk radio or cellular telephone, freeway service patrol operations are severely hampered. Without appropriate high intensity and high visibility lighting, for accident scene illumination and emergency warning signaling, safety can be jeopardized. Other technologies can assist in computer aided dispatch, incident records management, and first response medical assistance.

The expressway service patrol isn't intelligent because of technology, technology enables an effective freeway service patrol. And that is the real answer for all of ITS – technology enables the deployment of truly intelligent transportation systems.

4.2 USE OF THE TECHNICAL REFERENCE

The technical reference contained on the CD-ROM is not a wish book or a shopping list of ITS technologies. It is a reference, a discussion of a great number of potential technology solutions to established needs and requirements. The User Service Plan defined those needs and produced a series of candidate actions which served as inputs to immediate, short, medium, and long range action plans. This

reference is a resource to help identify technologies which may meet the identified system and component needs and refine the requirements prior to design and deployment of the solution.

The technical reference is intended as a practical guide to ITS technology. It covers the technologies in understandable terms. As such it serves a useful and valuable role in the SEDP process to consider and develop candidate actions, architecture, and potential ITS projects. The interface to the document, through any HTML compatible web browser, further enhances the usefulness of the document.

4.3 ORGANIZATION OF THE ITS TECHNOLGIES TECHNICAL REFERENCE

The ITS technologies technical reference CD-ROM is presented not as a continuous document to be read from cover to cover, but rather as an interactive reference source. Through the HTML interface the document can be used in a direct access mode with hypertext links to the various sections of the document. The sections of interest can then be read or printed for future reference.

The technical reference is structured around five basic technology areas:

- Surveillance
- Traveler Information
- Control Strategies
- Communications
- Operations

Each section includes a description of the various technology alternatives and strategies for that area, each technology's respective features and associated issues as well as potential drawbacks.

The table in Table 4-1 provides a correlation between the candidate user services and the technology alternatives in the technical reference. Primary relationships are indicated by the larger symbols, secondary relationships are indicated by smaller symbols. In the HTML interface, this table is available as an interactive interface, allowing direct "point and click" access to related technologies.

	1.Traveler Information	A. Pre-Trip Travel Information	B. En-Route Traveler Information	C. Traveler Services Information	D. Route Guidance	E. Ride Matching and Reservation	2. Transportation Management	A. Traffic Control	B. Demand Management and Operations	C. Electronic Payment Services	D. Commercial Vehicle Operation	E. Emissions Testing and Mitigation	F. Rail-Highway Intersection	3. Public Transportation	A. Public Transportation Management	B. En-Route Traveler Information	C. Personalized Public Transit	D. Public Travel Security	4. Emergency Management	A. Incident Management	B. Hazardous Materials Incident Response	C. Emergency Notification and Personal Securit	D. Emergency Vehicle Management
Surveillance																							
Roadway																							
In Pavement		X	X		x			X					X		x					X			x
Overhead		X	X		x			X					X		x					X			x
Vehicle		x	X		x	X			x	X	X		x		X	X	X			X	X		X
Rail		X											X		X	X							
Pavement/Weather		X	x		x			X			x				x			x		X	X	x	x
Environmental									X			X											
CCTV		X						X		x								X		X	X		
Traveler Information																							
Pretrip																							
Computer Based		X		X	X	X											X						
Telephone Based		X				X																	
Television Based		X																					
En Route																							
Roadway Based			X	X	x																	X	
Automobile Based			X	x	X	X														x		X	x
Transit			X													X							
Personal		X	X	x	x											X						X	
Control Strategies																							
Roadway																							
Ramp Metering								X	X						X					x			
Traffic Signal								X	x				X		X					x			X
Lane Use								X							X					x			x
Variable Speed Limit								X												X			
Electronic Toll Collection										X													
Diversions								X	x											X	x		
Congestion Pricing									X	X	x												
Incident Management																				X	X		X
Parking			X		x			X		X													
Transit																							
Paratransit						X									X	x	X						
Fare Payment										X					X								
Transit Priority								X							X								
HOV Facility						X			X						X								
Real Time Ridesharing						X																	
Communications																							
Network Architecture		X	X	X	x	x		X	x	X	x				X	X	x	X		X	x	X	X
Cabled Media		X	x	x		x		X	x	x		x	x		X		x	X		X	x	X	
Wireless Technologies			X		x			x		X	X	x			X	X				X	X	X	X
Inter Agency Communications		X	X	x				X		x					x	x				X	X		x
Operations Centers																							
User Interfaces		X	X			X		X	X						X	X	X	X		X	X	X	X
Roadway Oriented		X	X					X	X	x	x									X	X	X	X
Transit Oriented		X	X			X				x					X	X	X	X					

Table 4-1: User Services - Technology Cross-Reference

5. REGIONAL ITS ARCHITECTURE

5.1 BACKGROUND

A regional architecture establishes the overall framework for ITS which will serve as a basis for development of integrated systems for northeastern Illinois. This process typically begins with the definition of functional requirements necessary to implement the system and provide the identified user services. Following the functional requirements definition, organizational, physical, and logical architecture alternatives are developed.

Establishing a regional architecture for northeastern Illinois presents a unique opportunity. The region is not starting with a blank slate in terms of ITS. Not only does the region have a well developed ITS infrastructure, but projects in various stages are also underway to update systems for transit management, traffic management, electronic toll collection, and traveler information systems. The opportunity for this project is to document a regional architecture at a level of detail far greater than typically possible in an early deployment plan.

The recent regional Multi-Modal Traveler Information System (MMTIS) study undertaken by IDOT examined the regional transportation agencies, along with their information sources and needs, and developed a truly regional architecture for ITS. While the total scope of the MMTIS was the Gary-Chicago-Milwaukee corridor, the northeastern Illinois aspect was included in its entirety. Implementation of this architecture began in 1998 with the development of the Gateway and key agency interfaces.

5.2 WHAT IS SYSTEM ARCHITECTURE?

In the strictest sense, system architecture defines the framework and interfaces within which interacting, interrelated, or interdependent elements will work to form a collective entity. Establishing well defined requirements and a solid design approach for a system's architecture are critical to the development of Intelligent Transportation Systems. Many project development efforts overlook system design and management because of poorly defined requirements or a lack of experience with architecture concepts. An incomplete architecture can impede developers and users for years to come. System architecture becomes even more critical as technological advances allow the system to take advantage of emerging opportunities.

It is important to understand the fundamentals of system architecture. The following are key system architecture definitions:

- *Functions* - Fundamental activities that an architecture carries out.
- *Data Flow Diagrams (DFDs)* - Functions are depicted in DFDs.
- *Process Specification (P-spec)* - Lower level functions are typically assigned a precise definition called a P-spec.
- *Subsystems* - Logically independent entities with different roles and functions. The advantage of making these divisions is that the functions can be distributed systematically, and information can be shared between subsystems to take advantage of synergies.
- *Interfaces* - Connections between the subsystems.
- *Data Flows* - Illustrations of the connection between interfaces.
- *Logical or Organizational Architecture* - Defines the DFDs and the P-specs (see Figure 5-1).

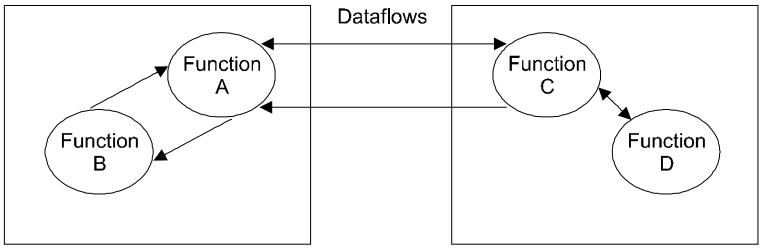

Figure 5-1: Logical or Organizational Architecture

(What has to be done or what functions need to be linked).

- *Physical Architecture* - Defines the subsystems, assigns P-spec functions to them, and documents the data flow interfaces between the subsystems. Physical architecture usually depicts a more technical blueprint of the organizational architecture including specific types of equipment, networks, communication links, etc (see Figure 5-2).

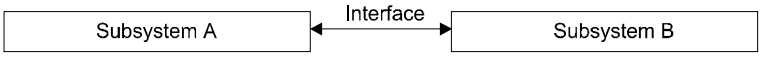

Figure 5-2: Physical Architecture

(How should it be done).

5.3 MMTIS ARCHITECTURE

The Illinois, Indiana and Wisconsin Departments of Transportation, in cooperation with the United States Department of Transportation (USDOT), formed a coalition to create an ITS corridor between the cities of Gary, Chicago and Milwaukee. This GCM Corridor is one of the four original corridors in the United States designated by the USDOT in March 1993 as an ITS Priority Corridor under the guidelines of the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA).

Figure 5-3 illustrates the relationship between the GCM projects/programs and the ITS Infrastructure Initiative developed by the USDOT.

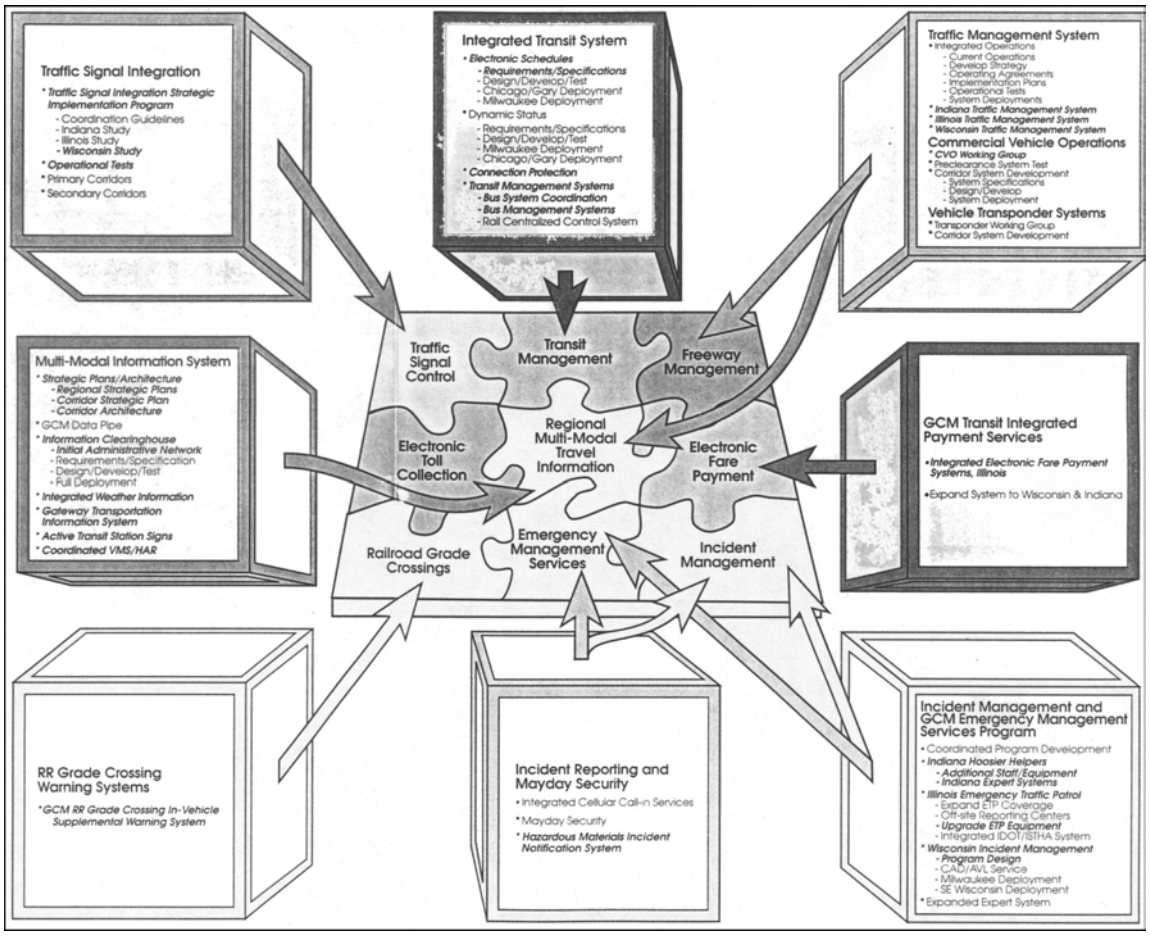

Figure 5-3: GCM Deployment Building Blocks

The principle objective of the GCM Corridor initiative is the integrated use and dissemination of traveler information throughout the Corridor. The purpose is to benefit not only the traveling public by making all traveler information available, but also the transportation agencies that are responsible for transportation planning, operations, and maintenance. The legacy ITS subsystems in northeastern Illinois are established and many have served the motoring public for decades. The proposed GCM Corridor architecture has been developed to be consistent and compatible with these existing systems as well as the systems that are currently being implemented and planned. These goals can be achieved by implementing the essence of the above diagram. A key step to implementation is the development of a corridor wide system architecture.

The center piece of the puzzle, "*Multi-Modal Travel Information*" addresses the system architecture for the GCM Corridor and has been identified as the initial project undertaken by the GCM Corridor Program. The MMTIS has been completed. This project has produced system functional requirements that when implemented will make the above diagram a reality throughout the Corridor. The Gateway design project to implement the regional architecture has been initiated.

5.4 GCM CORRIDOR ARCHITECTURE

The system architecture that is proposed for the GCM Corridor consists of a Gateway, four hubs, and multiple subsystems, collectively known as the Gateway Traveler Information System (TIS). The primary

function of the Gateway is to collect, organize, and redistribute travel time, construction and maintenance, incident, weather, and all other pertinent information on the transportation systems within the GCM Corridor. This information can then be used by agencies, operators, and the traveling public.

In order to collect information from sources throughout the Corridor, the Gateway will be connected by a Corridor wide electronic network together with the regional hubs within the three states and with all appropriate ITS data sources. The Gateway will redistribute the information it collects from these sources in a number of ways. An example is that collected congestion and incident information will be provided to the public through numerous maps on the Internet.

The deployment of the Gateway TIS will provide a comprehensive, integrated, and multi-modal transportation system that serves the needs of travelers and operators within the GCM Corridor. The Gateway TIS architecture has been designed to conform with the National ITS Architecture. The GCM corridor architecture is a hybrid distributed architecture, based on open standards. It consists of multiple servers and clients to provide the necessary computing power, data communications and data storage to meet the data and information exchange requirements within the Corridor. The architecture is open in the sense that it possesses the following:

- *interconnectivity* - General networking ability to connect and seamlessly exchange information with other systems.
- *interoperability* - Seamless access of distributed data across hardware and among software applications.
- *vendor neutrality* - Both in terms of hardware and software.
- *portability* - Ability to move applications from one vendor's computer system (hardware and operating system) to another with minor or no modifications required.
- *scalability* - Ability to run applications without modification on larger or smaller computer systems.

The design of the GCM corridor architecture also addresses other general goals including:

- Provisions for incorporating future ITS technologies
- Security
- Reliability
- Availability
- Maintainability
- Fault detection and recoverability
- Performance consistency

In general, the organizational architecture is comprised of the Gateway, four regional or state level hubs, and several subsystems which operate various elements as indicated in Figure 5-4.

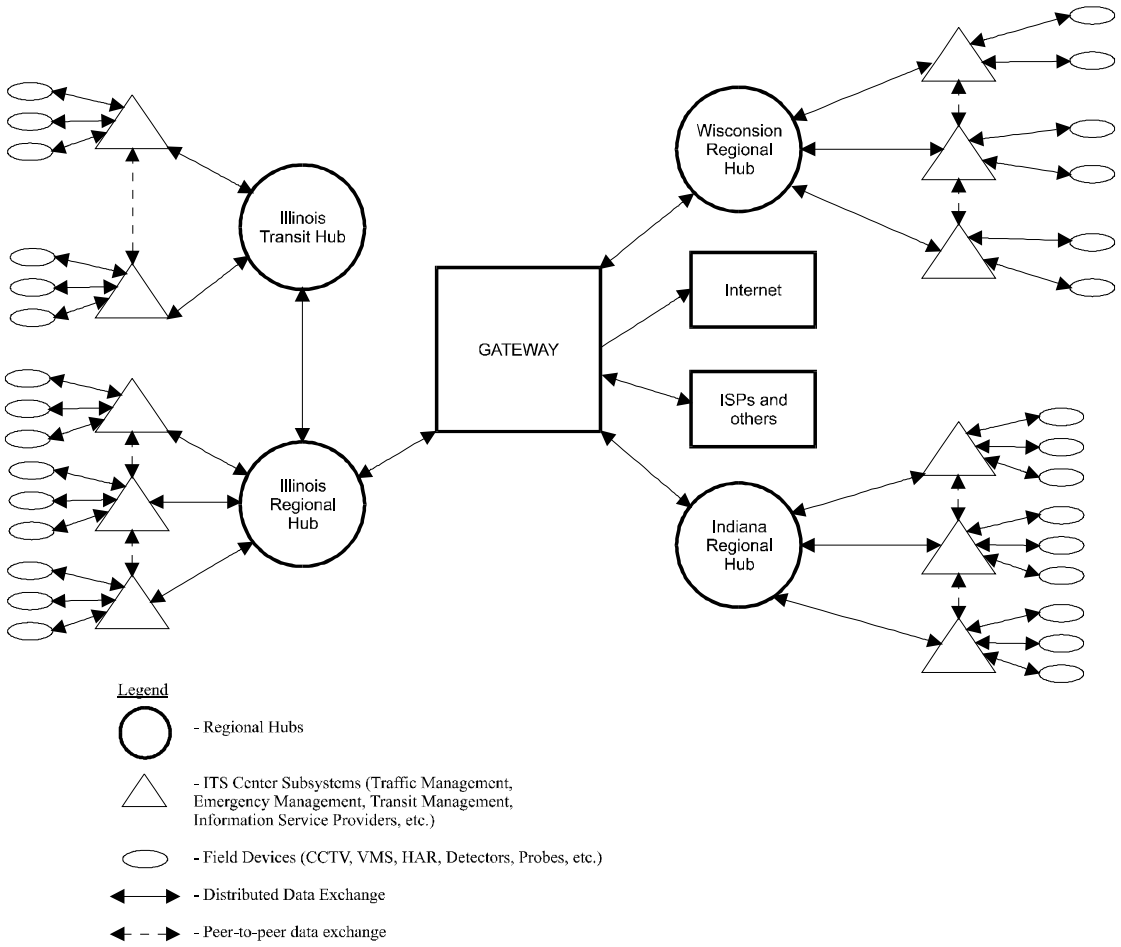

Figure 5-4: GCM Corridor Architecture

The Gateway will be the central hub for gathering and disseminating traveler information from the other regional hubs within the Corridor, for the exchange of data between systems in the Corridor including northeastern Illinois, and for sharing control and monitoring of operations. The Gateway will also function to:

- Generate a database for temporary storage of real-time travel information from various sources throughout the GCM Corridor.
- Compile and coordinate the collected transportation data into a corridor-wide source of real-time transportation information.
- Provide for the collection and fusion of data from all transportation modes within the GCM Corridor and distribute this information to those who operate and use the transportation systems.
- Detect errors within the Gateway TIS and report those errors to the appropriate operators and logs.

The four regional or state level hubs include the Illinois Regional Hub, the Illinois Transit Hub, the Wisconsin Hub (Communication and Data Systems Infrastructure [CDSI]), and the Indiana Regional Hub (Borman ATMS). These hubs interface with their respective ITS subsystems, such as the Chicago-area systems of the Traffic Systems Center, Chicago Transit Authority (CTA), or *999, and provide for the collection, translation (where necessary), and fusion of data from transportation modes located within each particular area. The information will be distributed to various users, including the traveling public,

the media, traffic system managers, transit operations managers, law enforcement, emergency service officials, and organizations involved in interstate commerce.

5.5 IMPLEMENTATION

The Gateway serves as the central collection and distribution hub for traveler information with the GCM Corridor. Together with the regional hubs and connections to ITS subsystems within the Corridor it composes the Gateway TIS. The Gateway TIS will be implemented under a two phase approach. These phases include the "Initial Phase" and the full build-out or "Ultimate Phase." The primary difference between the initial and ultimate phases of the Gateway TIS will be the type of data connections to the data source systems.

The initial phase includes what is expected to be implemented in the next two years. The initial phase will build off the existing connections between the existing Corridor Transportation Information Center (C-TIC), shown in Figure 5-5, and its related data flows (including some re-use of existing, proven software). The C-TIC is the prototype for the Gateway TIS. The C-TIC was designed to be a pass-through between various information sources in the sixteen counties which comprise the GCM Corridor. It is not designed to control or monitor traffic control devices but rather to facilitate sharing of information between various agencies, control centers and private firms.

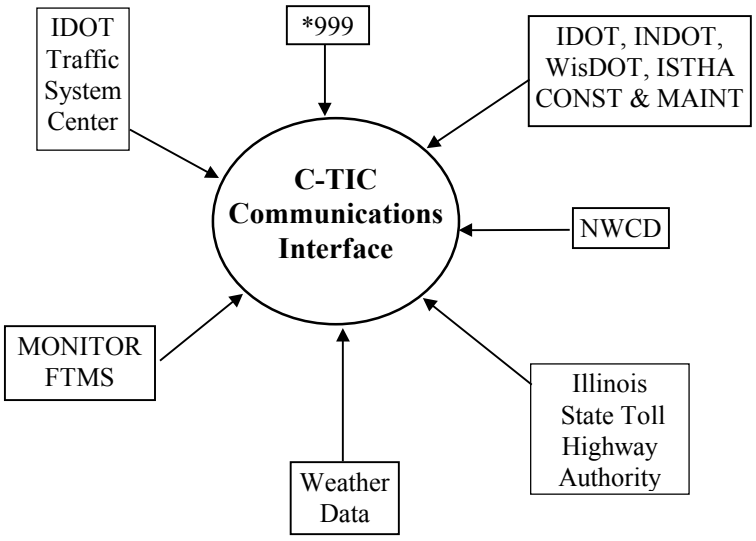

Figure 5-5: C-TIC Data Flow Diagram

Figure 5-6 shows the initial phase Gateway TIS, including the current links to the C-TIC. The central box in Figure 5-6 represents the Gateway. The functionality and major processes for the Gateway in the initial phase are the same as those outlined for the ultimate phase. The two-way flow, shown in Figure 5-6 and the ultimate design, will allow for shared control and monitoring capabilities. The Gateway is responsible for developing and updating the Corridor maps and the detailed state maps throughout the Corridor for Web page dissemination as well as providing traveler data to the various Information Service Providers (ISP) through the ISP server.

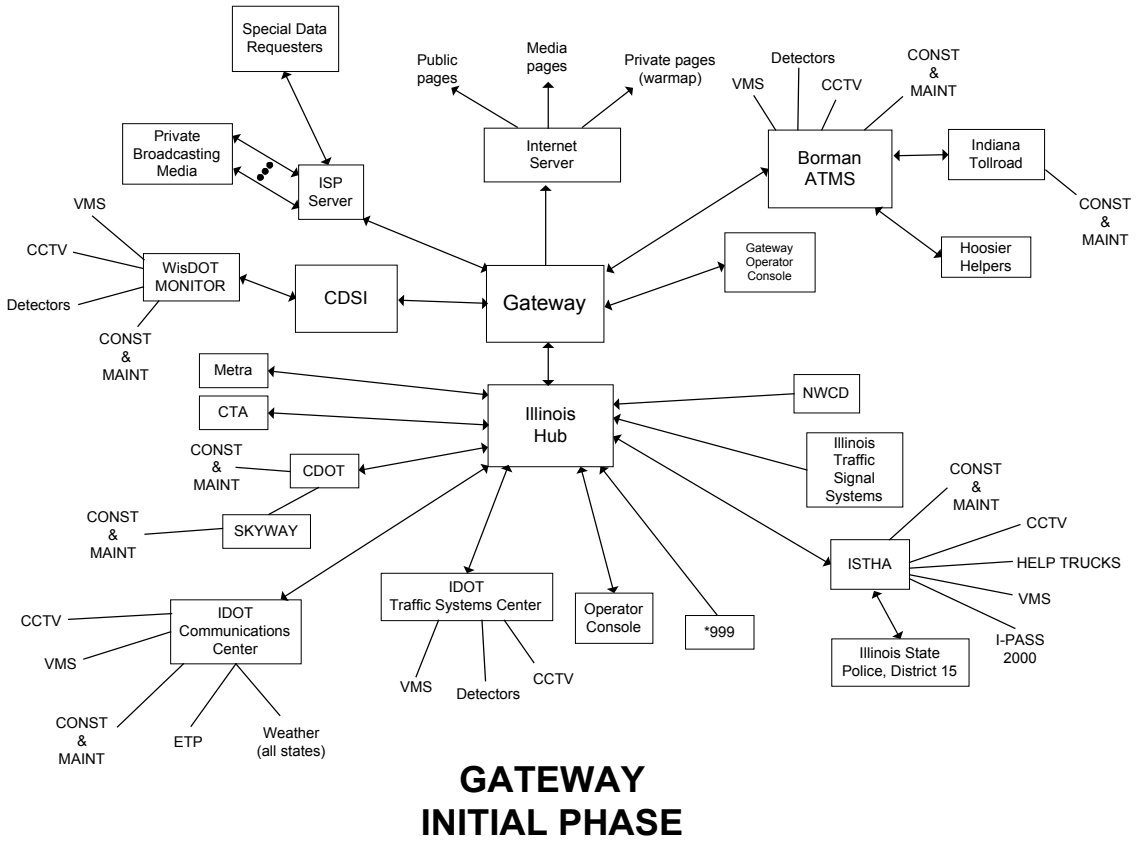

Figure 5-6: Gateway TIS Context Diagram: Initial Phase

The ultimate phase will be implemented after the initial phase is completed and will be an on-going process as new data sources and distribution methods are implemented. Figure 5-7 shows the ultimate phase Gateway TIS Context Diagram which depicts the Gateway and the external entities that interface with the Gateway in the ultimate phase.

The Gateway architecture includes an Illinois Transit Hub which will collect and process information for all of the regional transit operations. This information is expected to include routes, schedules, and real time information as it becomes available from agencies.

There are several issues pertaining to the implementation of the GCM corridor architecture and the Gateway. These issues are related to hardware, software, critical Gateway interfaces and critical regional hub interfaces. The following focuses on the implementation of the critical Gateway and regional hub interfaces.

The Illinois Hub will collect all the data from various agencies located within NE Illinois including the Illinois Transit Hub. It is anticipated that it will be co-located in the same building as the Gateway.

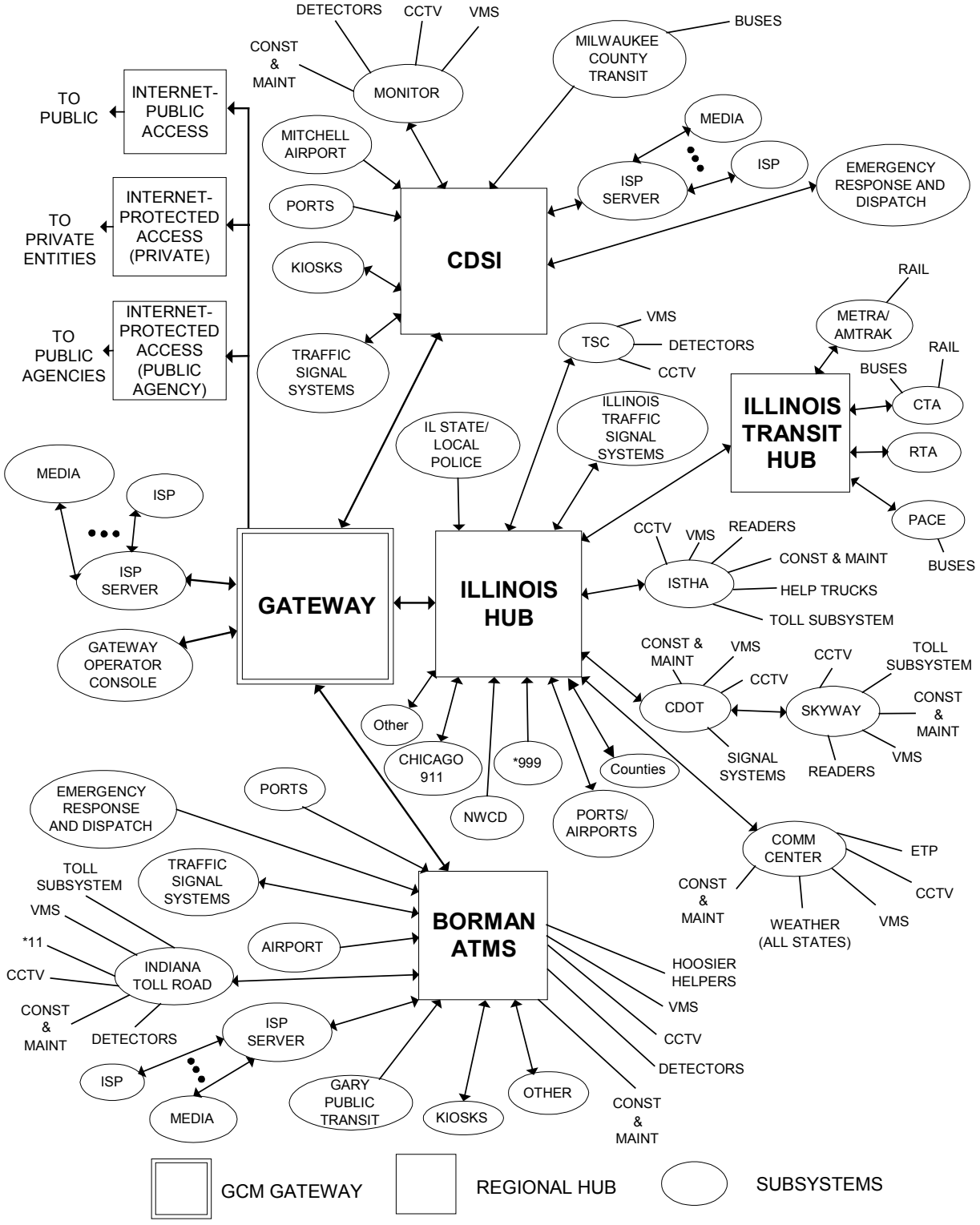

Figure 5-7: Gateway TIS Context Diagram: Ultimate Phase

Transportation related information collected from Northwest Indiana and Southeast Wisconsin will be directed to the Gateway through the Borman ATMS and CDSI which will act as the Indiana and Wisconsin regional hubs, respectively. At the same time that the Gateway/Illinois Hub is being implemented, the Borman ATMS and CDSI will need to prepare for the time in which they will start providing data to the Gateway. There are three tasks that are critical to bring the Gateway to full operational status. The first task is connecting the regional hub to the ITS subsystems in both Indiana and Wisconsin. The second task is for the Borman ATMS and CDSI to process their data into a usable format, perform data filtering, data fusion, etc. The third task that needs to be performed is the establishment of a data connection to the Gateway. This data connection task is one of the critical tasks that needs to be performed in order for the Gateway to become fully operational and to reflect more than an Illinois presence.

After implementation of the initial phase, there are several tasks required to transition into the ultimate phase Gateway TIS. These future tasks will include

- Determining which data providers will be added to the Gateway such as additional traffic signal systems and/or airports
- Increasing the number of workstations
- Increasing the number of operators
- Upgrading outdated hardware if necessary
- Upgrading communication links if necessary
- Applying emerging ITS technologies

The ultimate phase GCM Gateway architecture (Figure 5-7) illustrates that the Illinois, Indiana, and Wisconsin Hubs will connect to a variety of subsystems. Specific examples of some of the architecture's subsystems, the type of data that is/will be transmitted, and how the data is anticipated to be transferred is described in the following sections.

Wisconsin Subsystems

The Communication and Data System Infrastructure (CDSI) will serve as the regional hub for the Southeast Wisconsin area. All transportation related information from this area will be collected and provided through the CDSI. There are no planned connections to the Gateway from other sources in Wisconsin except through the CDSI. The CDSI sources will include

- The MONITOR Freeway Traffic Management System;
- Milwaukee County Traffic Signal Systems Center; and
- Transit Management Centers.

Indiana Subsystems

The Borman Advanced Traffic Management System (ATMS) will serve as the regional hub for the Indiana area. All transportation related information from Indiana will be provided through the Borman ATMS. There are no planned connections to the Gateway from any other sources in Indiana. The Borman ATMS sources include:

- Borman ATMS Detection Subsystem, and
- Indiana Tollroad Traffic Management Center

Illinois Subsystems

Illinois has two hubs, the Illinois Hub and the Illinois Transit Hub in the ultimate phase Gateway design (Figure 5-7). These hubs are further broken down into many subsystems. Examples of some of these subsystems and the types of data they will be transferring are further discussed below. Various ITS projects that may be incorporated into the Gateway TIS are also described below.

- *IDOT Traffic System Center (TSC)* - The TSC is responsible for managing congestion on the 150 mile IDOT District 1 expressway system. This system includes vehicle detection, ramp metering, closed circuit television (CCTV), variable message signs (VMS), and CB radio monitoring sites.

  Currently, the TSC is in the process of reevaluating and updating their hardware and software. At this time, the TSC provides the C-TIC with updates of congestion information at one minute intervals. Under full implementation of the GCM Gateway, the TSC will supply traffic conditions, VMS text and status, video feeds, incident information, and other pertinent traffic data to the Gateway. Specifically, the TSC will transmit the following data to the Gateway:

  - Detector data
  - Incident data
  - Event data
  - Video data
  - VMS data

  Data that will be received by the TSC from the Gateway includes video feeds and data from other ITS subsystems.

- *IDOT Communication Center* - The IDOT Communications Center (ComCenter)acts as the 24 hour incident management center for District 1 and has control over the Highway Advisory Radio system and the Kennedy Expressway Reversible Lane Control System (REVLAC). During off hours, the ComCenter also dispatches the Emergency Traffic Patrol and other maintenance vehicles within IDOT District 1 and also operates the TSC VMSs.

  Data to be transmitted by the ComCenter to the Gateway includes:

  - reversible lane directions and status
  - traffic signal and lighting malfunctions
  - incident information
  - video feeds
  - construction and maintenance events
  - other pertinent traffic data

  In turn, the ComCenter will receive various types of TSC system information including video feeds from the Gateway. Cooperative control ability with the TSC to assign VMS messages and control CCTV will also be included.

- *Illinois State Toll Highway Authority* - The Illinois State Toll Highway Authority (ISTHA) includes the North-South Tollway (I-355), the Tri-State Tollway (I-94 and I-294), the Northwest Tollway (I-90), and the East-West Tollway (I-88). ISTHA is currently installing electronic toll collection equipment (IPASS) at many of the toll plazas within the system. In addition to collecting and processing toll payments automatically, plans include a process to determine vehicle travel times

from the toll tag transactions. ISTHA also operates and maintains VMSs and operates the Highway Emergency Lane Patrol (HELP) program.

ISTHA systems will provide the following data to the Gateway:

- travel times
- VMS text and status
- construction and maintenance events
- incident information
- toll pricing
- other pertinent traffic

- *Chicago Department of Transportation (CDOT)* - CDOT's signal system will provide information to the Gateway on incidents/signal malfunctions on major arterials including type, location, time of detection, and clearance time. The architecture includes future provisions for occupancy, volume and/or speed data as this is available. This data will be provided on a five minute basis for detector data and on a per occurrence basis for incidents and malfunctions. CDOT will also provide construction and maintenance information with location, time, type, duration and estimated impact (if known) for the major arterials within the city. Data from planned VMS and CCTV installations along major arterials in the city will also be provided.

- *Chicago Transit Authority (CTA)* - The CTA is implementing an automatic vehicle location (AVL) system on their buses. This will help in the communication of real time traveler information. The CTA would provide information on current light rail train and bus schedules, real time transit information (schedule adherence) and incidents (location, type, time of detection) based on the AVL system. Current schedules and fare rates will be provided on an as needed update basis. Real time information and incident information will be provided on a regular basis.

- *Other ITS Projects in Northeastern Illinois* - The following ITS projects in Illinois are either proposed, committed, or under development:

  - Pace Intelligent Bus System: Pace buses equipped to communicate with a centralized location for transit vehicle management. The intelligent bus project also includes AVL, signal priority, passenger counters, fare collection, radio network, control center, passenger information, and security systems.

  - Chicago Master Signal System: CDOT is developing of a master signal system within the City of Chicago to provide monitoring and control capabilities from a centralized location in order to facilitate the progression of traffic on arterial streets.

  - Electronic Itinerary Routing System: RTA is developing an Automated Transit Route Itinerary Planning System (IPS). Callers are provided with best transit routes from origination point to destination. In addition to handling calls, future system enhancements may incorporate kiosks, hotel cable channels and an interface to the Internet.

  - Constant Time Warning Device: Metra is installing constant time warning devices at critical railroad grade crossings to minimize unnecessary motorist and pedestrian delay relative to slow moving trains.

- Parking Management Systems: Metra's installation of electronic signage along major roadways and/or arterials informing motorists of parking availability (real time parking information/parking capacity, etc.) at rail stations locations.

- Active Transit Station Signage: Real time information of next bus/next train to be located at rail stations with CTA/Pace bus connections. Capabilities include automated communications directly to bus operators.

- Train Information Management System: Train AVL system is currently being piloted on the Southwest Service Line and Metra Milwaukee District North Line (features real time arrivals and identifies precise train movement information through a GPS system).

- I-PASS 2000 (Electronic Toll Collection): ISTHA has redesigned its I-PASS electronic toll collection system with equipment from Mark IV and Denso International in the vehicle and at roadside. The upgrade will include 500 total lanes and express ETC at 24 plazas. The project also includes a new TMC which will utilize the toll transactions to collect and process travel time data on tollway links.

These Illinois subsystems are shown in Figure 5-8. This exhibit shows all the major subsystems that will be connected to the Gateway, as well as the current and/or future ITS projects which are/will be implemented under the various subsystems in the ultimate phase Gateway TIS.

5.6 ROLE OF THE SEDP IN THE REGIONAL ARCHITECTURE

Previously implemented systems, current initiatives, and the MMTIS project have produced a well-defined regional architecture which was available to provide a context for the SEDP. Based on review and discussion of the GCM corridor architecture, the ATTF recommended that the Strategic Early Deployment Plan adopt the GCM corridor architecture and the Gateway as the foundation for the regional architecture for northeastern Illinois.

The GCM corridor system architecture is a carefully thought out design that will likely meet current and future corridor transportation data needs. The National ITS Architecture has been used in most senses to help define the GCM corridor and the Gateway architecture. Because the GCM Gateway architecture is "open," consistent, and compatible with the National ITS Architecture, integration of additional corridor subsystems will be possible. The GCM corridor architecture has been developed to be consistent and compatible with legacy systems as well as the systems that are currently being implemented and/or planned. The architecture is not intended to replace or supersede, but simply provide for a mechanism to better disseminate and collect information that is pertinent to their on-going and future planning, operation and maintenance activities.

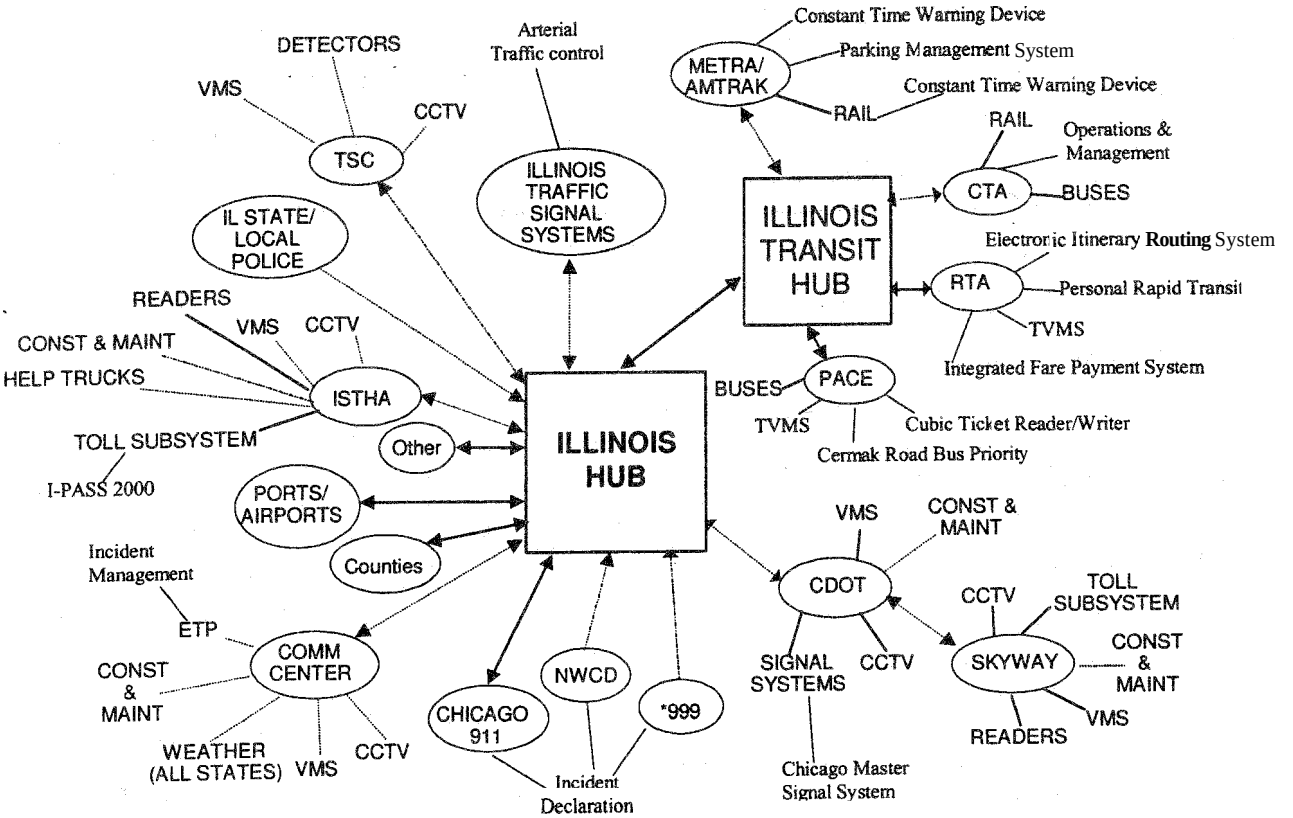

Figure 5-8: Illinois Regional and Transit Hubs

5.7 INTERIM GUIDANCE ON NATIONAL ARCHITECTURE CONFORMITY

Section 5206(e) of the Transportation Equity Act for the 21st century (TEA-21) states:

> "... the Secretary shall ensure that intelligent transportation systems projects carried out using funds made available from the Highway Trust Fund, including funds made available under this subtitle to deploy intelligent transportation system technologies, conform to the national architecture, applicable standards or provisional standards, and protocols ..."

The Federal Highway Administration and the Federal Transit Administration issued interim guidance for informational purposes on their recommended approach to implement this requirement. The interim guidance was published in the December 21, 1998 Federal Register. The intent of the interim guidance is to foster integration, encourage the incorporation of ITS into the transportation planning process, and focus on near term ITS projects with the greatest potential for affecting regional integration. As many of the projects identified in the Deployment Action Plan fall under this guidance, the region must begin the process of demonstrating conformity for these projects.

The guidance exempts only a small subset of projects from conformity, including those under construction or those for which final design is complete. Legislative exemption is afforded if certain criteria are met, but few projects will meet those criteria. As a result, the SEDP has developed an approach to meet these requirements without onerous deliverables or excessive delay.

A number of activities have been underway related to the regional process to demonstrate consistency with the national architecture. Among these activities is the development and documentation of the GCM corridor architecture as being consistent with the national architecture. This is particularly relevant to the Strategic Early Deployment Plan, because the SEDP has adopted the GCM/MMTIS/corridor architecture and the Gateway as the regional architecture for northeastern Illinois. A diagram illustrating the Gateway's architecture is shown in Figure 5-9. This diagram maps the Gateway architecture to the National ITS Architecture.

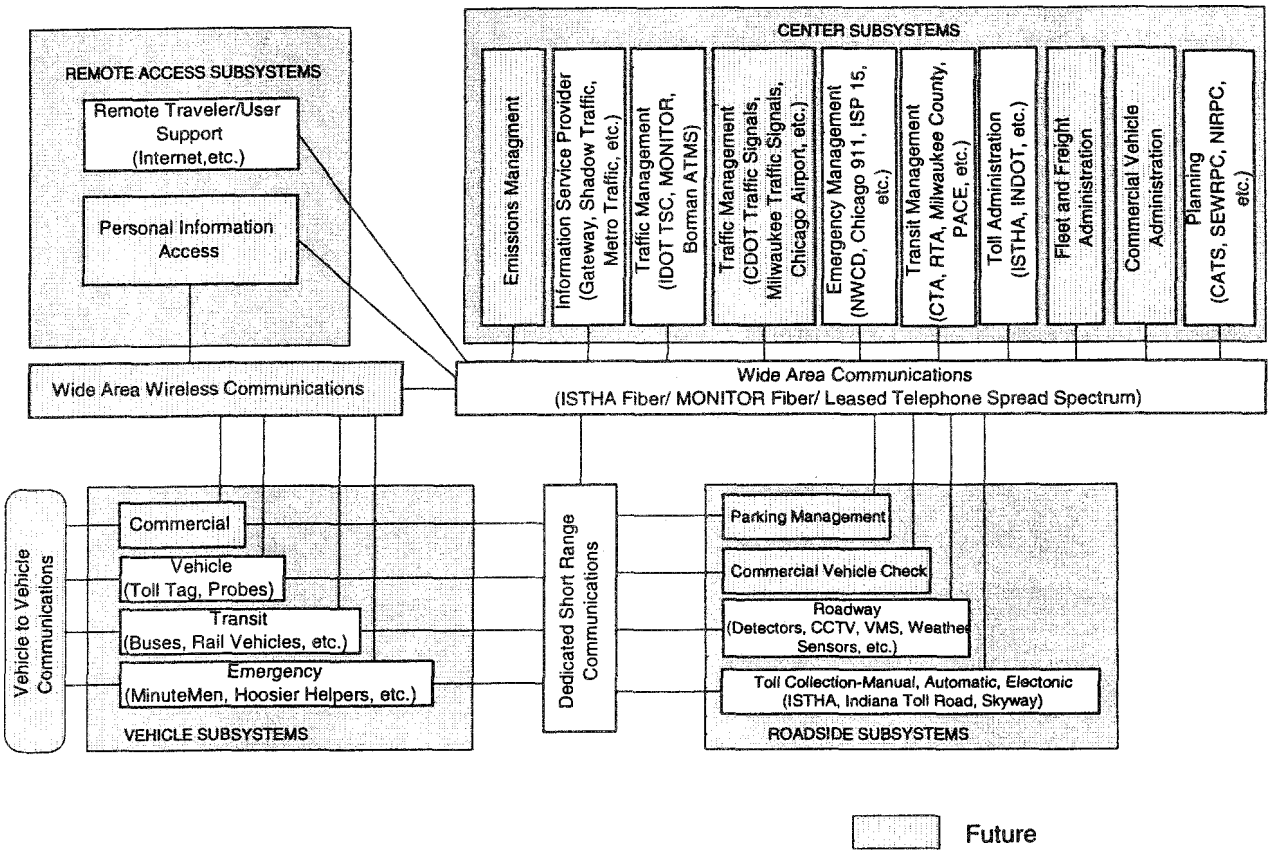

Figure 5-9: Gateway Architecture

A clear distinction has been made between planning, project, and design level consistency. The SEDP recommends the following approach to address the architectural consistency issue from the metropolitan planning perspective. This approach is summarized in the following steps:

1. The adoption in the SEDP of the GCM corridor architecture and the Gateway as the regional architecture for the deployment of ITS projects or ITS elements of projects deployed in northeastern Illinois.

2. Reference at an appropriate level of detail to the demonstration of the GCM corridor architecture and the Gateway consistency with the national architecture developed through the GCM, MMTIS, and Gateway planning and design process.

3. The fact that the SEDP is comprehensive in addressing regional ITS deployment and the fact that the projects in the SEDP have been developed as part of an integrated ITS deployment plan.

4. The commitment by project implementors through the SEDP to develop project(s) in accordance with the GCM corridor architecture and the Gateway as the adopted regional architecture and to incorporate applicable standards and protocols into projects in the design phase where the project is a regionally significant ITS project.

And, subsequent to the SEDP:

5. A finding that projects submitted for the Transportation Improvement Program (TIP) are integrated into the SEDP and the Regional Transportation Plan. Consistency at the project design level would be addressed by a statement of implementor commitment that applicable standards and protocols will be incorporated in the project design and that projects will be coordinated through the Gateway Regional Integration Committee for the Corridor with submittal of projects involving ITS elements which are subject to the consistency requirement for the TIP.

These elements meet the requirement to demonstrate consistency with the national architecture at the planning level.

6. REGIONAL INTEGRATION STRATEGIES

The northeastern Illinois region is unique in its current state of development of transportation systems. Every transportation operating agency in the region has ITS technologies that are currently deployed, planned, or in the design stages to solve operating problems or better manage their facilities. The use of technology to solve transportation problems isn't new in this region. In fact, with so many efforts underway to better manage and control the transportation system, the exchange of information between systems becomes an increasingly critical issue. The SEDP addresses this issue of shared information by identifying levels of integration for compatibility with the Gateway regional architecture. This regional integration strategy provides a guide to information transfer requirements.

Often when it was necessary to share information with another transportation agency, the agency picked up the phone and requested the information that we needed. In many cases, this type of manual, voice, specific request approach is still used. However, as agency transportation systems become more complex, these stand-alone systems acquire and generate overwhelming amounts of data – too much to assimilate manually or in real time. Fortunately, technology integration allows us to store, use, and disseminate orders of magnitude more data than possible manually or through stand-alone systems.

The Gateway regional architecture provides the framework in which to accomplish this technology integration. The SEDP has developed this regional integration strategy to ensure consistency with both the Gateway regional architecture and the National Architecture.

6.1 GATEWAY COMPATIBILITY ISSUES

Under the guidance of the GCM Corridor coalition, much work has been accomplished in creating a regional architecture and regional standards for the Corridor. This architecture concept, as developed by the MMTIS, project has been endorsed by the Corridor coalition and is recommended as the architecture for northeastern Illinois by the SEDP. The SEDP identifies an approach to be employed for individual ITS systems to gain compatibility with the Gateway.

It is important to make a distinction between planning for consistency, which is a policy level decision to ensure systems are designed such that they will lead to an appropriate level of planned integration; and compliance with the Gateway, which involves detailed design issues such as the use of common protocols, open data structures, and standard programming tools for data transmission and sharing. While simply stating that a system will comply with the Gateway standards is appropriate at the policy and planning level, it does not provide enough information for project design. The level of integration of each existing or future transportation system in the region with the Gateway must be evaluated on a case by case basis during the design process. These design issues are coordinated through the Gateway Regional Integration Coordinating Committee (GRICC) to address the detailed project requirements.

For example, transportation systems in the region may share information through the Gateway by placing the information on a diskette and mailing it via the US Postal Service to the Gateway Operations Center. Gateway operators would copy the disk information and it could then be made available to other agencies through the Gateway system. This level of integration is certainly not high tech, but may be appropriate for certain types of information that do not change rapidly or often and do not require real-time dissemination.

At a slightly higher level of integration, files can be sent via the Internet or other computer network. The recipient of the file could manually or automatically load the file into their system, perform any necessary data manipulation, and then use the information. As we move along the spectrum of higher and

more complex levels of integration, we see that it is possible to use technology to dynamically link certain systems. In this manner, data can be shared among disparate systems such as the integration between the C-TIC and Northwest Central Dispatch where incident data is extracted from the 911 database and sent electronically to the C-TIC server. This incident information is then available to the C-TIC and all its external connections, including the Internet. This is accomplished with minimal operator involvement and at a fairly high level of integration.

At the highest level of integration between systems, information is not only simply shared, but joint levels of system operations and control can also occur.

The following points outline different levels of integration for systems and subsystems to be compatible with the Gateway:

- **Level 0** – At the lowest level of integration, there is no connectivity between the individual system and the Gateway. Requests for information are via traditional means such as telephone calls and personal contacts. Data is transmitted via facsimile, mail, courier, e-mail etc. and manually input into the receiving system

- **Level 1** – Read-only data is shared between the individual systems and the Gateway. The data can be easily viewed, but it is not formatted for insertion into system databases except through manual means. Examples would include roadway maintenance reports obtained electronically or via other means. Gateway operators would manually key in the data as required.

- **Level 2** – Data is shared between the individual systems and the Gateway. Data formats would be previously agreed to and exchanged such that a semi-automated response is possible. Manual data entry is not required, although some file handling may be necessary. Data is transmitted electronically. Level 2 introduces automated information concepts into the operational features of the system.

- **Level 3** – Data and limited control is shared between individual systems and the Gateway. All data formats are compatible such that information is seamlessly exchanged between systems. An automated and coordinated response between agencies is possible. Limited control of remote field devices is possible from the Gateway or other operating agencies that are connected to Gateway as previously agreed by all parties and documented in memoranda of understanding.

- **Level 4** – All system functions and data are seamlessly networked with the Gateway. The Gateway would function as a remote or redundant point of system access. Control of system devices would be possible from the Gateway or other operating agencies that are connected to the Gateway as previously agreed by all parties and documented in memoranda of understanding.

For existing systems to be compatible with the Gateway, lower levels of integration could first be investigated. Systems that are currently in the design stage or planned should establish a higher level of integration with the Gateway, as the marginal costs should be minimal. The compatibility issues must first be addressed prior to system design or modernization. In any case, agencies desiring connectivity with the Gateway at one of the above levels would define what information is appropriate for inclusion in the Gateway. Obviously, a significant amount of detail must be shared among agencies desiring connectivity with the Gateway and the Gateway designers. Developing protocols, such as NTCIP, will facilitate compatibility, but will not define more global issues for the Gateway, such as, "what systems information is truly meaningful to the Gateway concept." The following bullets illustrate this point:

- **System Data** – Travel time on the Kennedy Expressway is valuable information collected and provided by IDOT that is already widely used throughout the Corridor. However, significant and

very detailed data are also available from IDOT, such as the phase 2 minimum green time at North Avenue and 25th Street. Sifting through all data points per individual transportation system is necessary on a case by case and bit by bit level.

- **Gateway Data** – The Gateway will collect information from many sources. Some of this information will be of tremendous use to some users at certain times while meaningless to other users. For example, the March 1998 snowstorm in northwestern Indiana virtually shut down east/west travel south of Lake Michigan for over 48 hours. Agencies, commuters, and goods movers relying on the Borman Expressway or Indiana Tollroad would have tremendous interest in this information that will be available on the Gateway. Conversely, travel times in Milwaukee on I-894 will typically have limited meaning to the Gary Public Transit system managers.

How these types of issues are addressed on a case by case basis will be determined to a large extent through the detailed design and implementation of the Gateway systems. This system is programmed to be completed and operational in July 2000. Clearly, connecting to the Gateway can be accomplished in a myriad of methods. The higher technology (Level 3 or 4) approaches are not required in all cases. In other instances, such as the transmission of travel time data or video, a higher level of systems integration would be required. It is important to recognize that the Gateway is being designed to make information from all transportation sources available to system operators, maintainers, and planners as well as the traveling public such that relevant information covering the whole multi-modal transportation system in the GCM corridor, and specifically, northeastern Illinois can be used to make the system more efficient.

The following sections provide a detailed definition and discussion of each level of system integration. Following these definitions and discussions, the issue of migrating from one level of integration to the next is discussed. Finally, potential funding requirements for ITS projects in the region are discussed as they relate to compatibility with the Gateway.

6.2 INTEGRATION COMPLIANCE LEVELS

The above descriptions do not deal with specific types of data but how whole systems could be integrated. The issue of compatibility, however, is more complex. This section describes how systems can be compatible with the Gateway (and each other) by addressing specific data types for each level of integration. Table 6-1 provides an overview of different data types versus the desired level of integration.

There is an implied assumption that it is the intent of all ITS projects, in some way and in some time, to integrate with other systems. The SEDP supports such integration and discourages stand-alone system designs. The SEDP adopts this regional integration strategy to be consistent with National guidelines and good operational practice.

Table 6-1: Overview of Different Data Types vs. Desired Level of Integration

LEVEL	OPTIONS	TRANSPORTATION MANAGEMENT DATA TYPES					
		Real Time Data	Historical Data	Archive Data	Real Time Control	Real Time Video	Archive Video
0	Operate Independently	Local only	Local or batch export	Local or batch export	Local only	Local only	External storage only
1	Share Data Only	Local or broadcast transmission	Serial or batch export	Batch export on a regular basis	Local only	Local control. "View only" images broadcast	Can be exported
2	Share Data and Loosely Coupled Response to Events	Local and remote	Local and remote	Batch export on a regular basis	Local only	Local control. "View Only images broadcast	Can be exported
3	Share Data and Limited Device Control	Local and remote required	Local and remote	Batch export on a regular basis	Limited on as-needed basis	Available with some control supported	Can be exported
4	Share Data and some or all Management Functions	Distributed via wide area network	Accessible remotely or through distributed database	Exported or shared	Available for some or all system elements	Available with control as needed	Available as needed

6.2.1 Level 0 – Operate Independently

At the lowest level of integration, there is no connectivity between individual system and the Gateway. Each individual system is operated, controlled, and monitored independently under local authority. If information is shared between the individual systems and the Gateway, it is via traditional means such as verbal communications, mail, facsimile, courier, etc. No electronic file transfer or integrated use of data is included at this level. A closed loop signal system could be an example of this level of integration. System loop data available in the closed loop system is typically used for implementing timing plan changes within the isolated system. Should congestion information, as derived by system loops, be desired at the Gateway for broader dissemination, the local system operator would have to request the data, print it, and send it to the Gateway operators. Obviously, this approach would be unsatisfactory for dissemination of the information in real time, but may be practical for transfer of historic data and archiving depending on the operator needs and requirements.

The applicability of the following data types is discussed in terms of Level 0 integration.

- **Real Time Data** – Local only.
- **Historical Data** – Historical data can be exported, but data is not integrated. That is, there is no common format to the data that would enable data searches, statistical analysis, or facilitate research.
- **Archive Data** – Data archives can be exported. However, there is no common format to the data that would enable data searches, statistical analysis, or facilitate research.
- **Real Time Control** – Local only.

- **Real Time Video** – Local only.
- **Archive Video** – External storage only.

6.2.2 Level 1 – Share Data Only

This level of integration is similar to Level 0. Data is shared between users, but it is typically in a "read-only" format. That is, the data is not integrated into the Gateway, but an automatic mechanism is created whereby the data is periodically received. The principle difference between Level 0 and Level 1 is this automated mechanism for regular periodic transfer of information. However, the data is still not integrated between systems. Users of the data (e.g., Gateway operators) would be responsible for manually "keying" the information into a database for broader dissemination. Transmission of the data can be via traditional means as in Level 0, or it may also include automated faxes, electronic file transfers, etc. As in the Level 0 discussion, this approach would be unsatisfactory for dissemination of the information in real time, but it may be practical for transfer of historic data and archiving depending on the operator needs and requirements.

Expanding the closed loop system example presented above: in this case, the system loop data would be periodically and regularly requested by the local operator, the data would be saved on disk and transferred to the Gateway. The Gateway operator would key the data into the database and derive congestion information from the system loop information. This information could be disseminated across the Gateway network.

The applicability of the following data types is discussed in terms of Level 1 integration.

- **Real Time Data** – Local or broadcast transmission.
- **Historical Data** – Historical data can be exported on regular basis via data communications, but data is still not integrated. That is, there is no common format to the data that would enable data searches, statistical analysis, or facilitate research.
- **Archive Data** – Data archives can be exported. Because data is transmitted on a regular basis, data can be archived in a sequential/complete manner providing the basis for data searches, statistical analysis, or research.
- **Real Time Control** – Local only.
- **Real Time Video** – Local control. "View only" transmission or broadcast of video.
- **Archive Video** – Archived video can be exported.

6.2.3 Level 2 – Share Data and Loosely Coupled Response to Events

Level 2 builds on Level 1 by integrating the data that is shared between agencies. At this level, data transmission would ideally be accomplished via common protocols but may also include mailing electronic floppy disks or other electronic media between users. The key to this integration level is that common file formats and database schemas are agreed to and information is shared between agencies per these formats to facilitate data integration and response between systems. Once a user receives data from another agency, the data is automatically inserted into a database for immediate use. Some manual manipulation of the data may be required, such as handling of electronic media and file imports, but mostly, when the data is received it is ready for immediate use with only minor manual manipulation.

In the closed loop system example, the system loop data would be automatically uploaded and saved in a comma delineated text file. The text file would include a header to identify the detection site, time, and date. The header would be followed by occupancy and volume data in 15 minute increments for northbound, southbound, eastbound, and westbound traffic. An end of file message would be appended to the end of the data. The file could be transmitted via common protocols or sent to the requesting agency via other means. The data is transmitted on a regularly scheduled basis. The recipient of the data file imports the file into their system which reads and understands the comma delineated file and format structure. The recipient's system can then immediately make this data available for further use or disseminate to others as appropriate.

The applicability of the following data types is discussed in terms of Level 2 integration.

- **Real Time Data** – Local and remote data transmission with specified interface for data interchange.
- **Historical Data** – Historical data exchange is provided in an integrated format to enable data searches, statistical analysis, or facilitate research.
- **Archive Data** – Data archives can be exported. Because data is transmitted on a regular basis, data can be archived in a sequential/complete manner providing the basis for data searches, statistical analysis, or research.
- **Real Time Control** – Local only.
- **Real Time Video** – Local control. "View only" transmission or broadcast of video.
- **Archive Video** – Archived video can be exported.

6.2.4 Level 3 – Share Data and Limited Device Control

At this level of integration, data as well as potential limited control of field devices is possible between agencies. This level infers a substantial departure in communications technology from the previous levels to transmit data. In order for this level of integration to occur, data and limited control commands would be transmitted via common protocols over leased or dedicated communication networks. Data can be made available to other users in real time and a fully automated and coordinated response to traffic incidents or events is possible.

In the closed loop system example, this level of integration would allow other agencies limited access to the master controller. System loop data could be transmitted automatically via the communication network and imported seamlessly in the requesting agency's database for further processing or dissemination to other users. This could occur as often as necessary and/or feasible depending on the system capacity and network bandwidth limitations, but no operator intervention or manual manipulation of data would be necessary.

In this example, there may be no discernible reason for any other agency, other than the local operating agency, to take "limited control" of the master controller for the closed loop system. However, it would be possible at this level of integration for two or more agencies to jointly control certain field devices such as closed circuit television cameras or changeable message signs.

The Atlanta ATMS provides a nice example of limited joint control of field devices between different agencies. In Atlanta, closed circuit television cameras that are installed along the expressways are operated by the state DOT. The City of Atlanta also receives the video input from these cameras. If City operations staff needs to move one of the State cameras to view a different part of the expressway, say on

off-ramp, the City can take limited and temporary control of the camera. City access to the camera is possible only if one of the State operators does not currently have "control" of the same camera. Once the City operator is done with the camera, control reverts back to the State. In this case, the City reciprocates by allowing the State access to City cameras installed at major arterial intersections.

The applicability of the following data types is discussed in terms of Level 3 integration.

- **Real Time Data** – Essential with frequent updates and common exchange formats.
- **Historical Data** – Historical data exchange is provided in an integrated format to enable data searches, statistical analysis, or facilitate research.
- **Archive Data** – Data archives can be exported. Because data is transmitted on a regular basis, data can be archived in a sequential/complete manner providing the basis for data searches, statistical analysis, or research.
- **Real Time Control** – Supported for specific elements on an as needed basis.
- **Real Time Video** – Transmission of real time video with some control supported.
- **Archive Video** – Archived video can be exported.

6.2.5 Level 4 – Share Data and Some or All Management Functions

At the highest level of integration, all the functions and capabilities of Level 3 are enhanced by providing full control of some or all system management functions to another agency. In this context, it is possible to infer that joint system control is possible across jurisdictional agency boundaries. This level of integration may be beneficial if 24-hour operation is necessary but limited manpower is available to staff system operations for that many hours. If control is shared between agencies, 24-hour operation could conceivably be achieved without increasing staff. Further, joint control may be useful during periods of natural disaster or regional crisis. In this scenario, it is feasible to assume that one control center is not operational for some reason. The second (or redundant) control center can take on full operational capability of the first control center as a backup.

The closed loop system example applies to this level of integration. In this example, two or more agencies would have full access to the master controller to obtain data, make database changes, and control the traffic signals. Agencies could likewise share control of changeable message signs, closed circuit television cameras, and potentially any system management functions.

The applicability of the following data types is discussed in terms of Level 4 integration.

- **Real Time Data** – Essential and typically supported over medium to high data rate wide area network (WAN).
- **Historical Data** – Historical data is integrated and accessible remotely or through distributed database.
- **Archive Data** – Data archives can be exported or shared across the WAN. Data is transmitted on a regular basis, data can be archived in a sequential/complete manner providing the basis for data searches, statistical analysis or research.
- **Real Time Control** – Available for some or all devices and system management functions.

- **Real Time Video** – Available with control as needed.
- **Archive Video** – Available as needed.

6.3 SYSTEMS MIGRATION

Over the past few years, there has been a great deal of discussion and interest devoted to transportation communication networks, open systems technology, and transmission protocols. System integration has come to imply only the highest levels of technology integration discussed above. In some cases, systems integration seems too complicated for our needs and maybe not be worth the effort. The above discussion identifies a number of different approaches to gain connectivity with the Gateway and all of them are part of an integrated systems approach. Integration does not necessarily require the highest levels of automation. The act of dialing the phone, hearing it ring, saying hello, and identifying ourselves and the topic of discussion is a level of integration. This was easy, but mostly because the telephone is familiar and comfortable technology (it wasn't always this way). As the years go by, and new technology becomes more familiar and comfortable, agencies will naturally move toward the higher levels of integration. There are several reasons for this.

- First, the motoring public benefits by receiving transportation information in a consistent and easy to interpret manner. Assuming this information is used responsibly, it can be inferred that the transportation system will operate more efficiently and for longer periods of time as modal choice and route selection decisions are affected dynamically.
- Second, transportation agencies benefit by having a greater amount of current and accurate information available to them and the ability to interpret the data in meaningful ways to enhance operations, maintenance, and planning functions.

These types of benefits are only possible with higher levels of integration supporting this exchange of transportation data. There are a number of opportunities to migrate from one integration level to another. There are obviously advantages to seeking higher levels of integration: manpower requirements are reduced, service is enhanced, system management capabilities are improved, etc. There are also issues that must be considered with higher levels of integration such as institutional and liability issues that must be addressed and resolved. Technology can be expensive and must be maintained, driving costs of equipment higher. Regardless of where an agency is currently, or where they eventually want to be, they can increase their level of connectivity with the Gateway by specifying compatibility in requirements for system upgrades and expansions.

6.4 FUNDING REQUIREMENTS

Significant discussion was undertaken in the Advanced Technology Task Force (ATTF) on requiring Gateway compatibility for eligibility for future ITS funding. By defining increasing levels of integration to being compatible with the Gateway and a migration path to increased integration, the SEDP anticipates all new ITS systems developed in the northeastern Illinois region will be compatible with the Gateway at an appropriate level. Obviously, higher levels of integration are ultimately desired, but a commitment on the part of every agency seeking outside funds to be compatible with the Gateway at one of the above levels is recommended as a policy and planning decision.

To facilitate compatibility with the Gateway, the SEDP recommends that agencies seeking funding for ITS projects or submitting projects for the Transportation Improvement Program (TIP) declare the intended level of integration with the Gateway at the planning and programming stage. Such a

mechanism would help mitigate isolated system development in the region and provide excellent documentation to begin developing the specific data elements that would be shared between the agency and the Gateway. Other issues, such as the degree of sharing joint control of devices and system management functions, might also be covered in this documentation.

This mechanism for ITS project funding application is not intended to lock an agency into a specific approach but to assist the agency in developing their ITS project within the adopted regional ITS framework. Once an integration level is established and the data elements are defined, the next step is to identify how the integration would actually occur. For example, an agency seeking ITS funds would state which of the five levels of integration seem most applicable to their needs. In exchange, the Gateway staff would discuss integration issues with the agency, review the integration needs, and identify data sharing and data available from the Gateway that may be of benefit to the agency. Communication media, networks, database, location referencing, specific protocols, hardware platforms, and other specifics could be agreed to before any system development occurs.

The result of this process will be a comprehensive project plan that will improve the development of a project by ensuring that the widest range of system development information is available and that a proper level of compatibility with the Gateway will result. The detailed integration design would be coordinated through the GRICC.

7. REGIONAL ITS VISION

A vision can reflect a wide variety of future expectations. This variety reflects the differing perspectives of people, whether they represent the general traveling public, transportation service providers, transportation agencies, business organizations, or other sectors of the community. In anticipation of these variations, the vision must be broad enough to embrace these perspectives. The SEDP vision for technology applications was developed in association with categories of ITS candidate actions. The candidate actions reflect the results of user group workshops held during this project.

This chapter presents a long range vision for ITS actions in northeastern Illinois and a path for implementation of that vision. This vision has an important role in the ITS deployment planning process in that it defines the context for selecting and prioritizing ITS actions. The vision incorporates the expectations and benefits, in terms of improved operation of the region's transportation system, that could reasonably be achieved via implementation of ITS actions.

The vision statement will guide deployment in a manner consistent with the adopted long range (year 2020) regional transportation plan. This will ensure that actions will contribute to the achievement of the goals and policies of the plan. In so doing, the vision statement anticipates that deployment represents a building block approach. ITS improvements build upon the existing system, achieving incremental benefits over a long period of time.

The vision gives direction to the selection of ITS actions for deployment. The candidate ITS actions used for this purpose are categorized into the following six packages:

A. Multi-Modal Traveler Information
B. Transportation Management
C. Public Transportation
D. Emergency Management
E. Institutional Perspective
F. Long Range Perspective

7.1 CONTENT OF VISION

The articulation of a vision statement requires the identification of future outcomes as related to transportation performance, services and information available to travelers, qualities of transportation facilities, financial aspects, and other impacts. The content of these outcomes can be described in terms of a set of parameters that identify specific characteristics and qualities of the transportation systems that could be affected by deployment of ITS actions. The parameters that have been considered in vision development are described below:

1. ***Information to use.*** All members of the general public will be able to obtain a comprehensive set of information about (a) real-time transportation conditions for all modes and (b) trip itinerary for travel planning.

2. ***Seamless agency coordination.*** As people travel through the system, there will be no noticeable change in either the quality or capacity of service; the system will have balance at any mode interchange point. Information given to the traveler will be multi-modal and will include fares, schedules, combined travel time, etc.

3. ***Reliable transportation.*** Similar to a "well-run railroad," the transportation system's performance will be reliable. Users will be able to count on uniformity (day to day) in the service so that travel can be planned knowing that transportation service will always deliver as expected and scheduled. This will apply to both highway and transit modes.

4. ***Personal Security.*** Users will never feel in jeopardy or at risk in the transportation system because they understand the system (and not get lost). The system will be visibly well run and maintained. The system will include security protection (though "invisible") that users knew was present; two-way communication/video surveillance will be installed at specific high-crime locations.

5. ***Accident Free.*** The training and quality of transit/truck/train operations will be very high so that accident rates will be very low. Public education and awareness will be very high to produce exemplary driving behavior. Transportation systems will be well-designed and operated to eliminate road rage and other conflicts. Facilities will be designed using proper standards.

6. ***Minimum Travel Time.*** The multi-modal character of the system will provide contingencies for most users. There will always be alternate routes or modes to minimize travel time. Traffic management measures will enhance the capability of the system to accommodate peak travel demand.

7. ***No Surprise Delays.*** For non-recurrent travel conditions, users will have access to real-time information to plan diversion routes. The traffic management system will automatically sense non-recurrent conditions and broadcast information. This will be done seven days a week, 24 hours a day.

8. ***User Friendly.*** The new technology—information systems, kiosks, new electronic equipment, new signing, route planning—will be user friendly so that people will use these resources. Simplicity in various ways will need to be the rule.

9. ***Low User Cost.*** The technology must benefit a wide spectrum of users and will be perceived as being affordable and a good "value" (significant benefits for the dollars invested). User costs will be developed in connection with a cost policy that considers multiple modes and relates benefits to cost. The policy will avoid subsidizing one mode by another, increasing cost disproportionately by user group, or causing an imbalance in the use of the system.

10. ***Equitable Service.*** The transportation services will be available fairly to all users without any penalty (because of location, trip orientation, economics, or time of travel).

11. ***Efficient System.*** The operation of the system will be highly efficient. Supply will closely match demand. The system will be coordinated to include only desirable redundancies. Productivity will be high.

12. ***Positive Image.*** The combined effect of an understandable system, secure system, and well-run system will establish a very positive impact for the facilities and agencies responsible for them. There will be a high level of confidence in the transportation agencies by public and major constituencies. Physically, systems will be designed and developed to achieve an aesthetic appeal.

13. ***Cost-Effectiveness.*** The benefit of ITS technology will be great in comparison to the dollars spent. ITS projects will prove to be more cost-effective than traditional capital projects.

7.2 STATEMENT OF VISION

A vision for regional ITS deployment has been developed in consideration of the above parameters. This vision statement has resulted from a process that defined alternative visions and considered the advantages and disadvantages of these alternatives. The vision statement resulting from this process is organized into a broad overview with various subtopics described. This helps to define a context for the more specific vision statement that follows.

7.2.1 Organization

Considering the range of parameters and the content of the candidate actions being considered, there are two overall distinctions that can be made that serve to "organize" a vision statement. With the improved operation of the region's transportation system as the overall goal, ITS actions represent the means to achieve this end by:

1. Enhancing, improving, and expanding the quality and quantity of information about transportation conditions for travelers, public agencies, and private sector organizations.

2. Enhancing, improving, and expanding the management of transportation systems and/or the provision of new, modified, or rehabilitated facilities within the transportation system.

Under these dual perspectives for the vision (i.e., information and management/facilities), there are several tiers of more specific choices about the content of the vision.

7.2.1.1 Information Based Vision

For the information-based perspective, the general vision statement is: *ITS will be deployed to significantly enhance the quantity, quality, and accessibility of information about transportation conditions for individual travelers, public agencies, and private organizations.* Under this vision, there are five possible choices describing the more detailed substance of the vision that have been considered in developing the vision statements:

1. Focus of information to be provided (e.g., for pre-travel purposes, real-time information).

2. Responsibility (or role) of the public and private sectors for information collection and distribution.

3. Cost for information (direct user fee, free, or a combination of fee and free access).

4. Extent that enhanced information will be made available.

5. Information content relative to transportation modes.

7.2.1.2 Management Based Vision

For the management-based perspective, the general vision statement is: *ITS will be deployed to facilitate the management of transportation facilities and services to optimize performance, capacity, productivity, cost-effectiveness, safety, and security.* Under this vision, there are seven considerations:

1. To deploy across the entire transportation system or selectively on a geographic and/or modal basis.

2. To focus on addressing recurrent transportation conditions or non-recurrent conditions or both.

3. To manage transportation systems with or without a modal preference or in combination.

4. To manage transportation systems involving the direct use of user fees/financial requirements or free for public use.

5. To address future system needs through existing agencies or by forming a new agency.

6. To focus transit ITS deployment on traditional transit corridors or non-traditional transit service.

7. To enhance individual response within the transportation system or provide system automation.

7.2.2 Deployment Vision

Using the above organization, the following broad vision statement is recommended.

> *"ITS actions will be deployed to materially improve the operation of the region's multi-modal ground transportation system through benefits achieved via enhanced information and management of facilities and services."*

The improved operation will be achieved by deployment of a family of actions, each with a specific focus, but combining to achieve a significant aggregate benefit. In this context, each component member of this ITS family will achieve the following:

A. **Information Systems**

Existing information systems will evolve to provide better information to the traveler, public agency, and private organization. This will include both pre-trip and real-time information. Inasmuch as this information must be credible to the users, it is paramount that all information be accurate and reliable.

Because of this requirement, it would be the role of the public sector to be principally responsible for collection of information. The distribution of information could be shared jointly between the public and private sector. It would be preferable that the public sector would have the principal role in distributing real-time information. Public agencies are directly responsible for operating the transportation system and can provide the most accurate and timely information.

Information would be available for the entire transportation system. This would address all modes and comprehensively cover the northeastern Illinois region. There would be multiple means to access the information. Direct user fees could be used for private sector involvements associated with market demand.

B. **Roadway (Transportation) Management**

While retaining the high-quality management of the freeway/tollway systems, management tools and technologies would be distributed across the entire system, including the arterial street system. In a building block fashion, there will be three significant focuses for achieving improved operation:

1. The existing program to enhance the operation of the tollways via significant reductions or eliminating delays caused by toll collection will be carried out to affect all tollways.

2. Management activities will include added emphasis on reducing the negative impacts of non-recurrent traffic conditions on freeways and tollways.

3. The system will be operated to maximize the movement of people and cargo; to achieve the former, there will be an increased use of public transit preference actions that will increase the number of travelers being accommodated. These actions would include traffic signal preference

operations, HOV facilities, enhanced access to transit stops and stations, and similar improvements.

C. **Transit Management**

ITS actions will help improve the productivity, reliability, and efficiency of public transit operations. Technology and tools will enhance management capability to achieve such operational status. The efforts will recognize the need to balance the deployment of ITS actions to address the two primary roles of public transit in the regional system, that is:

1. To maximize the movement of people in the region via the provision of increased capacity in high-demand transportation corridors by fixed-route/schedule services.

2. To optimize the mobility of people in the region to facilitate the needs of their lifestyle and to support economic development by linking people to jobs and other activities.

D. **Emergency Management**

ITS emergency management actions will be broadened to include the regional major arterial street system in addition to the freeways and tollways. Enhancements in traffic signal systems will provide for coordinated alternate diversion routes. Improvements will be made in agency coordination to train, equip, and enhance local agency response teams. Information system improvements will be used to inform large employers, business associations, and/or local transportation management associations about incident occurrences and responses.

E. **Institutional Perspective**

For the short range future, ITS deployment will benefit from actions to enhance institutional relationships, achieving a "seamless" character for the provision of transportation facilities and services. Institutional enhancements shall focus on improved interagency coordination for existing agencies.

Over a longer period of time, the nature of transportation operations will become more intermodal and coordinated. This will be achieved through successful interagency cooperation. However, it will become more efficient and effective to transition these relationships to adopt new models for agency interaction. These may entail integration of existing agencies via commitment of staff and resources to special groups, task forces, operating centers, etc.

F. **Long Term Perspective**

It is anticipated that ITS technology will continue to advance. The technology will provide the means to achieve increased safety and operating quality via various facility and on-vehicle control tools. As these tools become available, they will be integrated into the transportation system to enhance system performance. Such new technology would result in better information and equipment. Managers and users (travelers) would benefit from training programs and similar means to make optimum use of such advances.

7.3 IMPLEMENTATION OF THE VISION

The long range vision stated above is a broad and all-encompassing goal for ITS in the region. Realization of this vision requires building on the foundation of existing ITS programs, supporting programs under development, and initiating new programs to reach the long term goals.

The nine nationally recognized intelligent transportation infrastructure elements addressed in the following paragraphs are the building blocks for the regional ITS vision.

7.3.1 Freeway Management

Chicago has long been a leader in freeway management systems and will reaffirm their commitment to proactive management of the freeway infrastructure with the completion of the Traffic Systems Center upgrade in 2000. This project is currently underway and will upgrade all of the central hardware and software for the system. In addition, video surveillance is currently being installed to cover the I-94/I-290 and I-94/I-55 interchanges.

Given that over 275 miles of expressway in northeastern Illinois are not freeways, but rather tollways, surveillance, driver information, and proactive management needs to extend to the tollway system. To that end, ISTHA is currently in the planning stage for the deployment of a region-wide traffic management system along the tollway. The proposed system includes video surveillance, travel time collection, and variable message signs. Communications support is provided by fiber along the tollway mainline. This fiber was installed and is maintained under a public-private partnership in a fiber for right of way arrangement.

The extent of coverage of the freeway management system for the northeastern Illinois region is shown in Figure 7-1.

The SEDP envisions a freeway management system which provides cost-effective surveillance and the capability for high quality communication in selected locations. This communication capability would support the connectivity and integration of regional centers and permit the application of expanded video and other enhancements at key locations.

7.3.2 Traffic Signal Control

There are many signal systems currently deployed in northeastern Illinois, owned and operated by a variety of agencies, including Illinois DOT, counties, and cities. Of the over 4,500 signals in the region, an estimated 1,600 are under some form of traffic signal management system. By far, closed loop signal systems control the majority of the signals. In their signal management systems, IDOT has over 216 closed loop systems in operation controlling over 1,460 intersections.

The City of Chicago has more signals than any single agency in the region, with 2,700. Currently, only 150 are under closed loop or central control. As part of Chicago's Advantage21 program, however, the City will embark on a significant expansion of their centralized traffic signal management system. The proposed expansion will bring approximately 2,000 signals under control of CDOT's traffic control system.

In the region as a whole a number of initiatives are underway to coordinate signals across jurisdictional boundaries. While IDOT currently coordinates with a number of local agencies to provide coordination on primary arterials, regional initiatives are underway to broaden the scope and capability. The DuPage Mayors and Managers Conference recently completed a study recommending a pilot project in interjurisdictional signal coordination. The DuPage Mayors and Managers Conference has applied for and received a Congestion Mitigation and Air Quality (CMAQ) grant to provide for the coordination of signals in two arterial corridors passing through several jurisdictions.

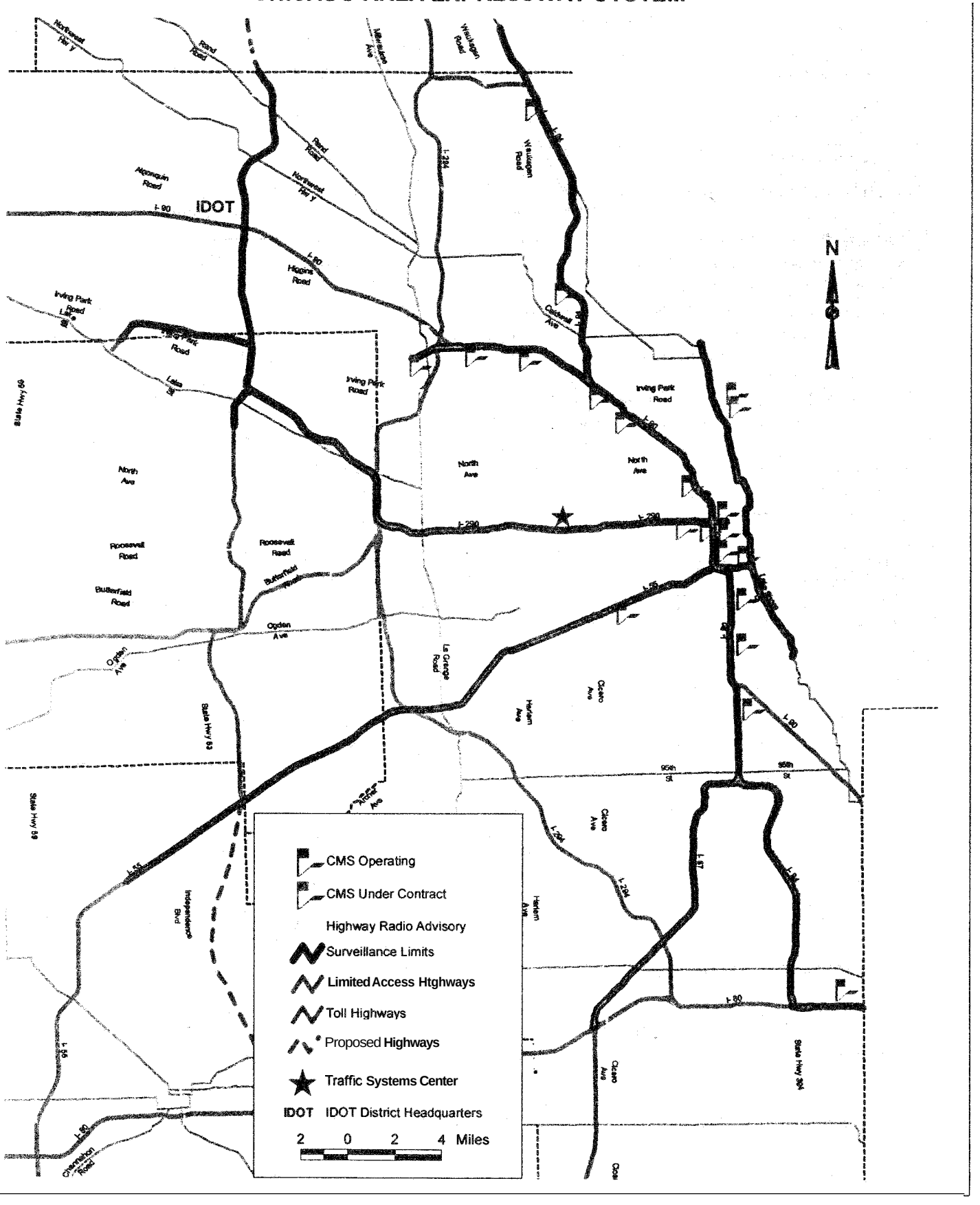

Figure 7-1: FMS Network

The SEDP recommends the deployment of signal control systems which facilitate priority for transit vehicles where this is an effective strategy and which support multi-jurisdictional coordination of signals in order to improve traffic flow and relieve congestion.

7.3.3 Traveler Information Systems

Traveler Information Systems are a key focus for the regional ITS deployment. The ADVANCE program, which was completed in 1995, provided the foundations for a regional traveler information system known as the Traveler Information Center or TIC (not to be confused with the RTA TIC which is a telephone-based transit information center). As the GCM program plan recommended a corridor traveler information center, the TIC became the Corridor-TIC (or C-TIC) with inputs planned from Wisconsin and Indiana. The Multi-Modal Traveler Information System design study recommended a more extensive system and defined a regional information architecture known as the Gateway. Phase I of the recommended architecture is currently under development and will be deployed in 1999.

The Gateway architecture is shown in Section 5. The vision for the Gateway includes provision for Information Service Providers or ISPs to connect to the Gateway for regional multi-modal traveler information. It is generally envisioned that the dissemination from there be provided by the private sector for resale through mass media, personal communications devices, etc. However, the Gateway will provide the information to regional transportation agencies with Gateway connectivity as well as to the general public through the World Wide Web.

The SEDP envisions an integrated system to collect, process, and distribute multi-modal information to operators and users of the regional transportation system. This information would include real time travel conditions, incidents, transit schedules and times, and other measures that operators and travelers can use to make more effective decisions.

7.3.4 Incident Management

Illinois has for some time been an innovator in the area of incident management coordination on their roadways. The primary vehicle for this coordination is the Emergency Traffic Patrol (ETP). The ETP provides first response, clearance, and incident scene coordination for over 95,000 incidents per year.

The Illinois DOT Emergency Traffic Patrol is one of the longest running freeway service patrols in the country. The program was initiated in 1970 and has grown to 35 vehicles and over 720 lane-miles of coverage during the peak hours. However, funding for the ongoing operation and maintenance costs is becoming increasingly difficult to find, with strong competition for the program funding.

The Illinois Tollway also recognizes the benefits of service patrols, with their HELP program starting in 1997. The tollway service patrol currently has seven vehicles plying 150 centerline miles or 55 percent of the tollway during the peak periods. The HELP program is expected to expand after 1999.

Incident Management is not limited to the controlled access facilities in northeastern Illinois, though. The Cook County Highway Department and the Lake-Cook TMA is currently completing a study of incident management coordination along Lake Cook Road. This project is expected to serve as a prototype for the application of incident management to selected arterial corridors.

The SEDP recommends continued support and enhancement of the regions incident management system to improve the operational capability and to expand coverage to major arterial corridors.

7.3.5 Emergency Management Services

Emergency management services are tightly coupled to the incident management capability afforded by the ETP and HELP programs. Coordination is provided through the IDOT Communications Center, NW Central Dispatch, and state police. The City 911 Center also is involved in emergency management activities in the region.

The SEDP envisions integration of emergency services and transportation operations to enhance the use of these resources.

7.3.6 Electronic Toll Collection

The Illinois State Toll Highway Authority operates and maintains over 275 miles of roadway and 500 lanes of toll collection in northeastern Illinois. In 1996 the tollway began expansion of their electronic toll collection system, known as I-PASS, to 500 lanes, including express lanes. The deployment of this technology has significantly reduced delays at toll plazas, a chronic problem on the tollway routes. With over 100,000 toll tags deployed today, and an anticipated 500,000 in operation by 2000, the I-PASS system will be one of the largest in operation in the United States. Figure 7-2 shows the extent of the I-PASS system.

The tollway, in partnership with IDOT is using the toll tags to acquire travel time samples throughout the region. This will provide the primary traffic flow metrics for the ISTHA traffic management system. This information will be used for both proactive congestion and incident management in the system as well as for traveler information through the Gateway, the regional ITS data collection and dissemination hub for the GCM Corridor.

The Skyway is investigating ETC and is currently evaluating a proposal for implementation.

The SEDP supports the continued development and improvement of electronic tolling in the region including the use of IPass only and IPass express lanes. These innovations will improve tollway operations, reduce plaza delays, and provide opportunity for other services.

7.3.7 Transit Management

Transit is essential to the northeastern Illinois region. The RTA and the three service boards provide over 1.4 million trips per day over commuter rail, subway, elevated trains, and urban and suburban buses. Over the course of the last five years, a number of initiatives have begun to better manage and operate these critical systems.

Metra, the service board responsible for commuter rail operations, built a new control center and upgraded their train control system in 1987. The control center functions as a dispatch center that controls the entire train movement system and coordinates with all freight rail systems. The system is not currently integrated with other regional systems, but will ultimately provide input on schedule delays to the transit hub for communication to the Gateway, the regional transportation information clearinghouse.

Figure 7-2: I-PASS System

The Chicago Transit Authority, responsible for the operation of subway and elevated rail, and urban bus services began deployment of their Bus Emergency Communications System (BECS) and Bus Services Management System (BSMS) in 1998 (BECS) and 2001 (BSMS). The system includes Automatic Vehicle Location(AVL) for both buses and trains as well as schedule adherence calculations. These systems are partially on-line now with completion expected in 2001. A 9,000 sq. ft. control center located at CTA headquarters provides both vehicle and traction power management for the entire CTA system.

Pace, responsible for suburban bus operations, is currently designing their Intelligent Bus System (IBS). The IBS will include automatic vehicle location and fleet management technologies and will be deployed starting in 1999.

The RTA is also very proactive in regional ITS, currently sponsoring a series of design studies. These include a parking management system study for management of transit parking facilities, a traveler information kiosk system study, a connection protection program integrating the AVL resources of the service boards, and an active transit sign system study developing standards and interfaces for real-time platform and station signing. Each of these studies will be followed by a Phase II prototypical deployment. These projects should begin in early 1999.

The RTA is also currently deploying their Itinerary Planning System (IPS) which will aggregate schedule and route information from each of the service boards and perform automated route planning functions. Initially the system will support the RTA Travel Information Center (TIC), but will provide the basis for Internet and kiosk route planning services and even the future deployment of the transit hub.

The SEDP envisions a transit management system which receives real time information from a regional fleet of intelligent transit vehicles and uses this capability to improve operations and performance, support strategies to increase transit use, and inform travelers.

7.3.8 Electronic Fare Payment

Integrated Fare Payment has been identified as a future enhancement for the regional transit service boards. Currently, some fare media integration is supported through discrete programs between CTA and Pace. A larger scale program was recommended in the GCM program plan dated June 1995. A pilot study/design is currently funded at $150,000. It is anticipated that the program will be initiated in 1999 with RTA as the sponsoring agency.

The SEDP supports a regionally integrated fare payment system which makes effective use of available fare technologies and which will offer seamless service to transit users independent of the specific provider.

7.3.9 Railroad Grade Crossings

Rail crossing safety is an increasingly critical issue for the region. There are over 6,000 at grade crossings in northeastern Illinois, many with significant volumes of both rail and vehicular traffic. Illinois continues the development of a prototype demonstration of an in-vehicle rail crossing alert system. The Pilot Study of Advisory On-Board Vehicle Warning Systems at Railroad Grade Crossings will be deployed in the spring of 1999 and tested for one year.

The SEDP envisions use of intelligent technologies to supplement existing systems to enhance the safety of the region’s grade crossings.

8. IMMEDIATE ACTIONS

The immediate action element of an SEDP is typically used to initiate an ITS program in a region. The many existing ITS projects in northeastern Illinois reduce the need for an immediate action element to initiate ITS in this region. But, the candidate actions developed through the user service process represent an opportunity to gain additional benefits from ITS and to accelerate the application of ITS technologies in the region. The SEDP examined the need for and desirability of undertaking activities to foster the early deployment of ITS technologies anticipated by the candidate actions identified in the user service plan. In this context, immediate actions were identified to advance projects being considered for the Deployment Action Plan into the next phase of project development.

8.1 OBJECTIVES

Developing immediate actions items for the Strategic Early Deployment Plan differed from typical deployment action plans that identify short to long term initiatives or projects to develop and deploy regional infrastructure or systems. Such plans take several years to develop and integrate.

Current projects and initiatives under each candidate action were analyzed for possible immediate actions that would provide assistance to further the candidate action's objectives and that could be supported by the Advanced Technology Task Force members. The objective of these immediate actions is to identify projects or tasks that address the most pressing ITS objectives and can be readily implemented. These actions were then screened against several selection criteria to develop the recommended immediate actions.

8.2 CANDIDATE ACTIONS

The candidate actions identified in the User Service Plan laid the foundation for eventual potential projects and ITS initiatives to be incorporated in the SEDP. They provided the guide for evaluating existing transportation issues and objectives for the region. A total of 30 candidate actions were developed in five categories.

Each candidate action was further developed to identify short term activities or actions that are needed to move that candidate action forward. These were reviewed for actions that, if completed, would allow follow-on actions or implementations to occur in a more timely manner. From this list, tasks were identified as possible candidates for immediate actions. The tasks shown in Table 8-1 were potential immediate actions.

Table 8-1: Potential Immediate Actions

IMMEDIATE ACTION	TASKS
Gateway Data Warehousing: Promote the development of an archival system for traffic planning data gathered in the Gateway System.	• Identify data elements to be archived • Develop operational and system requirements
Gateway Connectivity: Provide immediate recommendations to coincide with MMITS and Gateway development activities.	• Identify system connectivity for agencies or sources that should be implemented in the initial implementation rather than in follow-on deployments • Identify cost and benefits of being connected to the Illinois Hub and through the Illinois Hub to the Gateway • Ensure the project to expand the Gateway is funded for education/outreach to the regional agencies that may be affected
Transit Itinerary Planning System: Assist RTA in implementing and integrating a new itinerary planning system.	• Review recent implementations • Document current format and processes for passing schedule data from the Service Boards to the RTA. • Evaluate potential system specifications and processes for integration between the systems • Study the requirements for alternative GIS formats • Develop the RFP
Traveler Information: Generate interest in providing region wide traveler information services to the general public and commercial sectors.	• Identify potential public/private partnerships projects • Identify outreach opportunities • Identify elements for an RFI
DuPage Signal Study: Support for potential deployment of the current DuPage signal coordination study.	• Evaluate study results • Recommend follow-on actions • Find potential prototype funding
Priority Vehicle Signal System: Coordinate the development of regional guidelines for priority vehicle signal systems.	• Review test results from recent tests • Develop guidelines for further deployments • Identify priority corridors and signal locations • Investigate possible funding for implementations
Transit Signing: Further develop and implement multi-agency static and dynamic transit signing.	• Review recent implementations • Evaluate potential system specifications • Develop both short and long term plan for integrating current and future systems for both static and dynamic signs • Identify transit centers for initial deployment • Develop the RFP
Connection Protection System: Investigate and find possible funding for a connection protection system undertaken by the Services Boards.	• Identify actions to accommodate coordination • Identify transit centers suited to support initial deployment • Identify funding sources for prototype deployment

IMMEDIATE ACTION	TASKS
Fare Collection Integration: Investigate the technology and accommodate coordination for fare collection integration by all transit agencies.	• Identify actions to accommodate coordination • Evaluate current technology • Identify cost and benefits of integrating transit fare collection
Video Surveillance: Identify the means or possible funding to assist Pace with a demonstration of an onboard video surveillance system.	• Identify actions to accommodate coordination • Identify funding sources for prototype deployment
Arterial Incident Management: Provide support for potential deployment of the arterial incident management system studies completed and underway on Lake-Cook Road.	• Evaluate study results • Recommend follow-on actions • Potentially find prototype funding
Diversion Routes: Coordinate the evaluation of diversion routes.	• Identify potential routes needing diversion plans • Incorporate previous work and studies done for reconstruction projects • Screen diversion corridors • Outline follow-on actions
ATTF: Establish the ATTF as a mechanism or institution to facilitate and to identify potential ITS projects for the region.	• Define the ATTF's function • Define its organization and process • Define how it will be empowered

8.3 SELECTION CRITERIA

The Advanced Technology Task Force served as the coordinating forum for the selection of the immediate actions. To formulate the immediate actions, the candidate actions were compared with the region's existing initiatives. Consideration was given to activities under the GCM Corridor Program that would be implemented within two years as well as programs that were under study or design but did not have funding or were not projected to be implemented within the near future. From this a list of supporting actions was developed and selected based on the following criteria:

1. ***Does it meet the Regional or Agency's Goals and Objectives?*** It must support the seven goals and 39 objectives identified as part of the 2020 Plan.
2. ***Is it supported by the involved agencies?*** It must be supported by a lead agency(s) and by other involved stakeholders.
3. ***Is it fundable?*** The project or task must be initially funded by the involved agencies, State and Federal stakeholders or by public/private partnerships.
4. ***Is it sustainable?*** The involved agencies, State and Federal stakeholders must be able to provide continued funding support or the project must be fundable through its own revenue or by public/private partnerships.
5. ***Is it achievable?*** The benefits should be strong enough to overcome institutional, political and community objection barriers.

6. ***Does it provide some level of integration of systems or agencies into regional activities?*** The project or task should support or enhance the regional area ITS framework of other legacy systems or proposed projects while providing a higher level of integration.
7. ***Is it immediate in nature?*** The action should have some urgency to meet funding or follow-on actions required for future implementation or integration or to move the potential candidate action to the next phase of implementation.

8.4 ACTION ITEMS

Four actions were identified after evaluating over 18 potential initiatives and ideas. Due to the expedient nature of these action items, the itinerary planning system has already been completed and the other three are underway. Each immediate action provides some level of integration between multiple agencies and three of the four support initiatives involving system integration. The following four immediate actions were recommended:

1. Assist in implementing a regional transit itinerary planning system.
2. Assist in further developing diversion corridors.
3. Promote and assist in developing regional guidelines for priority vehicle signal systems.
4. Assist in implementing a multi-agency dynamic transit sign system.

8.4.1 Regional Transit Itinerary Planning System

The purpose of this immediate action was to assist the RTA in the timely implementation of a new itinerary planning system. The RTA had been planning to develop an automated itinerary information and planning system for northeastern Illinois. The new system would replace the current TRIPS software and system. The system would be able to accept schedule data in various formats from outside sources and be versatile enough to allow for future implementation of additional functions. The new system would automate the updating and maintenance of the bus and rail schedules from the three service boards. It would also reduce the customer service operators training time while providing improved functionality and reliability.

RTA identified several key issues that needed to be clarified to insure proper system integration to current and future systems of each service board. The SEDP supported an immediate action to provide assistance to the RTA in determining system requirements to develop an RFP to advance the IPS deployment. In a cooperative arrangement, EDP funded hours were combined with an RTA funded consultant contract to produce an IPS study and RFP development. Both were completed during the course of the SEDP project, allowing the solicitation of the RFP in October of 1997.

The study assisted the RTA in determining the needs and system specifications for procuring an IPS system. The main focus was on the methodologies for passing schedule information from the service boards to the RTA. The study also evaluated IPS technologies and institutional implications required to meet regional needs. This immediate action supports the traveler information and transit management objectives of the SEDP and lays the foundation for several related Deployment Action Plan projects.

8.4.2 Regional Diversion Corridors

This immediate action was developed to consider the desirability and evaluate the potential development of diversion corridors. CATS would facilitate an initial screening of candidate diversion corridors with funding to be provided through the Unified Work Plan. This work would be based on and expand upon previous work by other agencies and the GCM.

Initially, all potential diversion routes in the region would be identified including alternative expressways and arterials. The identification of potential diversion routes would be based on the available capacity on the proposed diversion route and the performance of the route for proposed diversions. In addition, the ability to guide traffic around incidents and back onto the primary route of travel would be considered.

Expressway to expressway diversions are currently the most viable opportunities and are currently used in select circumstances such as construction. Expressway to arterial diversions require careful study and consideration and may ultimately prove too costly to fully implement. Potential arterial diversion routes would likely be focused on the identified strategic regional arterials. This effort would build on work previously done for the Kennedy, Dan Ryan and Stevenson Expressways.

Any selected diversion route must provide a total reduction in current travel time from origin to destination. Diversion information must be sufficient to allow the motorist knowledge of the extent of the incident in order to positively affect route selection.

This immediate action supports the transportation management objective of the SEDP and facilitates the integrated corridor operations and related Deployment Action Plan projects.

8.4.3 Regional Guidelines For Priority Vehicle Signal Systems

The purpose of this immediate action was to assist the RTA, service boards, and regional signal agencies in further developing priority vehicle signal systems for the region's bus services and emergency vehicles. The objective was to establish multi-agency support for developing deployment guidelines based on recent and on-going tests and operational concerns. It was felt that such support would be critical to provide standardization and facilitate regional deployments.

The ATTF would assist in the development of these guidelines for use by all involved agencies to insure compatible deployments and to foster cooperative regional system development. This immediate action should undertake the following actions:

- Review test results from the Cermak Road test and Lewis Avenue in Waukegan
- Develop guidelines for further deployments that would include Pace, CTA and others
- Coordinate with the operating agencies to ensure compatibility
- Identify priority corridors and signal locations
- Investigate possible funding for implementations

The guidelines should consider several factors such as the operational requirements, locational parameters, the technologies and others. The follow-on actions would be a series of cooperative projects to assess the feasibility of priority vehicle systems along regionally significant arterials and to determine if design and selected deployment should be undertaken.

This immediate action supports the transportation and transit management objectives of the SEDP and lays the foundation for the signal coordination, signal priority, and related Deployment Action Plan projects.

8.4.4 Dynamic Transit Sign System

This immediate action would assist in the further development and deployment of dynamic transit signing systems. The goal would be to conduct operational tests to inform transit users of static next bus/train times and to foster further development of real-time schedule information as the transit agencies implement AVL systems. The initial prototypical deployments would be a collaborative effort to place transit signs at multi-agency transit centers.

To help accelerate the implementation, this immediate action would provide assistance to the RTA and services boards in determining system requirements and RFP development. The immediate action would review recent implementations by other agencies and vendors, evaluate potential system specifications and processes for integration between the systems, consider the need to integrate current and future systems for both static and dynamic signs, identify transit centers suited to support a prototype, and develop the RFP and provide project letting assistance.

This immediate action supports the traveler information objectives of the SEDP and facilitates the related Deployment Action Plan project.

These four immediate actions have been developed to move the related candidate actions forward. The itinerary planning system, transit signal priority, and active transit signing activities have been completed and the follow-up Deployment Action Plan projects are underway. The diversion corridor immediate action remains to be initiated and Unified Work Program funds have been allocated to begin the screening analysis.

9. DEPLOYMENT ACTION PLAN

9.1 BACKGROUND

The Deployment Action Plan has been developed through the strategic early deployment planning process and is based on regional transportation needs, 2020 RTP goals and objectives, user service priorities, candidate actions which resulted from these priorities, and the long range vision for ITS applications. The Deployment Action Plan is intended to provide an action oriented framework for the deployment of ITS technology and services in northeastern Illinois. It is a cooperative plan which reflects the input of regional stockholders, principally the transportation implementing agencies working through CATS as the Metropolitan Planning Organization for northeastern Illinois.

The Deployment Action Plan is the key element of the SEDP. It represents not only the mainstreaming of ITS into the metropolitan planning process but an initial effort to facilitate the integration and interoperability of existing and proposed ITS deployments in the region. The Deployment Action Plan has been designed to bridge the gap between where the region is today and where it would like to be in the future by focusing on the most effective applications of technology to the transportation system. In addition to considering the existing and emerging ITS initiatives, the Deployment Action Plan has been developed to be consistent with and supportive of the GCM Priority Corridor Program Plan, the Year 2020 Regional Transportation Plan developed by CATS, and the long range vision for ITS developed as part of the SEDP. The SEDP therefore represents a shared vision for regional ITS deployment and identifies a coordinated set of actions to allow the region to achieve the maximum operations, management, and performance benefits from ITS.

The SEDP provides an effective blueprint for ITS development and the Deployment Action Plan takes into account the significant progress that has been made in regional ITS activity and the facts that: 1) a Gateway regional architecture has been defined which is consistent with the National Architecture, 2) the Standards and Protocols for ITS deployment continue to advance, and 3) several regional studies and projects have been undertaken and are now underway to evaluate the costs and benefits of ITS. It is expected that the SEDP and the Deployment Action Plan will not only encourage integration but will also support the increased resources needed to achieve integration of the several existing and developing ITS initiatives in the region.

9.2 CONTEXT FOR DEPLOYMENT ACTIONS

The long range regional ITS vision defines the complete picture of ITS implementation in the region and the broad goals to be achieved by ITS. The immediate actions helped to move ITS deployments forward. The short, medium, and long term deployment actions summarized in this section fill the gap between the existing and ongoing projects and the long range vision.

The Deployment Action Plan was the culmination of evaluating and analyzing ITS resources and needs in northeastern Illinois. The short, medium, and long term Deployment Action Plan is compatible with the regional architecture and implements the regional integration strategy. Selection of these actions drew significantly from extensive one on one interviews with all of the primary and many secondary stakeholders in the region. These discussions generated over 100 project proposals which were narrowed down to represent the highest priority initiatives of the SEDP.

9.2.1 Architecture Context

The Deployment Action Plan was conceived as an integrated approach to regional ITS deployment. Through both the project proposal solicitation and the development of the plan, a series of project types or categories began to emerge. These project types include:

- **Core Infrastructure** – Enabling projects to provide foundational elements.
- **Subregional Hubs** – Regional centers for technology and institutional integration.
- **Integrated Operations** – Operations oriented projects which foster integration across agencies.
- **Information Management** – Projects that support the collection, aggregation, and/or dissemination of transportation information. Applied research and planning efforts will use this information to evaluate specific regional needs and objectives.

Each of the project types answers the question: "How does this project move the region toward the deployment of an integrated regional Intelligent Transportation System?" Each category answers the question differently, and all of the categories are essential.

Similarly, each of the categories defines the architecture context of the project. The National Architecture provides a guide to ITS deployment nationwide with the objectives of consistency and compatibility between systems to support an overall goal of integrated ITS. The Gateway regional architecture for northeastern Illinois adopted by the Strategic Early Deployment Plan serves a similar purpose. The architecture context defines how the project fits in to the regional architecture, and is a useful way to look at the collection of projects which make up the Deployment Action Plan.

9.2.2 Plan Development

Recognizing that a Deployment Action Plan of over 100 projects in addition to the current regional initiatives would be unmanageable, a methodology was developed for prioritizing the projects. The total list of projects was presented, discussed, and evaluated by the ATTF. The ATTF ranked the projects as high, medium, or low priority.

Based on the ATTF input, similar projects were aggregated and ranked by their composite scores. Up to this point, the project concepts submitted through the proposal solicitation process had been presented as discrete projects. This approach allowed the character of the agency recommendations to be preserved initially, even though similar projects may have been identified by multiple stakeholders. Following the initial review of the agency proposals, the projects were aggregated for two reasons: to allow the development of a logical Deployment Action Plan, and to recognize multi-agency support for certain projects which represented as a strong qualitative indicator of sponsorship and fundability.

The results of the aggregation and ranking of the 100 project proposals submitted for consideration for the Deployment Action plan are shown in Table 9-1.

Table 9-1: Deployment Action Plan Projects

PLAN ELEMENT	GROUP AVERAGE	AGENCY	REF #	PROJECT TITLE	AVERAGE
Tollway Hub	2.83	ISTHA	3	Development of a traffic management center	2.83
VMS Deployment	2.75	ISTHA	1	Deployment of VMS	3.00
		FHWA	16	Completion of VMS	2.50
Transit Signal Priority	2.75	CDOT	1	Transit advance signaling operational test	2.75
		RTA	7	Signal priority systems needs assessment	2.75
	2.71	IDOT	10	Surveillance video for ETP vehicles	2.71
Parking Management	2.68	RTA	9	Deployment of transit parking management systems	2.75
		Metra	3	Deployment of transit parking mgmt signs	2.71
		CDOT	8	Parking directional signs	2.57
Interjurisdictional Coordination	2.67	FHWA	6	Interjurisdictional systems	2.67
		DUPAGE	2	Interjurisdictional coordination implementation	2.67
		LAKE	4	Interjurisdictional coordination	2.67
CDOT Data Pipeline	2.67	CDOT	4	Data pipeline to IDOT	2.67
	2.67	IDOT	9	Security video for ETP vehicles	2.67
Smart Corridor	2.65	COOK	2	Expansion of smart corridor technologies	2.86
		IDOT	3	Smart corridor applications	2.75
		CDOT	4	Cicero Avenue smart corridor	2.33
		CTA	1	Transit smart corridor	2.67
Integrated Corridor Operations	2.63	IDOT	21	Integrated corridor operations	2.75
		ISTHA	8	Integrated corridor operations	2.50
Illinois Transit Hub	2.61	RTA	6	Design and development of Illinois transit hub	2.78
		FHWA	3	Transit hub for Gateway	2.67
		CATS	5	Integration of transit information with GCM traffic home page	2.38
	2.57	IDOT	17	Joint traffic operations center (war room)	2.57
	2.57	CDOT	7	Expand low viaduct warning systems	2.57
Fiber Installation	2.50	IDOT	5	IDOT fiber installation	2.50
	2.50	CTA	3	Completion of BSMS	2.50
	2.50	CDOT	2	TMC requirements study	2.50
Active Transit Signing	2.50	RTA	1	Active transit signing prototype deployment	2.50
		RTA	2	Active transit signing functional design	2.63
		CTA	2	Active transit signing	2.63
		Metra	1	Active transit signing	2.50
		RTA	3	Active transit signing full scale deployment	2.25

PLAN ELEMENT	GROUP AVERAGE	AGENCY	REF #	PROJECT TITLE	AVERAGE
Arterial Incident Management	2.50	COOK	1	Lake-Cook incident management	2.50
		DUPAGE	3	Arterial incident management	2.50
AVL for ETP/HELP	2.49	FHWA	4	AVL for Emergency Traffic Patrol	2.71
		IDOT	11	AVL for Emergency Traffic Patrol	2.43
		ISTHA	7	AVL for HELP vehicles	2.33
Expand TSC Coverage	2.44	IDOT	13	Expansion of detection surveillance	2.71
		FHWA	8	Expansion of TSC coverage	2.17
CCTV Deployment	2.43	IDOT	8	Expansion and integration of video surveillance	2.83
		ISTHA	2	Deployment of CCTV	2.60
		LAKE	1	Video detection and surveillance	2.14
		IDOT	19	Video sharing with private ISP	2.14
	2.43	CATS	4	Trip time information on transit sites	2.43
Gateway Completion	2.43	COOK	3	Transportation system monitoring and Gateway interface	2.57
		IDOT	7	Completion of Gateway connectivity	2.29
	2.43	LAKE	2	Countywide communication study	2.43
	2.43	CDOT	3	Expand signal coordination	2.43
	2.33	CATS	2	Regional kiosk	2.33
	2.29	IDOT	14	Integration of closed loop signal systems	2.29
	2.29	DUPAGE	1	Education and outreach	2.29
	2.29	FHWA	14	Transit security enhancements	2.29
	2.29	CATS	6	Partnership with private ISP (e.g., Digital Cities/Sidewalks)	2.29
Data Archival	2.25	FHWA	5	Planning data acquisition from Strategic Regional Arterial closed loop traffic signal systems.	2.38
		ARGONNE	1	Data warehouse/archive system definition	2.43
		ARGONNE	2	Data warehouse/archive system deployment	2.29
		CATS	7	ITS data for CMS, planning and performance monitoring	2.29
		FHWA	1	Planning data acquisition	1.86
	2.25	UIC	5	Simulation platform for congestion routing	2.25
	2.25	CATS	1	Rideshare kiosk	2.25
Mobile VMS Apps	2.17	IDOT	2	Mobile VMS for construction travel time	2.17
		ISTHA	4	Portable VMS for construction delay advisory	2.17
	2.17	FHWA	11	Enhanced ramp metering operation	2.17

PLAN ELEMENT	GROUP AVERAGE	AGENCY	REF #	PROJECT TITLE	AVERAGE
	2.17	IDOT	12	Alternative technologies for traffic data collection	2.17
	2.17	FHWA	2	Zone specific HAR	2.17
	2.13	Metra	2	Train AVL	2.13
	2.13	UIC	1	Development of arterial travel time algorithms (bus probes)	2.13
	2.00	ARGONNE	3	Modeling & analysis for incident detection/congestion on arterials	2.00
	2.00	CATS	3	Intermodal freight ITS	2.00
	2.00	UIC	2	Technical training/certification program	2.00
	2.00	UIC	6	*999 Incident detection times/effectiveness	2.00
	2.00	FHWA	8a	Expansion of tollway traffic management instrumentation.	2.00
	2.00	IDOT	1	Plug and play video construction monitoring	2.00
	2.00	UIC	3	Evaluation of CDOT's signal system needs	2.00
	1.88	RTA	4	IPS public access development	1.88
	1.83	IDOT	6	Development of IDOT ITS vault	1.83
Lane Control Projects	1.82	IDOT	18	Interchange lane control with initial installation at 88/290 interchange	1.83
		FHWA	15	Lane control	1.80
AVL for Snow Removal	1.83	CDOT	6	Enhanced snow command control with GPS	2.00
		LAKE	3	AVL/GPS for snow removal	1.83
		IDOT	4	AVL/GPS for snow removal and maintenance vehicles	1.67
	1.83	CDOT	9	Parking fee collection using AVI	1.83
	1.80	FHWA	7	Integration of additional 911 centers in Gateway	1.80
	1.75	RTA	5	Upgrade of IPS to real time	1.75
	1.71	UIC	5a	Simulation platform for ITS decision support	1.71
	1.67	FHWA	10	Compatibility design for Skyway	1.67
	1.67	ISTHA	6	Alternate uses for AVI transponders	1.67
	1.60	RTA	8	Neighborhood on-demand transit prototype	1.60
	1.50	IDOT	16	Automatic de-icing for reversible lanes	1.50
	1.33	CDOT	5	City transportation services center	1.33
	1.33	IDOT	15	Maintenance inspections with MDT's	1.33
	1.33	ISTHA	5	Deployment of helicopter based CCTV	1.33
	1.33	UIC	4	UIC shuttle bus system	1.33
	1.00	IDOT	20	"Smart" maintenance vehicle	1.00

9.3 DEPLOYMENT ACTION PLAN

The aggregation shown in Table 9-1 indicated a number of projects or programs where significant multi-agency support exists. Based on this matrix and with input for the ATTF, the project team completed the development of the Deployment Action Plan. During these sessions, the project types were developed and the project proposals were refined. Each of the higher ranking projects with an average score of approximately 2.4 or greater was considered. Particular emphasis was placed on those which received multi-agency support. The team recognized the limitations of the high, medium, and low priority ranking. For example, some ATTF members responded by only scoring projects relevant to their agencies, while others ranked the priority of every project relative to their agency's needs. Similarly, some priority rankings reflected a temporal priority and some a strategic priority. The team's discussion and analysis considered the individual scores from the ATTF members to ensure that no key projects with artificially low or high values were misclassified in the development of the plan.

The analytical results and the discussions and input from the ATTF was used to develop the following Deployment Action Plan. Table 9-2 provides an overview of the project recommended as the regional Deployment Action Plan. This table also identifies the planning level costs associated with the project as well as the project time frame. More detailed descriptions on each of these actions are included in Appendix B – Project List.

9.3.1 The Plan Matrix

Section 7 described the ITS vision for northeastern Illinois, both in very high level terms as well as a more specific vision for various elements of the intelligent transportation infrastructure. The Deployment Action Plan includes over 40 discrete short and medium term projects, identified as needs over the next five years. These reflect stakeholder input and represent a cross-section of agencies, modes, and facilities. All of the identified projects are designed to move toward a regional, integrated ITS deployment consistent with the regional Gateway architecture.

The matrix in Table 9-2 maps these short and medium term projects in a temporal schematic. This does not represent a schedule per se, but gives a recommended timeline for the identified projects, particularly where the deployment actions are multi-phase efforts. In addition, the matrix adds a column for long range actions which would be the natural extension of these system elements, and a column which summarizes the SEDP vision in the context of that specific project. This matrix provides a sketch plan for how we move from the short and medium term deployment actions to achieve that vision.

It should be noted that there is not an exact correlation between the long term projected result of the deployment actions and the ultimate vision described in Section 7. This is a natural result of a number of unknowns at this time. In fact, the ultimate realization of the vision is contingent on funding levels and agency priorities, as well as advancements in both ITS and supporting technologies.

However, the matrix provides a road map and is intended to be updated and appended as more projects are accomplished and goals are revised in the coming years. To accomplish the regional vision for technology applications, the matrix, and indeed, the entire plan, must be a living document used as a planning tool.

Table 9-2 also summarizes the cost to implement the projects recommended in the Deployment Action Plan. These are planning level costs for the projects and total $130.1 million which include $53.5 million for short term, $52.6 million for medium term, and $24.0 million for long term actions.

Table 9-2: Summary of Deployment Action Plan Project Costs and Time Lines

CATEGORY	SHORT TERM (1999-2000)	MEDIUM TERM (2001-2003)	LONG TERM (2004-2009)	VISION (2010+)
Core Infrastructure				
Fiber Installation				
IDOT		IDOT Fiber (I-290E to Loop) - $1.13M	IDOT Fiber (I-290W to I-294, I-90 to tollway) - $3M est.	Regional fiber optic coverage along all major free/toll-ways
ISTHA	Tollway fiber network			
CTA		Red Line (Loop to Howard) - $660K	Brown Line - $1.5M Blue Line - $5.1M	
CCTV Surveillance				
IDOT	IDOT CCTV (Circle Interchange area, I-55) - $800K		IDOT CCTV (I-290W to I-294, I-90 to tollway) - $2M	Full CCTV coverage along all major freeways
ISTHA	Continued installation of CCTV at key locations - $1M	Continued installation of CCTV at key locations - $1M		Full CCTV System Coverage
Lake County Arterials	Demonstration installations at eight locations - $300K	Future deployment phase	Future deployment phase	Coverage of key intersections throughout County
VMS Deployment				
IDOT	Deployment of additional VMS locations - $1.5M	Deployment of additional VMS locations - $1.5M		VMS at strategic locations throughout the freeway system
ISTHA	Deployment of 22 initial VMS locations - $5.5M	Deployment of 10-15 additional VMS locations - $3.25M		VMS at strategic locations throughout the tollway system
Parking Management System Pilot	Phase II, Parking Management System design and prototype - $350K	Phase III, Parking Management System limited deployment - $400K plus implementation cost (unavailable at this time)	Future deployment of Parking Management Systems	Pending evaluation of pilot
CDOT Data Pipeline	CDOT Data Pipeline implementation (cost included in CDOT TMC)			Interconnectivity of all traffic management centers and the Gateway
Intelligent Transit Vehicles and Systems				
CTA BECS/BSMS	Equip 1,473 buses with MDT, GPS Equip 264 buses with BSMS Upgrade BECS buses to BSMS - $34.1M	Install BSMS on remainder of fleet - $4M		Fully instrumented fleet with integrated AVL and management system
Pace Intelligent Bus System	Design of Pace Intelligent Bus System - $1M	Implementation of Pace Intelligent Bus System - $7M Equip private carriers $2M		Fully instrumented fleet with integrated AVL and management systems

CATEGORY	SHORT TERM (1999-2000)	MEDIUM TERM (2001-2003)	LONG TERM (2004-2009)	VISION (2010+)
Paratransit Management System	Design of Pace Paratransit Management System - $200K	Implementation of Pace Paratransit Management System - $1.2M		
Subregional Hubs				
Gateway Completion	Gateway Core: CTA, District 15, Northwest Central Dispatch, ISTHA, *999, TSC, Chicago 911, ETP, INDOT, WISDOT	Gateway Enhancements: DuPage County, IDOT District 1 CAD, Lake County, CDOT, RTA, O'Hare Airport, CDSI, Borman $3M	Gateway Deployment $3M	Interconnectivity of all traffic management centers and the Gateway
Development of Transit Hub	Phase I, Feasibility Study - $150K	Phase II, Conceptual Design - $150K	Phase III, Development and Integration of Transit Hub - $400K	Expand traveler information system for transit users
Development of TMCs				
ISHTA	Continued Expansion of ISTHA TMC - $4M	Continued Expansion of ISTHA TMC - $2M		Integrated architecture of regional traffic management centers through the Gateway
CDOT	Design of CDOT TMC - $500K	Integration of CDOT TMC - $4M		
Lake County		Lake County TMC $1.8M		
DuPage County	Feasibility/concept - $400K	DuPage County TMC $1.8M		
Other counties				
Integrated Operations				
Expansion of Cicero Smart Corridor	Phase I $4 million	Phase II $2.3 M Phase III $2.3 M		Migration of smart corridor elements throughout the region
Interagency Signal Coordination	Pilot deployment in two corridors - $700K			Interagency coordination on key arterials throughout the region
Integrated Corridors (Pilot & Deployment)	Pilot $3.5 M	Deployment $3.5 M	Development of future corridors	Integrated corridor operations regionally
Advance Transit Signaling	Pilot deployment of 10 signals - $75K			Implement design standards pending evaluation of pilot deployment
Transit Signal Priority				
RTA Regional Transit Signal Priority Integration Plan	Inventory, location selection, simulation $560K Technology analysis and selection $300K	Initial implementation -$200K plus cost per vehicle/signal (unknown at this time)	Future implementation of interoperable transit signal priority	Regionwide deployment of transit signal priority along key routes
CTA Transit Signal Priority	Deploy at 200 signals - $1M	Deploy at 600 signals - $3M	Deploy at 200 signals - $1M	
Arterial Incident Management (Lake-Cook Road)	Phase II, Engineering Analysis $500K	Phase III, Construction $2 M		Regional arterial incident management strategy

CATEGORY	SHORT TERM (1999-2000)	MEDIUM TERM (2001-2003)	LONG TERM (2004-2009)	VISION (2010+)
Information Management				
RTA Regional Kiosk	Design study - $50K	Design and pilot deployment - $500K		Pending evaluation of pilot deployment
Active Transit Signing				
RTA Active Transit Signing Design	Phase I, Short Term Plan $50K Phase II, Design, Develop, Test Prototype $100K	Phase III, Limited implementation $350K plus implementation cost (not available at this time)	Future expansion of system	Integrated traveler information delivery through active signing at regional transit stations.
CTA Active Transit Signing		Deploy 600 active signs - $6M	Deploy 400 active signs - $4M	
Travel Information Archive	Phase 1, Requirements $150K Phase 2, Basic Implementation $225K	Phase 3, Modeling Support, $325K		Common repository and archive for regional travel data across all modes

	SHORT TERM	MEDIUM TERM	LONG TERM	TOTAL
Cost	**$61.0M**	**$55.4M**	**$20.0M**	**$136.4M**

9.3.2 Core Infrastructure

Core infrastructure are enabling projects. These projects provide the building blocks for subsequent functionality of other regional initiatives. The deployment of integrated ITS is predicated on a solid foundation of core infrastructure to enable integration – both locally and regionally.

Given the region's long involvement with ITS, the core infrastructure for the region is substantial. However, there is a significant amount of infrastructure yet needed. Some of this infrastructure covers areas which have not traditionally been instrumented, such as the tollway system. Other projects reflect new technology which is changing the state of the practice in ITS such as fiber optic communications.

The following core infrastructure elements are recommended for deployment in the SEDP plan

- **Tollway VMS** – A number of ITS projects for the tollway were listed as candidate projects resulting from current ITS initiatives underway at the tollway. ISTHA is developing a deployment plan for the tollway's overall ITS needs. The VMS project listed here reflects unanimous support for the project from the ATTF. Specifics for this project continue to be developed by the tollway. This project is a short term deployment action with additional deployments under consideration for the medium term.

- **IDOT VMS Expansion** – The IDOT VMS subsystem currently includes 22 signs. IDOT continues to add VMS signs, typically in conjunction with roadway improvements. IDOT plans for a total of 35 signs in District 1. This project is listed as a medium term deployment action.

- **Fiber Installation for Core IDOT Implementation** – This initial fiber optic interconnectivity ranked highly among the ATTF and represents IDOT's migration to a high capacity communications technology for ITS. This project will serve as a key enabling technology for future needs, including CCTV cameras and high speed control center interconnection. IDOT has planned for future land-based communication upgrades by installing empty ducts in median walls as expressways are reconstructed. The two highest priority communication links are related to the TSC. The TSC is located along I-290 halfway between downtown Chicago and the Tri State Tollway. A connection from the TSC west to the Tri State will link the TSC to the tollway's fiber backbone and therefore to the Gateway. A connection to the east will create a high speed, dedicated wireline link to the CCTV project at the Circle Interchange near downtown to the TSC. IDOT does not expect to replace all existing communications with fiber in the near or medium term; rather, fiber will be installed as appropriate on new ITS projects. The TSC and Circle Interchange connections are high priority projects and short term deployment actions. The systemwide connections are long term deployment actions. CTA proposes fiber optic installations on the Red Line from the Loop to Howard and on the Blue and Brown Lines. The SEDP recommends these projects as medium and long term actions.

- **CCTV Implementation** – These candidate projects encompass several agencies and approaches and represents an important evolution in ITS in northeastern Illinois – the deployment of video surveillance as part of the ITS toolbox. These projects will be implemented as follows: ISTHA CCTV is being implemented as part of the tollway's ITS plan. Additional installations are expected in the short and medium terms. The deployment of CCTV on the tollway will be phased as short and medium term actions with full CCTV coverage as a long term action. Lake County has tested video surveillance along an arterial for both surveillance and detection and is proceeding with more widespread deployment based on the results of the test. The Lake County CCTV projects are short and medium term actions. IDOT will examine planned CCTV projects to determine the appropriate rate of expansion of CCTV for District 1. It is expected that three more CCTV site-specific projects will be implemented in the next ten years. IDOT is also examining possible public/private

partnerships for video sharing. The SEDP recommends that the opportunity to develop CCTV projects as public/private partnerships with traffic reporting services should be investigated further.

- **Parking Management Sign Systems** – Three projects were identified in the candidate project list related to parking management signing. The agencies proposing them were RTA, Metra, and CDOT. A transit example is the RTA/Metra project that will develop electronic signage along major roadways to inform motorists of parking availability. CDOT proposals referred to general parking availability in the downtown area and include an active parking information signage component in the Cicero Smart Corridor project connecting to Midway Airport. Given the level of interest in the candidate projects and their ranking (an average of 2.68), the SEDP recommends the development of a pilot project for dynamic parking management signing as a short term deployment action. RTA has issued a contract for this initial parking management study. Subsequent deployment recommendations for specific implementations will be based on the pilot project results.

- **CDOT Datapipe Connectivity** – Originally listed as the CDOT Data Pipeline, this project provides connectivity from the CDOT traffic management center (subregional hub) in the Daley Center to the Illinois hub of the Gateway in Schaumburg. This is a short term action which will be undertaken in conjunction with the development of the CDOT TMC.

- **CTA Bus Emergency Communications System/Bus Service Management System (BECS/BSMS)** – The CTA Bus Service Management System is a comprehensive communications system designed to support the delivery of transit services by improving reliability, eliminating platooning, and providing real time passenger information. The BECS/BSMS project would equip the entire CTA bus fleet with mobile data terminals and GPS location. Initially a subset of the fleet would have full BSMS capability including schedule adherence and Advanced Vehicle Location (AVL). This project provides critical core infrastructure to support operations functions such as signal priority and connection protection and information functions such as active transit signing. The SEDP recommends this project as short, medium, and long term actions.

  CTA's current $34.1 million project will equip 1,473 of 1,872 buses with mobile data terminals and GPS location devices, as well as 264 buses with new radios and AVL capability with schedule adherence functions. Also funded, but not underway is the upgrade of BECS buses to BSMS buses in 2000 for the balance of the fleet not slated for replacement. Installation for new buses with BSMS is also funded for 2000-2002. The related projects in the integrated operations and traveler information categories are not funded. These include the conversion of 200 traffic signals per year beginning in 2000 up to 1,000 total signals and the deployment of up to 200 active transit signs per year. The SEDP recommends the funding for these projects in addition to the completion of the BECS and BSMS projects.

- **Pace Intelligent Bus System** – This Pace initiative will be implemented as a short term action. It will deploy a system incorporating Advanced Vehicle Location (AVL) and fleet management technologies to optimize and enhance transit operations.

- **Pace Paratransit Management System** – Pace has identified this project as a medium term initiative. It will deploy integrated mobile data terminals with Advanced Vehicle Location (AVL) in conjunction with an automated scheduling system.

In addition to these deployment actions, the SEDP supports significant initiatives to develop core infrastructure as proposed in CDOT's Advantage 21 plan. These include the CDOT traffic signal system expansion and communications network, known as ChicagoNET.

9.3.3 Subregional Hubs

Subregional hubs are centers for technology and institutional integration. These projects include physical and/or virtual centers which support system data, information sharing, and/or control functions across agency, division, or functional boundaries. The implementation of the core elements of the Gateway, currently underway, provides an excellent foundation for regional integration. The subregional hubs represent the development of centers within northeastern Illinois for connection to the Gateway through the Illinois Hub and for integration based on the Gateway regional architecture.

- **Completion of the Gateway** – These projects begin following the completion of the current implementation of the Gateway core system and span the next ten years. Successive contracts will build a regional transportation resource/hub for the GCM corridor. The Illinois Hub component of the Gateway provides the physical connection for the subregional hubs serving northeastern Illinois. This activity is recommended as a medium term deployment action although some projects may begin sooner.

- **Development of Transit Hub** – In addition to the overall plan for Gateway completion described above, the development of the regional transit hub is a near term priority. This project includes the design and development of the transit hub, the interface and connectivity to the Illinois Hub of the Gateway, and the interfaces to each of the regional service boards. The RTA's itinerary planning system currently being implemented will serve as the basis for the transit hub. The design and development of the transit hub is recommended as a phased short, medium, and long term deployment action project.

- **Development of ISTHA Center** – ISTHA is currently in the implementation phase of deploying ITS along tollway facilities. This project includes the tollway traffic management center, the central hardware and software, and the establishment of an interface with the Gateway. Continued expansion of traffic management center capabilities is expected in the short and medium terms.

- **Development of CDOT Hub** – The CDOT hub is an essential element of the regional ITS which is being developed under the CDOT's Advantage 21 program. This project will include the CDOT traffic management system and interface to the Gateway. The conceptual design of the CDOT Hub is a short term action and deployment is a medium term action.

- **Development of Countywide Centers** – The Gateway regional architecture supports the development of countywide centers for interface of regional signal agencies to the Gateway. DuPage Mayors and Managers has completed their countywide study which includes recommendations for integration and coordination of the multiple signal systems and agencies within the County. That program is currently in a pilot phase for inter-agency signal coordination. Signal coordination will serve as a basis for the development of a countywide center or hub. A feasibility and concept development study for a DuPage County traffic management center is recommended as a short term action with design and deployment recommended as a medium term action dependent on the results of the feasibility study. Lake County has proposed a feasibility and concept study for a traffic management center. This is recommended as a short term action with design and deployment of a Lake County center recommended as a medium term action based on the feasibility and concept results. This deployment action may evolve into multiple projects over time. Additional subregional centers in other counties are recommended as a medium term deployment action to allow the maturation of the Gateway implementation and the further development of local ITS in the northeastern Illinois counties.

9.3.4 Integrated Operations

These are projects which involve operational interface and integration between agencies or divisions within agencies. These projects help to realize the true potential of ITS. Once the core infrastructure is in place and operating as part of a regional ITS solution, the integrated operations optimize the solution by using information and control techniques to accomplish multiple objectives. For example, transit signal priority solutions use the signal system infrastructure to optimize the travel times and throughput of transit vehicles and persons. The following are recommended deployment actions for integrated operations:

- **Smart Corridor** – No less than four agencies recommended a "Smart Corridor" project. In the context of the SEDP, a smart corridor project would involve multiple agencies and modes of transportation. An example would be a state route in the urban area served by bus and rail service. The corridor would be instrumented with high levels of performance monitoring such as dense detection and video surveillance. The corridor would also feature strong communications support for telemetry, video, and traveler information communications. The corridor would serve as a test bed and proving ground for the integrated deployment and assessment of new technologies. The corridor could provide performance metrics for both standalone and integrated operations with other technologies. Not only would the corridor provide a "regional showcase" for ITS technologies, but fledgling technologies could be proven here before widespread deployment in the region. The smart corridor project is recommended as a multiphase expansion of a joint IDOT and CDOT project on Cicero Avenue over the short and medium term.

- **Interagency Signal Coordination –** Interjurisdictional coordination of signal systems would enhance the operation and performance of major arterials in the region. This project concept has been envisioned since the inception of the SEDP project and was recommended by three agencies. The SEDP recommends pilot deployment of interagency coordination in ten arterial corridors as a short term action based on the results of the DuPage Mayors and Managers' study.

- **Integrated Corridor Operations** – Different from the "smart corridor" project, integrated corridor operations refers to the joint operation of expressway and parallel arterial routes. One recommended corridor included the Tri-State Tollway and US 41 Highway. The development of this corridor as an integrated corridor is recommended as a short term deployment action.

- **Transit Signal Priority –** IDOT, Pace, and CTA have successfully tested transit signal priority in the Cermak Road demonstration project. The SEDP recommends further deployment of transit signal priority at selected locations. This project includes necessary interagency agreements and should establish requirements for transmitting the bus approach to the signal controller. This project is recommended as a short term action. Additional integrated operations corridors are recommended as medium term and long term actions.

- **Arterial Incident Management** – Arterial incident management can include many elements, both institutional and technology based. Based on the preliminary analysis of arterial incident management along Lake-Cook Road, the SEDP recommends a short term deployment action for the engineering of an arterial incident management system on Lake-Cook Road. Construction is recommended as a medium term action. This includes implementation of arterial incident management strategies. Following that implementation, other corridors and agencies should be considered for expansion of the arterial incident management program.

9.3.5 Information Management

Information management projects address the aggregation, storage, retrieval, and dissemination of the enormous volume of data generated by ITS systems. These elements are key in maximizing the effectiveness of ITS deployments. This area includes traveler information as well as archiving of operations and performance data. This is an area with significant potential for academic and research institution involvement in the collection , storage, and analysis of ITS data and for private involvement in the dissemination of information collected from regional transportation agencies.

- **Active Transit Signing** – As an extension of the pilot immediate action of the SEDP currently underway as an RTA project, the full deployment of active transit signing was recognized by the ATTF as a priority deployment action. Based on the results of the pilot demonstration, active transit signing is recommended throughout the regional transit systems as short, medium, and long term deployment actions.

- **Regional Kiosk** – RTA anticipates moving forward with a plan for the design, development, and deployment of a regional kiosk system. The kiosks will provide multi-modal traveler information, including transit itineraries and travel times throughout the region. The regional kiosk system project would include evaluation of a range of technologies. A design study for the regional kiosk project is recommended as a short term action. Pilot deployment is recommended as a medium term action.

- **Travel Information Archive** – Combining an information management function with a research and planning opportunity, Argonne National Laboratories and the University of Illinois at Chicago have identified a project for the travel information archive. The archive will capture relevant information from the Gateway on a current basis and provide a means to access and analyze historical data for planning and modeling purposes. To create a comprehensive travel information archive, it will be important to gather information on arterials as well as freeways. The feasibility of gathering data from the many closed-loop signal systems in the region must be considered. A requirements study and basic implementation are recommended as short term actions. Full deployment and modeling support for the travel information archive is recommended as a medium term deployment action.

9.3.6 Research and Planning

Research and planning projects are those needed to assess or develop new technology applications for the region. While much of the ITS technology development is carried out by private enterprise or federally sponsored research, there is a need for technology application development for specific regional needs. In addition, with national laboratory and university resources in the region – even pure technology research is possible. With the exception of the travel information archive project listed under information management, no research and planning projects were included in the Deployment Action Plan. However, this important area is included for future consideration.

9.4 AN INTEGRATED APPROACH

The Gateway architecture supports several levels of integration: levels 0, 1, 2, 3, and 4.

- **Level 0 –** Stand-alone operation, no connectivity between the individual system and the Gateway.

- **Level 1 –** Data export, read-only data is shared between the individual systems and the Gateway, but it is not formatted for insertion into system databases.

- **Level 2 –** Data sharing, data is shared between the individual systems and the Gateway in pre-defined data formats.
- **Level 3 –** Data sharing with control, data and limited control is shared between individual systems and the Gateway using common data formats.
- **Level 4 –** Fully integrated, all system functions and data are seamlessly networked with the Gateway.

Table 9-3 represents a suggested level of integration for each project recommended in the Deployment Action Plan. In general, as you move to the right in the matrix, or into the future, the projects are proposed for higher target levels of integration. These suggested levels of integration represent starting points for further refinement as specific projects are defined. This matrix demonstrates how northeastern Illinois is moving toward integrated ITS solutions under the Gateway regional architecture.

Table 9-3: Projects Integration Levels

CATEGORY	SHORT TERM (1999-2000)	MEDIUM TERM (2001-2003)	LONG TERM (2004-2009)	VISION (2010+)
Core Infrastructure				
Fiber Installation				
IDOT		*LEVEL 4:* IDOT Fiber (I-290E to Loop)	*LEVEL 4:* IDOT Fiber (I-290W to I-294, I-90 to tollway).	*LEVEL 4:* Regional fiber optic coverage along all major free/toll-ways
ISTHA	*LEVEL 4:* Tollway fiber network			
CTA		*LEVEL 4:* Red line (Loop to Howard)	*LEVEL 4:* Brown Line *LEVEL 4:* Blue Line	
CCTV Surveillance				
IDOT	*LEVEL 2:* IDOT CCTV (I-290 E to Loop, I-55)		*LEVEL 3:* IDOT CCTV (I-290W to I-294, I-90 to tollway)	*LEVEL 4:* Full CCTV coverage along all major freeways
ISTHA	*LEVEL 2:* Continued installation of CCTV at key locations	*LEVEL 3:* Continued installation of CCTV at key locations		*LEVEL 4:* Full CCTV System Coverage
Lake County Arterials	*LEVEL 1:* Demonstration installations at four locations	*LEVEL 2:* Future deployment phase	*LEVEL 3:* Future deployment phase	*LEVEL 4:* Coverage of key intersections throughout County
VMS Deployment				
IDOT	*LEVEL 2:* Deployment of additional VMS locations	*LEVEL 3:* Deployment of additional VMS locations		*LEVEL 4:* VMS at strategic locations throughout the freeway system
ISTHA	*LEVEL 2:* Deployment of 22 initial VMS locations	*LEVEL 3:* Deployment of 10-15 additional VMS locations		*LEVEL 4:* VMS at strategic locations throughout the tollway system
Parking Management System Pilot	*LEVEL 2:* Phase II, Parking Management System design and prototype	*LEVEL 2*: Phase III, Parking Management System Limited Deployment	*LEVEL 4:* Future deployment of Parking Management Systems	Pending evaluation of pilot
CDOT Data Pipeline	*LEVEL 2:* CDOT Data Pipeline implementation			*LEVEL 4:* Interconnectivity of all traffic management centers and the Gateway

CATEGORY	SHORT TERM (1999-2000)	MEDIUM TERM (2001-2003)	LONG TERM (2004-2009)	VISION (2010+)
Intelligent Transit Vehicles and Systems				
CTA BECS/BSMS	*LEVEL 3:* Equip 1,473 buses with MDT, GPS *LEVEL 3:* Equip 264 buses with BSMS *LEVEL 3:* Upgrade BECS buses to BSMS	*LEVEL 3:* Install BSMS on remainder of fleet		*LEVEL 3:* Fully instrumented fleet with integrated AVL and management system
Pace Intelligent Bus System	*LEVEL 3:* Design of Pace Intelligent Bus System	*LEVEL 3:* Implementation of Pace Intelligent Bus System		*LEVEL 3:* Fully instrumented fleet with integrated AVL and management systems
Paratransit Management System	*LEVEL 3:* Design of Pace Paratransit Management System	*LEVEL 3:* Implementation of Pace Paratransit Management System		
Subregional Hubs				
Gateway Completion	*LEVEL 3:* Gateway Core: CTA, District 15, Northwest Central Dispatch, ISTHA, *999, TSC, Chicago 911, ETP, INDOT, WISDOT	*LEVEL 3:* Gateway Enhancements: DuPage County, IDOT District 1 CAD, Lake County, CDOT, RTA, O'Hare Airport, CDSI, Borman $3M	*LEVEL 4:* Gateway Deployment $3M	*LEVEL 4:* Interconnectivity of all traffic management centers and the Gateway
Development of Transit Hub	*LEVEL 3:* Phase I, Feasibility Study	*LEVEL 3:* Phase II, Conceptual Design	*LEVEL 3:* Phase III, Development and Integration of Transit Hub	*LEVEL 4:* Expand traveler information system for transit users
Development of TMCs				
ISHTA	*LEVEL 4:* Continued Expansion of ISTHA TMC	*LEVEL 4:* Continued Expansion of ISTHA TMC		*LEVEL 4:* Integrated architecture of regional traffic management centers through the Gateway
CDOT	*LEVEL 4:* Design of CDOT TMC	*LEVEL 4:* Integration of CDOT TMC		
Lake County		*LEVEL 4:* Lake County TMC		
DuPage County	*LEVEL 4:* Feasibility/concept	*LEVEL 4:* DuPage County TMC		
Other counties				
Integrated Operations				
Expansion of Cicero Smart Corridor	*LEVEL 2:* Phase I	*LEVEL 3:* Phase II Phase III		*LEVEL 4:* Migration of smart corridor elements throughout the region
Interagency Signal Coordination	*LEVEL 3:* Pilot deployment of two corridors			*LEVEL 3:* Interagency coordination on key arterials throughout the region

CATEGORY	SHORT TERM (1999-2000)	MEDIUM TERM (2001-2003)	LONG TERM (2004-2009)	VISION (2010+)
Integrated Corridors (Pilot & Deployment)	*LEVEL 2:* Pilot	*LEVEL 3:* Deployment	*LEVEL 4:* Development of future corridors	*LEVEL 4:* Integrated corridor operations regionally
Advance Transit Signaling	*LEVEL 2:* Pilot deployment of 10 signals			*LEVEL 3:* Implement design standards pending evaluation of pilot deployment
Transit Signal Priority				
RTA Regional Transit Signal Priority Integration Plan	*LEVEL 3:* Inventory, location selection, simulation Technology analysis and selection	*LEVEL 3:* Initial implementation	*LEVEL 4:* Future implementation of interoperable transit signal priority	*LEVEL 4:* Region-wide deployment of transit signal priority along key routes
CTA Transit Signal Priority	*LEVEL 3:* Deploy at 200 signals	*LEVEL 3:* Deploy at 600 signals	*LEVEL 4:* Deploy at 200 signals	
Arterial Incident Management (Lake-Cook Road)	*LEVEL 3:* Phase II, Engineering Analysis	*LEVEL 3:* Phase III, Construction		*LEVEL 4:* Regional arterial incident management strategy
Information Management				
RTA Regional Kiosk	*LEVEL 2:* Design study	*LEVEL 2:* Design and pilot deployment		*LEVEL 3:* Pending evaluation of pilot deployment
Active Transit Signing				
RTA Active Transit Signing Design	*LEVEL 2:* Phase I, Short Term Plan Phase II, Design, Develop, Test Prototype	*LEVEL 2:* Phase III, Limited implementation	*LEVEL 3:* Future expansion of system	*LEVEL 4:* Integrated traveler information delivery through active signing at regional transit stations.
CTA Active Transit Signing		*LEVEL 3:* Deploy 600 active signs	*LEVEL 3:* Deploy 400 active signs	
Travel Information Archive	*LEVEL 2:* Phase 1, Requirements Phase 2, Basic Implementation	*LEVEL 2:* Phase 3, Modeling Support		*LEVEL 4:* Common repository and archive for regional travel data across all modes

9.5 A FUNDED PLAN

Many of the short term and medium term deployment actions are already funded, a strong indication of the commitment in the region to continuing ITS deployment. However, to realize the vision, much more funding is needed, both in the short term, and particularly leading into the five to ten year time frame. The SEDP has addressed the funding needs for ITS through the regional planning process. This funding planning has two advantages. The first advantage, of course, is to be aware of the project needs and to be prepared with proper levels of funding, because many of the funding sources require a long lead time. Secondly, the funding plan will demonstrate that a viable plan is in place, that project priorities have been considered, and that this overall program is a wise investment for the region's benefit. This consolidated plan will lend credibility to the overall ITS initiative. The SEDP can be used to support regional agencies as they seek to funding necessary to implement an integrated program of ITS deployment.

The work performed under the SEDP project is a beginning of that process. Table 9-4 provides an indication of each project's funding levels and whether it is currently funded or not. These percent funded values are then totaled at the bottom of the table for each time frame and the unmet needs identified.

As shown in Table 9-4, approximately 85% of sort term needs, 34% of medium term needs, and 25% of long term needs have been funded for an overall level of 55%. But, this means that some $59.7M of unmet needs remain in order to fully implement the recommended Deployment Action Plan.

This table gives an indication of the percentage of funding committed during each time frame. However, the funding planning process should not end here. The funding needs must be constantly updated because this picture changes regularly as new projects are conceived, new funding sources are made available, and better information on costs are developed. The funding plan must be fully developed in an on-going initiative to provide good, accurate, and current information to regional planning and funding agencies in support of the continuation of ITS in northeastern Illinois.

Table 9-4: Project Funding Levels and Unmet Need

CATEGORY	SHORT TERM		MEDIUM TERM		LONG TERM	
	TOTAL	% FUNDED	TOTAL	% FUNDED	TOTAL	% FUNDED
Core Infrastructure						
Fiber Installation						
IDOT			1,130,000	70%	3,000,000	20%
ISHTA						
CTA			660,000	0%	6,600,000	80%
CCTV Surveillance						
IDOT	800,000	50%			2,000,000	20%
ISTHA	1,000,000	0%	1,000,000	0%		
Lake County Arterials	300,000	80%		20%		0%
VMS Deployment						
IDOT	1,500,000	100%	1,500,000	50%		
ISTHA	5,500,000	100%	3,250,000	0%		
Parking Management System Pilot	350,000	20%	400,000	0%		0%
CDOT Data Pipeline		80%				
Intelligent Transit Vehicles and Systems						
CTA BECS/BSMS	34,100,000	100%	4,000,000	100%		
Pace Intelligent Bus Systems	1,000,000	100%	9,000,000	55%		
Paratransit Management System	200,000	100%	1,200,000	70%		
Subregional Hubs						
Gateway Completion		100%	3,000,000	70%	3,000,000	0%
Development of Transit Hub	150,000	100%	150,000	20%	400,000	0%
Development of TMCs						
ISTHA	4,000,000	100%	2,000,000	0%		
CDOT	500,000	100%	4,000,000	0%		
Lake County			1,800,000	0%		
DuPage County	400,000	100%	1,800,000	0%		
Other Counties						

CATEGORY	SHORT TERM		MEDIUM TERM		LONG TERM	
	TOTAL	% FUNDED	TOTAL	% FUNDED	TOTAL	% FUNDED
Integrated Operations						
Expansion of Cicero Smart Corridor	4,000,000	80%	4,600,000	50%		
Interagency Signal Coordination	700,000	70%				
Integrated Corridors (Pilot & Deployment)	3,500,000	70%	3,500,000	50%		0%
Advance Transit Signaling	75,000	70%				
Transit Signal Priority						
RTA Regional Transit Signal Priority Integration Plan	860,000	100%	200,000	30%		0%
CTA Transit Signal Priority	1,000,000	0%	3,000,000	0%	1,000,000	0%
Arterial Incident Management (Lake-Cook Road)	500,000	100%	2,000,000	50%		
Information Management						
RTA Regional Kiosk	50,000	100%	500,000	30%		
Active Transit Signing						
RTA Active Transit Signing Design	150,000	100%	350,000	30%		0%
CTA Active Transit Signing			6,000,000	0%	4,000,000	0%
Travel Information Archive	375,000	80%	325,000	50%		
Total Project Costs	61,010,000		55,365,000		20,000,000	
Total Amount Funded	**56,112,500**		**18,988,500**		**6,280,000**	
Percent of Category Funded		**92%**		**34%**		**31%**

Grand Total Project Cost: **136.4 million**
Grand Total Funded: **81.4 million**

Percent Grand Total Funded: **60%**

Final Report – Appendices

NORTHEASTERN ILLINOIS
STRATEGIC EARLY DEPLOYMENT PLAN FOR
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Prepared for: **Chicago Area Transportation Study**

Consultant Team: **TransCore/JHK**
Barton-Aschman Associates, Inc.
HNTB

June 1999

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Memo No. 4:	ITS-Related Activities in the Region	April 1997
Memo No. 5:	Alternative ITS Technologies	July 1997
Memo No. 6:	Regional ITS: Status and Perspectives	August 1997
Memo No. 7:	Immediate Deployment Action Plan	January 1998
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APPENDIX B. – PROJECT LIST

B.1 CORE INFRASTRUCTURE

Project Title **Fiber Installation**	
Project Category: Core Infrastructure	*Deployment Time Frame:* Short and Medium
Location Region-wide (see area map on following page)	
Description Install fiber optic cable in existing and new conduit along a core route interconnecting the TSC, the reversible lanes, and the IDOT communications center along I-55, I-94, Circle interchange, and I-294. The existing and proposed routes are shown in Figure B-1.	
*ITS Objectives Addressed** 1	*User Services Addressed* 1A, 1B, 1C, 1D, 1E, 2A, 2B, 2C, 2D, 2E, 2F, 3A, 3B, 3C, 3D, 4A, 4B, 4C, 4D
Recommended Lead Agency IDOT	*Other Involved Agencies* CDOT, ISTHA
Technical Elements This project involves the installation of fiber optic cable in existing and new conduit along the route described above and shown on the following page. A design producing plans, specifications, and estimates will be required, as this will be an IDOT construction project. The project also will require splicing and enclosures, connectivity from the route to various centers and devices, and end equipment to support the transmission of data, voice, and video.	
Operational Requirements This project will interconnect the IDOT Traffic Systems Center, the IDOT Comm Center, and the Illinois Gateway hub, allowing exchange of center data and connectivity to the Illinois Hub of the Gateway. In addition, the route includes a significant number of freeway miles, allowing the interconnection of existing and future field devices which should be considered in its design. As a core infrastructure element, this is an enabling work and should not require additional staff time for operations, but maintenance requirements should be considered in the overall program.	
Hardware, Software, Communications Requirements The project will include the cable, necessary electronics for fiber transmission and multiplexing and encoding, determined by the actual design. Software modifications should be minimal as the hardware should support standard data, voice, and video communications interfaces to existing systems. Some modifications may be required to accommodate field devices if those are included in the initial installation.	
Deployment Schedule This project should have a design schedule of six months, a procurement cycle of six months, and a construction period of six to nine months.	
Capital Cost $980,000 (7 miles at $140,000 per mile)	
Engineering Cost $147,000	*O&M Cost* $98,000 (maintenance only)
Recommended Funding Sources CMAQ, STP, NHS	

*Based on Deployment Action Memorandum #1, Section 2.7, "Agenda for ITS Deployment"

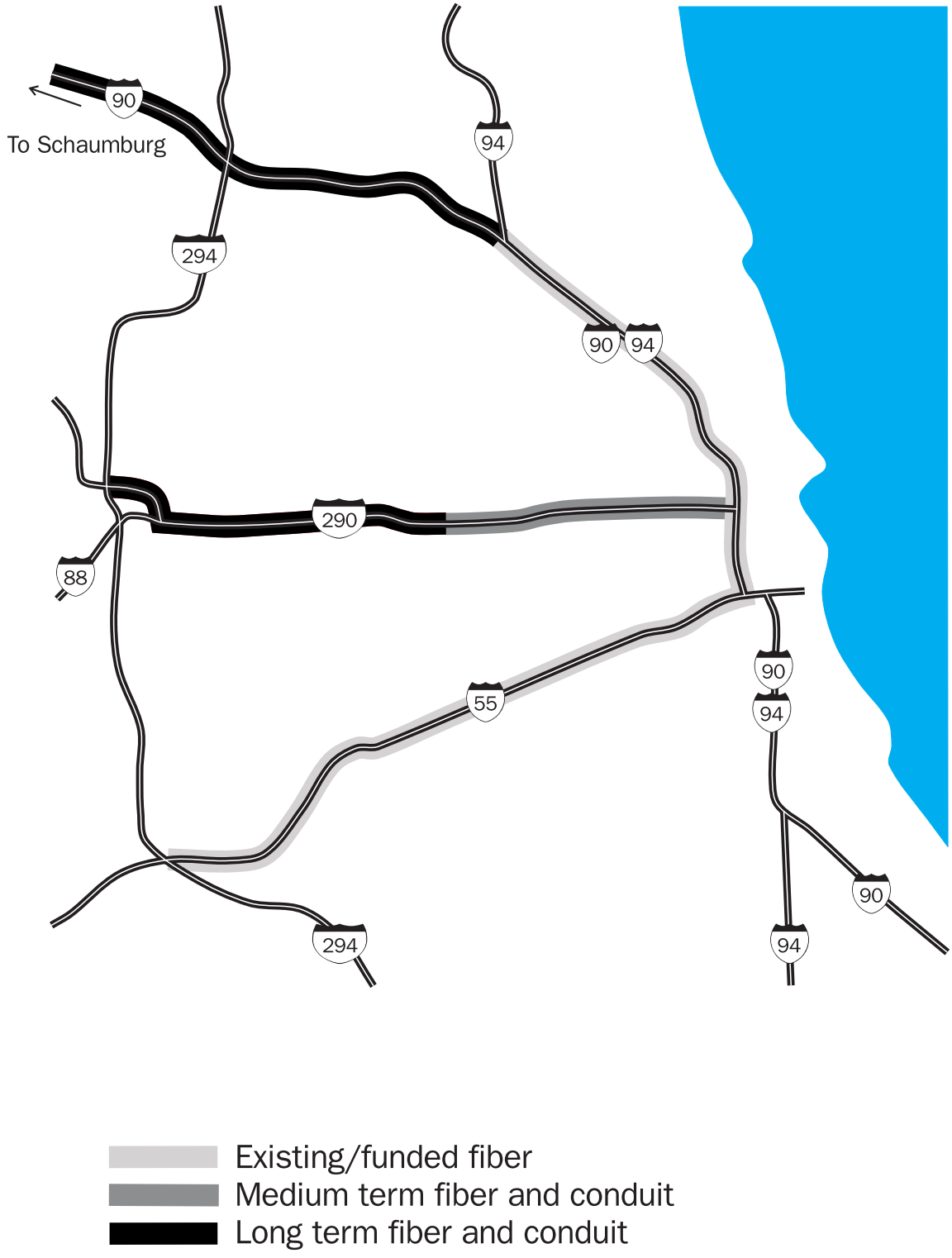

Figure B-1: Fiber Optic Deployment in Northeastern Illinois

Project Title **CCTV Surveillance**	
Project Category: Core Infrastructure	*Deployment Time Frame:* Short and Medium
Location See following figure	
Description Expand and integrate video surveillance along IDOT facilities to enhance incident verification and response and congestion assessment. See map in Figure B-2 for area of coverage.	
ITS Objectives Addressed 2, 3, 5	*User Services Addressed* *2B, 3D, 4A, 4C*
Recommended Lead Agency IDOT	*Other Involved Agencies*
Technical Elements This project will deploy video surveillance along key IDOT routes to complement other electronic surveillance in place currently. A design producing plans, specifications, and estimates will be required, as this will be an IDOT construction project. The system will require cameras mounted on existing or new poles or structures, ground mounted equipment cabinets, power, and communications interconnect. The central equipment will consist of switching, camera control, and display facilities.	
Operational Requirements The objective of the video will be to provide initial coverage of critical areas of the freeway, high incident locations, and traditional bottlenecks. Full coverage may be added later. The video would not be continuously monitored, but would be used as a verification and assessment tool for congestion and incidents reported by the TSC ATMS. Current operators would be able to use the tool and additional staff should not be required.	
Hardware, Software, Communications Requirements The system will include color solid state cameras, mounted in a pan/tilt/zoom configuration at a height of 25 to 40 feet above the roadway. Each camera will require a ground mounted equipment cabinet for video fiber transceivers, power, and remote control units. Fiber or other high bandwidth communications will be required. Software will not be required as off the shelf control, switching, and display hardware can be used. Future integration into the TSC software may be considered.	
Deployment Schedule This project should have a design schedule of nine months, a procurement cycle of six months, and a construction period of nine to twelve months.	
Capital Cost $690,000	
Engineering Cost $104,000	*O&M Cost* $69,000 (maintenance only)
Recommended Funding Sources CMAQ, STP, NHS	

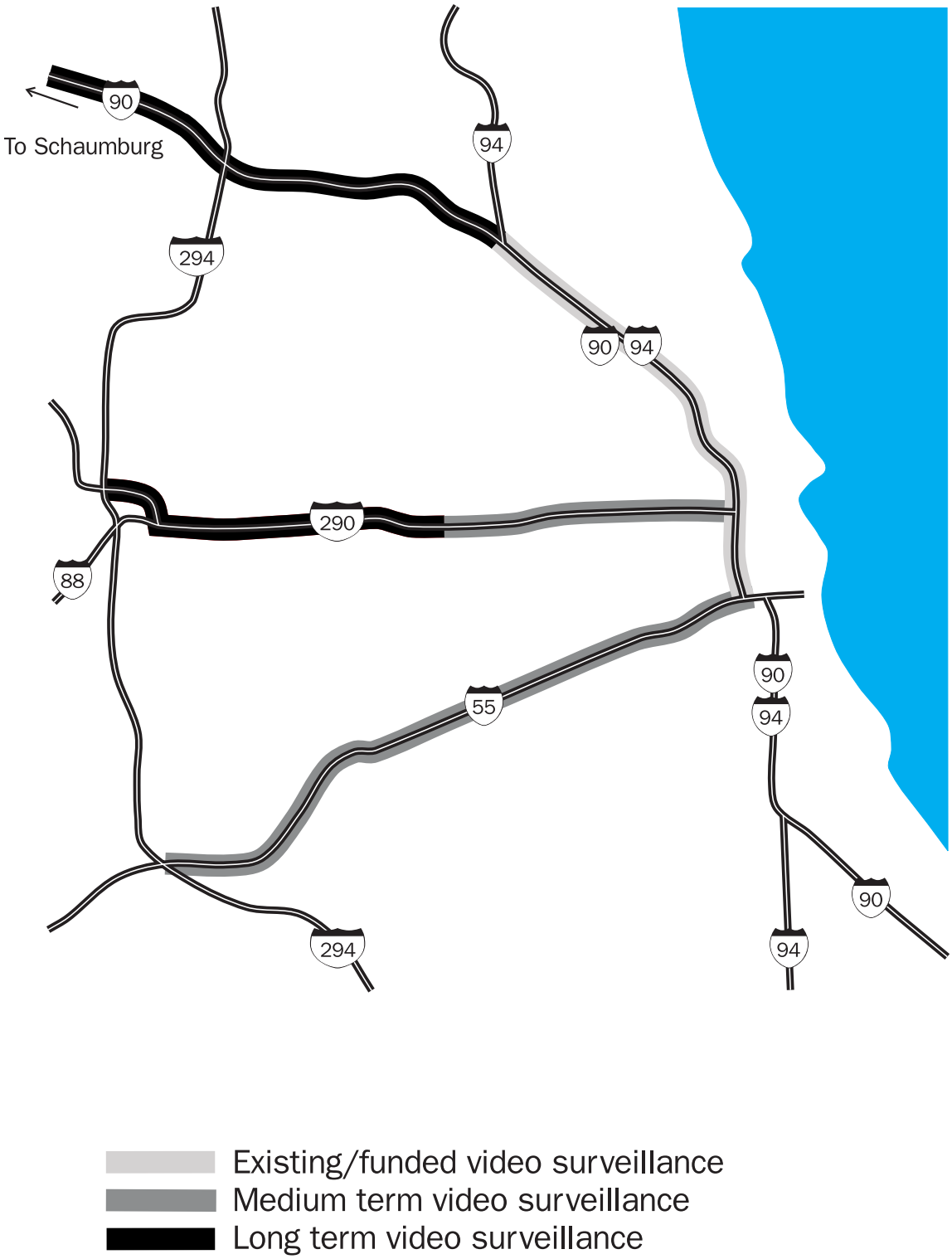

Figure B-2: Video Surveillance in Northeastern Illinois

Project Title **CCTV Surveillance**	
Project Category: Core Infrastructure	*Deployment Time Frame:* Short and Medium
Location Tollway system including I-90, I-94, I-88, I-355, I-294	
Description Deployment of CCTV along tollway near toll plazas and interchanges for monitoring congestion and verifying incidents.	
ITS Objectives Addressed 2, 3, 5	*User Services Addressed* *2B, 3D, 4A, 4C*
Recommended Lead Agency ISTHA	*Other Involved Agencies*
Technical Elements This project will deploy video surveillance along tollway routes. The system will require cameras mounted on existing or new poles or structures, ground mounted equipment cabinets, power, and communications interconnect. The central equipment will consist of switching, camera control, and display facilities	
Operational Requirements The objective of the video will be to provide initial coverage of critical areas of the tollway, high incident locations, and traditional bottlenecks. The video would not be continuously monitored, but would be used as a verification and assessment tool for congestion and incidents reported from various sources. The cameras would be monitored and controlled by operators in the proposed Traffic and Incident Management Center.	
Hardware, Software, Communications Requirements The system will include color solid state cameras, mounted in a pan/tilt/zoom configuration at a height of 25 to 40 feet above the roadway. Each camera will require a ground mounted equipment cabinet for video fiber transceivers, power, and remote control units. Fiber or other high bandwidth communications will be required. Software will not be required as off the shelf control, switching, and display hardware can be used. Future integration into the Traffic and Incident Management software may be considered.	
Deployment Schedule This project should have a design schedule of nine months, a procurement cycle of six months, and a construction period of nine to twelve months	
Capital Cost All costs will be funded by ISTHA	
Engineering Cost All costs will be funded by ISTHA	*O&M Cost* All costs will be funded by ISTHA
Recommended Funding Sources ISTHA	

Project Title **CCTV Surveillance**			
Project Category:	Core Infrastructure	*Deployment Time Frame:*	Medium
Location Intersections in Lake County including Dilleys @ Nations Drive/Pinewood, MLK Jr. Drive @ Abbott Drive, Stearns School @ North Creek Drive, and Buffalo Grove @ Thompson Blvd.			
Description Deploy intersection video surveillance and control along arterials for traffic operation monitoring and detection.			
ITS Objectives Addressed 2, 3, 5		*User Services Addressed* *2B, 3D, 4A, 4C*	
Recommended Lead Agency Lake County		*Other Involved Agencies*	
Technical Elements This project will deploy video surveillance at selected intersections along arterials. A design producing plans, specifications, and estimates will be required, as this will require contract field construction. The system will require cameras mounted on traffic signal combinations mast arm poles, ground mounted equipment cabinets, power, and communications interconnect. The central equipment will consist of switching, camera control, and display facilities			
Operational Requirements The objective of the video will be to provide a visual assessment of intersection operations, congestion, and incidents. The video would not be continuously monitored, but depending on current staff availability, may require additional staffing during peak periods to support.			
Hardware, Software, Communications Requirements The system will include color solid state cameras, mounted in a pan/tilt/zoom configuration at a height of 25 to 40 feet above the roadway. Each camera will require a ground mounted equipment cabinet for video fiber transceivers, power, and remote control units. Initial deployment will likely use dial up connections with video encoding hardware. Software will not be required as off the shelf control, switching, and display hardware can be used			
Deployment Schedule This project should have a design schedule of nine months, a procurement cycle of six months, and a construction period of nine to twelve months.			
Capital Cost $120,000			
Engineering Cost $20,000		*O&M Cost* $12,000	
Recommended Funding Sources CMAQ, STP, NHS			

Project Title **CCTV Surveillance**	
Project Category: Core Infrastructure	*Deployment Time Frame:* Short
Location Various	
Description Develop a public-private partnership with traffic information providers to share video images from surveillance cameras between IDOT and private providers.	
ITS Objectives Addressed 2, 3	*User Services Addressed* *2B, 3D, 4A, 4C*
Recommended Lead Agency IDOT	*Other Involved Agencies*
Technical Elements Minimal technical elements are required, but this project should be contingent on initial IDOT deployment of video surveillance. Technical elements would include leased or owned interconnection between TSC and traffic information providers.	
Operational Requirements Operational guidelines would be developed to govern use and availability of images. Images would be incorporated into the respective agencies' video switching and display systems. Control is not envisioned by other than owning agencies.	
Hardware, Software, Communications Requirements Video transmission between traffic information providers and TSC would be required. Hardware requirements vary by transmission media.	
Deployment Schedule Contingent on execution of agreement and selection of interconnection.	
Capital Cost $10,000 - $30,000 for communications end equipment given use of existing switching and display systems and either leased or existing communications interconnection.	
Engineering Cost $10,000 for interconnection design, not including new interconnect if required.	*O&M Cost* $2,500 to $15,000 per year for equipment maintenance and leased communications facilities.
Recommended Funding Sources Private partnership contribution, IDOT operating budget	

Project Title **VMS Deployment**	
Project Category: Core Infrastructure	*Deployment Time Frame:* Short and Medium
Location Various on regional freeways. See map for details.	
Description Complete design and deployment of additional 13 variable message signs for IDOT managed freeways and expressways. Map shown in Figure B-3 shows existing and proposed VMS locations.	
ITS Objectives Addressed 2, 3, 4	*User Services Addressed* *1D, 2A, 2B, 4A*
Recommended Lead Agency IDOT	*Other Involved Agencies*
Technical Elements This project will deploy additional variable message signs along key IDOT routes to provide relevant information to motorists based on current conditions. A design producing plans, specifications, and estimates will be required, as this will be an IDOT construction project. The system will require signs mounted on existing or new structures, ground mounted equipment cabinets, power, and communications interconnect. The signs would be supported by existing central equipment already in place.	
Operational Requirements This project would not introduce any additional operational requirements. The 13 new signs would be operated just like the current 22 signs. No additional staff or procedures are anticipated for this expansion.	
Hardware, Software, Communications Requirements Only the field elements of the sign, structure, power connection, communications connectivity to the TSC are required. The requirements for these elements will be included in the design plans and specifications.	
Deployment Schedule This project should have a design schedule of nine months, a procurement cycle of six months, and a construction period of nine to twelve months	
Capital Cost $2.6 million	
Engineering Cost $300,000	*O&M Cost* $150,000 year – maintenance only
Recommended Funding Sources CMAQ, STP, NHS	

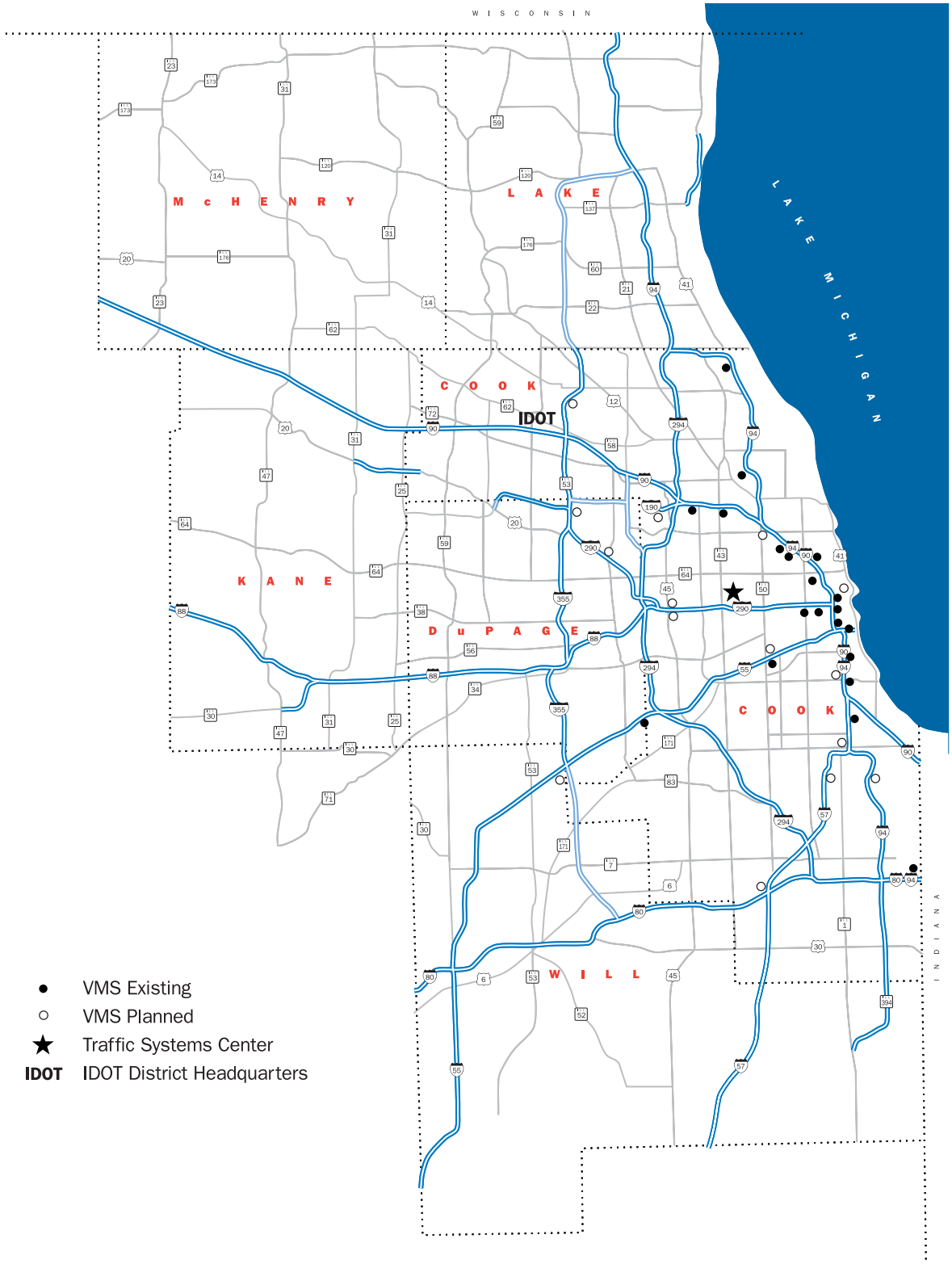

Figure B-3: VMS Deployment in Northeastern Illinois

Project Title **VMS Deployment**	
Project Category: Core Infrastructure	*Deployment Time Frame:* Short and Medium
Location Various locations along the tollways including I-90, I-94, I-88, I-355, I-294	
Description Design and deployment of approximately 20 variable message signs along the tollway system.	
ITS Objectives Addressed 2, 3, 4	*User Services Addressed* *1D, 2A, 2B, 4A*
Recommended Lead Agency ISTHA	*Other Involved Agencies*
Technical Elements This project will deploy additional variable message signs along ISTHA routes to provide relevant information to motorists based on current conditions. A design producing plans, specifications, and estimates will be required, as this will be an ISTHA construction project. The system will require signs mounted on existing or new structures, ground mounted equipment cabinets, power, and communications interconnect. The signs would be supported by existing central equipment already in place.	
Operational Requirements The objective of the signs will be to provide current, accurate information to motorists, particularly at key decision points in the roadway network. The sign's messages could be displayed automatically by the Traffic and Incident Management software or manually as needed by Center operators. Sign messages would be generated in response to roadway surveillance data and confirmed incidents.	
Hardware, Software, Communications Requirements The field elements of the sign system include the sign assembly, structure, power connection, communications connectivity to the Traffic and Incident Management Center will be required. The requirements for these elements will be included in the design plans and specifications. Control of the signs would be through the Center software for both automatic and manual sign message selection. This functionality will be provided through the tollway hub software developed under a separate project.	
Deployment Schedule This project should have a design schedule of nine months, a procurement cycle of six months, and a construction period of eighteen to twenty four months.	
Capital Cost All costs will be funded by ISTHA	
Engineering Cost All costs will be funded by ISTHA	*O&M Cost* All costs will be funded by ISTHA
Recommended Funding Sources ISTHA	

Project Title **Parking Management System Pilot**	
Project Category: Core Infrastructure	*Deployment Time Frame:* Medium to long
Location TBD	
Description Develop a parking management system to manage capacity and circulation using on street VMS to direct motorists to available parking.	
ITS Objectives Addressed 4, 8	*User Services Addressed* *1B, 2B, 3A, 3B*
Recommended Lead Agency RTA	*Other Involved Agencies* CDOT
Technical Elements This project will deploy VMS and parking capacity monitoring tools at and around RTA facilities.	
Operational Requirements Operational requirements include definition of parking conditions and determination of VMS messages to display under various conditions. No additional RTA operations staff are anticipated for this project.	
Hardware, Software, Communications Requirements The field elements include sign assembly, structure, power, communications, and parking management systems. Sign control will be achieved through the transit hub with software developed for this project.	
Deployment Schedule This project will require 3 to 4 years to complete phases I through III as defined by RTA.	
Capital Cost TBD based on requirements	
Engineering Cost $950,000	*O&M Cost* TBD based on capital cost
Recommended Funding Sources CMAQ	

Project Title **CDOT Data Pipeline**	
Project Category: Core Infrastructure	*Deployment Time Frame:* Short
Location Route TBD	
Description Complete data pipeline connection from CDOT control center to the C-TIC over a fiber optic link.	
ITS Objectives Addressed 1, 8	*User Services Addressed* *1A, 1B, 1C, 1D, 1E, 2A, 2B, 2C, 2D, 2E, 2F, 3A, 3B, 3C, 3D, 4A, 4B, 4C, 4D*
Recommended Lead Agency CDOT	*Other Involved Agencies* IDOT
Technical Elements This project will provide connectivity from CDOT facilities at the Daley Center to the IDOT C-TIC and Gateway servers at the ITS Program Office in Schaumburg. The project will include the fiber and all associated end electronics for transmission of data, voice, and video.	
Operational Requirements Operational requirements include definition of the data to be exchanged, data formats and update frequency, queries supported for data extraction from the Gateway, and access levels and privileges. No additional CDOT or IDOT operations staff are anticipated for this project.	
Hardware, Software, Communications Requirements The Data Pipeline will require a minimum of 12 fibers throughout the link. Communications hardware for each end will be determined by the final design but would include both LAN and video transmission capability	
Deployment Schedule This project will require six to nine months to complete.	
Capital Cost TBD based on requirements	
Engineering Cost TBD based on requirements	*O&M Cost* TBD based on capital cost
Recommended Funding Sources CMAQ	

Project Title **Pace Intelligent Bus System (IBS)**	
Project Category: Core Infrastructure	*Deployment Time Frame:* Short to medium
Location Regional (Pace operating area)	
Description Deploy an integrated bus management system incorporating automatic vehicle location and fleet management technologies to optimize and enhance transit operations.	
ITS Objectives Addressed 4, 8	*User Services Addressed* *3A, 3B*
Recommended Lead Agency Pace	*Other Involved Agencies* IDOT
Technical Elements The system will feature AVL and route/schedule adherence subsystems as well as fare and capacity analysis capability, vehicle performance monitoring. The system will integrate transit signal priority into the schedule monitoring capability. Based on the data collected from the vehicles, the system will perform capacity and fare analyses to enable optimization of the transit operation.	
Operational Requirements The system will require staff positions to monitor the system operation. This function may be absorbed into current operations staff and efficiencies may be gained through the automation of location and schedule updates. A detailed operations assessment is needed as part of the project.	
Hardware, Software, Communications Requirements The system will require AVL equipment on each vehicle along with local processing and interfaces to electronic fareboxes, automatic passenger counters, and radio communications equipment. A central system will be required to manage and download route and schedule data, receive position and status updates, process requests, perform offline analyses, and provide an interface to the system operators. Radio communications will be required for communications between the buses	
Deployment Schedule 2000-2003	
Capital Cost $7,000,000	
Engineering Cost $1,050,000	*O&M Cost* $700,000
Recommended Funding Sources FTA, State and local funds	

Project Title **Paratransit Management System**	
Project Category: Core Infrastructure	*Deployment Time Frame:*
Location Regional (Pace operating area)	
Description Deploy a paratransit management system consisting of integrated Mobile Data Terminals with AVL in conjunction with the Trapeze Software PASS automated scheduling system where installed at Pace paratransit operations.	
ITS Objectives Addressed 4, 8	*User Services Addressed* *3A, 3C*
Recommended Lead Agency Pace	*Other Involved Agencies*
Technical Elements The system would include capabilities for storage of manifest entries, transmission of adds and deletes from the manifest, tracking of paratransit vehicles, automatic odometer readings, interface to magnetic card readers for pickup and drop-off recording, and the interface to the Trapeze PASS automated scheduling system.	
Operational Requirements The system will require minimal staff to monitor the system operation. This function may be absorbed into current operations staff by reprogramming existing resources.	
Hardware, Software, Communications Requirements The system will require a mobile data terminal and GPS equipment on each vehicle and modification of the existing radio communication system on each vehicle. The system will also require integration with the existing MIS.	
Deployment Schedule 2000-2002	
Capital Cost $1.2 million	
Engineering Cost $180,000	*O&M Cost* $120,000
Recommended Funding Sources FTA, State and local funds	

B.2 SUBREGIONAL HUBS

Project Title **Gateway Completion**	
Project Category: Subregional Hub	*Deployment Time Frame:* Short and Medium
Location Various centers and subregional hubs throughout region.	
Description Program of multiple projects for completion of the Gateway connectivity over the next 10 years, in accordance with IDOT ITS sketch plan.	
ITS Objectives Addressed 1, 2, 8	*User Services Addressed* *1A, 1B, 1C, 1D, 1E, 2A, 2B, 2C, 2D, 2E, 2F, 3A, 3B, 3C, 3D, 4A, 4B, 4C, 4D*
Recommended Lead Agency IDOT	*Other Involved Agencies*
Technical Elements Subregional hubs for various agencies and centers would be integrated into the regional Gateway architecture. Subregional hubs may include an interface server to an existing management center or may include the center development along with the Gateway integration. Specific centers may be included separately in the Deployment Action Plan indicating more extensive development as opposed to a simple interface, e.g. the CDOT subregional hub,	
Operational Requirements The objective of the Gateway integration is to provide electronic interfaces to the extent possible, minimizing operational requirements. Where this is not possible or practical, some operational needs may exist for manual compilation and or transfer of data. Operational requirements for the Gateway itself are provided under other initiatives and center operations are addressed in those specific deployment actions.	
Hardware, Software, Communications Requirements Typically includes a hardware interface server with associated application software and network interconnectivity (leased or fiber) to the Illinois Hub.	
Deployment Schedule *All dates are preliminary and subject to change* 2Q1998 – CTA, District 15 (Northwest Central Dispatch) 4Q1998 – Illinois State Police and Chicago Police Computer Aided Dispatch 2Q1999 – Illinois State Toll Highway Authority, *999 3Q1999 – Traffic Systems Center, Chicago 911 4Q1999 – Emergency Traffic Patrol, DuPage County 1Q2000 – IDOT District 1 Computer Aided Dispatch, Illinois Transit Hub 2Q2000 – Lake County 3Q2000 – CDOT signals 4Q2000 – O'Hare Airport	
Capital Cost $600,000	
Engineering Cost $2.6 million	*O&M Cost* $60,000 (maintenance only)
Recommended Funding Sources CMAQ, STP, NHS	

Project Title **Development of the Transit Hub**	
Project Category: Subregional Hub	*Deployment Time Frame:* Short
Location Regional	
Description Design and develop the Illinois Transit Hub to collect and disseminate transit information to the Gateway. Specifically, develop design and specifications to integrate transit information (services, routes, schedules, travel times) to GCM/Gateway home page. Assess ability to offer comparative times in selected corridors.	
ITS Objectives Addressed 1, 8	*User Services Addressed* *1A, 3A, 3B*
Recommended Lead Agency RTA	*Other Involved Agencies* IDOT, CTA, Pace, Metra
Technical Elements Based on the current implementation of the Itinerary Planning System, extend the capability to allow interconnection with the Gateway to support up-to-date schedule information. Incorporate ability to support real time schedule information as available from the service boards.	
Operational Requirements Primary information will be drawn from existing sources and should not require additional operational input. Real time data acquisition should be automated. Existing IPS arrangements for acquisition of static schedule data should be extended to include real time data as available.	
Hardware, Software, Communications Requirements A detailed design is needed to define specific hardware, software, and communications requirements for this project. Components will include a server for the storage and aggregation of the real time and static schedule data (separate from the IPS server), connectivity with the GCM data pipeline, and software to support the interfaces between the systems.	
Deployment Schedule The schedule for the design should be six to nine months and development should be allocated twelve months.	
Capital Cost $2.5 million for development and hardware	
Engineering Cost $500,000	*O&M Cost* $100,000
Recommended Funding Sources FTA, GCM Corridor Earmarks, CMAQ	

Project Title **Development of ISTHA Traffic Management Center**	
Project Category: Subregional Hub	*Deployment Time Frame:* Short
Location Regional	
Description Design and develop the ISTHA Hub to collect and disseminate tollway information to the Gateway.	
ITS Objectives Addressed 1, 8	*User Services Addressed* *1A, 1B, 2A, 2B*
Recommended Lead Agency ISTHA	*Other Involved Agencies* IDOT
Technical Elements The tollway hub should be developed concurrently as part of the Traffic and Incident Management System for ISTHA.	
Operational Requirements The hub should be operated in tandem with the ISTHA Center operations, minimizing incremental operational requirements over and above those for the center.	
Hardware, Software, Communications Requirements The hardware, software, and communications requirements should be developed in concert with those for the Center. Some additional hardware may be required such as an additional server to support the Gateway interface. Some incremental software development should also be anticipated to fully support the Gateway.	
Deployment Schedule Concurrent with the Traffic and Incident Management System.	
Capital Cost Funded by ISTHA	
Engineering Cost Funded by ISTHA	*O&M Cost* Funded by ISTHA
Recommended Funding Sources ISTHA	

Project Title **Development of Countywide Centers**	
Project Category: Subregional Hub	*Deployment Time Frame:* Short and Medium
Location Regional county traffic management centers	
Description Design and develop a county hub to collect and disseminate transportation information to the Gateway.	
ITS Objectives Addressed 1, 8	*User Services Addressed* *1A, 1B, 2A, 2B*
Recommended Lead Agency Cook, Lake, DuPage counties	*Other Involved Agencies* IDOT
Technical Elements This series of projects would incorporate ITS elements across multiple jurisdictions in a County into a common control and data management center. The centers could be housed a single physical location or may be distributed using virtual control center or other technology. The purpose of the centers would be to aggregate the signal system control and data collection to facilitate more efficient and effective management of the systems. This approach also provides a natural interface to the Illinois hub of the Gateway.	
Operational Requirements There are significant operational requirements for the countywide hub approach. The concept of a single center would minimize operational resources by essentially pooling common resources across several jurisdictions. At the same time, this approach would be the most challenging in terms of institutional issues for shared maintenance and control. Solutions which provide for distributed control centers would require more sophisticated technology and likely higher cost, but would simplify the institutional aspects of the approach.	
Hardware, Software, Communications Requirements The hardware, software, and communications requirements should be developed in concert with those for the countywide center. Some incremental software development should also be anticipated to fully support the Gateway.	
Deployment Schedule The schedule for the design should be six to nine months and development should be allocated twelve months.	
Capital Cost $1.5 million per center for development and hardware	
Engineering Cost $300,000 per center	*O&M Cost* $200,000 per year for operations staff, hardware and software maintenance and support.
Recommended Funding Sources CMAQ, STP, NHS	

Project Title **Development of the CDOT TMC**	
Project Category: Subregional Hub	*Deployment Time Frame:* Short
Location Chicago CBD	
Description • Design and develop a traffic management center and hub for CDOT	
ITS Objectives Addressed 1, 2, 3	*User Services Addressed* *1A, 1B, 2A, 2B, 2C, 4A, 4B, 4D*
Recommended Lead Agency CDOT	*Other Involved Agencies* IDOT, CDSS
Technical Elements This project involves development and design of a center that will provide computers, monitors, fiber optic integration, and transmission equipment to monitor and control traffic signals, video cameras, and changeable message signs. It will have connectivity to CTA, Police, city 911 and IDOT.	
Operational Requirements This project will involve integrated management of traffic signals and traffic systems citywide. It will integrate traffic signals, video camera surveillance, and potentially the priority signal controls for CTA buses, and provide the linkage to IDOT Comm Center to provide arterial traffic information. It will also have connectivity to future CDOT CMS.	
Hardware, Software, Communications Requirements Will include fiber optic cable connections to the traffic signal system with appropriate hardware for integration and transmission. Software will be developed to support the system, with multiple reporting development capability.	
Deployment Schedule Design 18 months; Construction 24 months	
Capital Cost $4,000,000	
Engineering Cost $350,000	*O&M Cost* $250,000
Recommended Funding Sources CMAQ, STP, TEA-21	

B.3 INTEGRATED OPERATIONS

Project Title **Expansion of the Cicero Smart Corridor**	
Project Category: Integrated Operations	*Deployment Time Frame:* Short
Location Cicero Corridor, north and south limits by phase	
Description Develop corridor test bed for application of multiple ITS technologies in an integrated environment for test and evaluation.	
ITS Objectives Addressed 2, 3, 4	*User Services Addressed* *1A, 1B, 2A, 2B, 3A, 3B, 4D*
Recommended Lead Agency CATS	*Other Involved Agencies* IDOT, CATS, RTA, CTA, Counties, Municipalities
Technical Elements The Smart Corridor could include a variety of integrated, multi-modal ITS solutions throughout the corridor. These may include: • Transit – AVL, automated passenger counting, automated stop announcements, smart bus shelters with dynamic schedule info, etc. • Traffic Control – The Smart Corridor may be outfitted with adaptive and/or responsive traffic control as well as transit vehicle priority, EV priority, etc • Traveler Information – Arterial and expressway VMS, HAR, kiosks, and possibly in-vehicle devices could be used to facilitate dissemination of current conditions and route information. • Coordination with Expressway Management – The Corridor could be coordinated with expressway freeway routes to serve as an effective alternate route during congestion and/or incidents. • Demand Management – Demand management techniques could be used through integration of the signal coordination and ramp patterns.	
Operational Requirements The Smart Corridor would require a operational commitment across multiple agencies to realize the maximum benefit from the integration of the technologies. While many elements would be automated, operator monitoring and management of the various elements would be required. This may not require additional operations staff depending on the existing level of staffing for each participating agency.	
Hardware, Software, Communications Requirements The corridor would require deployment of hardware, software and communications. To the extent possible, these elements would be extensions of existing systems to minimize integration and maintenance requirements. The requirements for those elements would be defined by the existing systems. Technologies not currently deployed would need to be designed, installed, and integrated in the corridor. The corridor should be instrumented with fiber optic communications and video surveillance throughout to facilitate interconnection of the various elements, monitoring of the corridor, and evaluation of the corridor performance.	
Deployment Schedule 1999 =>Phase I – Expansion of pilot to Ford City (south) and Racetrack(north) along Cicero 2000 =>Phase II – Expansion to I-290 (north) and I-294 (south) along Cicero 2001 =>Phase III – Expansion to I-94 (north) to Hwy 57 (south)	

Capital Cost Phase I – $3.5M (funded) Phase II - $2M Phase III - $2M	
Engineering Cost Phase I - $500K (funded) Phase II - $300K Phase III - $300K	*O&M Cost* Phase I – $200K per year Phase II - $200K per year Phase III - $200K per year
Recommended Funding Sources GCM Corridor funding, CMAQ, NHS, STP	

Project Title **Interagency Signal Coordination**			
Project Category:	Integrated Operations	*Deployment Time Frame:*	Short and Medium
Location Six county metropolitan area			
Description Implementation of multijurisdictional signal coordination in DuPage County test area as recommended by the DuPage Signal System Study. Coordination of signals on strategic regional arterials across jurisdictional boundaries throughout the northeastern Illinois region.			
ITS Objectives Addressed *4*		*User Services Addressed* *2A, 2B*	
Recommended Lead Agency DuPage County, CATS		*Other Involved Agencies* IDOT, Counties, Municipalities	
Technical Elements Establish a common time reference and coordination algorithm to support coordination across systems.			
Operational Requirements Establish a signal coordination committee among the constituent agencies to develop and maintain common cycles and compatible offsets for the arterials under coordination.			
Hardware, Software, Communications Requirements Typically existing coordination systems would be used to minimize new hardware and construction requirements. Each agency would need to use a common time reference such as NIST UTC time and synchronize their signal system(s) to the time reference. This may require some hardware and software to acquire the time and automatically set system time to the standard. Additionally, some software modifications may be needed to ensure preservation of offset relationships between different systems.			
Deployment Schedule The project concept design would take approximately six months, detailed design for each system around two months each, procurement of time reference and interfaces three to six months, and integration approximately two months for each system. The project assumes an initial complement of systems coordinated with incremental expansion of the program.			
Capital Cost $500,000 for initial deployment of 10 arterials			
Engineering Cost $200,000 for concept and detailed design		*O&M Cost* Absorbed in existing O&M staff and materials	
Recommended Funding Sources CMAQ			

Project Title

Integrated Corridor Pilot

Project Category: Integrated Operations	*Deployment Time Frame:* Medium

Location

Tri-State Freeway and US Route 41

Description

Deploy integrated corridor management applications for the Tri-State and US41 as a prototype. These applications include traditional expressway management functions integrated with signal management and arterial incident management. The integration of these elements will better support utilization of available capacity on both facilities.

ITS Objectives Addressed	*User Services Addressed*
2, 3, 4, 5	*1B, 2A, 2B, 4A*
Recommended Lead Agency	*Other Involved Agencies*
IDOT	

Technical Elements

The integrated corridor pilot project will integrate freeway management with arterial management strategies to accomplish more effective management of these parallel routes. Expressway strategies would include traffic flow monitoring, video surveillance, incident detection/response/management strategies, ramp metering, and motorist information. Arterial strategies would include responsive or adaptive signal coordination, integration of intersection and ramp operation, video surveillance, and motorist information..

Operational Requirements

Integrated corridor operations require operator monitoring and control decisions in real time. The Traffic Systems Center would be responsible for providing the necessary staffing. In addition, operations plans would need to be developed for various incident and congestion scenarios. The pilot project may be supported with existing staff, but should be evaluated in light of current staff availability.

Hardware, Software, Communications Requirements

Hardware would include video surveillance on both the freeway and the arterial, signal control (if current control is not sufficient), freeway detection (if not currently in place), VMS on both the freeway and arterial, and ramp meters. Software requirements are variable depending on the level of decision support desired. A minimum need would be detection of anomalous conditions, i.e. congestion or imbalance in demand. Higher levels would provide recommended responses to the operator. Communications requirements would include that sufficient to support video surveillance either over IDOT fiber or over leased facilities.

Deployment Schedule

Design for the Integrated Corridor Pilot should be allocated nine months including operational concept, procurement three to six months, and implementation nine months. An operational period of no less than six months should be evaluated prior to recommendation for further deployment.

Capital Cost

$3 million to $5 million (less existing facilities suitable for reuse)

Engineering Cost	*O&M Cost*
$500,000	$300,000 per year

Recommended Funding Sources

CMAQ, STP, NHS

Project Title **Integrated Corridor Deployment**	
Project Category: Integrated Operations	*Deployment Time Frame:* Long
Location Various, based on recommendations from pilot	
Description Develop and deploy corridor management strategies for the integrated operation of parallel expressway and arterial facilities.	
ITS Objectives Addressed *2, 3, 4, 5*	*User Services Addressed* *1B, 2A, 2B, 4A*
Recommended Lead Agency IDOT	*Other Involved Agencies* ISTHA, CDOT, Local signal jurisdictions
Technical Elements The integrated corridor project will integrate freeway management with arterial management strategies to accomplish more effective management of parallel routes. Expressway strategies would include traffic flow monitoring, video surveillance, incident detection/response/ management strategies, ramp metering, and motorist information. Arterial strategies would include responsive or adaptive signal coordination, integration of intersection and ramp operation, video surveillance, and motorist information..	
Operational Requirements Integrated corridor operations require operator monitoring and control decisions in real time. The expressway control center (Traffic Systems Center [IDOT] or Traffic and Incident Management Center [ISTHA]) would be responsible for providing the necessary staffing. In addition, operations plans would need to be developed for various incident and congestion scenarios. The integrated corridor projects may be supported with existing staff, but should be evaluated in light of current staff availability at the respective center. Memoranda of understanding will also be needed where shared control is required.	
Hardware, Software, Communications Requirements Hardware would include video surveillance on both the freeway and the arterial, signal control (if current control is not sufficient), freeway detection (if not currently in place), VMS on both the freeway and arterial, and ramp meters. Software requirements are variable depending on the level of decision support desired. A minimum need would be detection of anomalous conditions, i.e. congestion or imbalance in demand. Higher levels would provide recommended responses to the operator. Communications requirements would include that sufficient to support video surveillance either over fiber or over leased facilities.	
Deployment Schedule Design for each the integrated corridor should be allocated six to nine months (using the operational concept established in the pilot), procurement three to six months, and implementation nine months..	
Capital Cost $3 million to $5 million per corridor (less existing facilities suitable for reuse)	
Engineering Cost $500,000	*O&M Cost* $300,000 per year
Recommended Funding Sources CMAQ, STP, NHS	

Project Title **Advance Transit Signaling**	
Project Category: Integrated Operations	*Deployment Time Frame:* Short
Location TBD	
Description Conduct a pilot project to implement and analyze the use of an additional signal timing phase for transit vehicles to pull-out in advance of the queue.	
ITS Objectives Addressed 4	*User Services Addressed* 2A, 2B, 3A
Recommended Lead Agency CDOT	*Other Involved Agencies* CTA
Technical Elements This pilot would require the development of signal phasing to accommodate an advance transit indication, allowing buses to precede the platoon of vehicles. This will aid the buses in avoiding congestion and maintaining schedules.	
Operational Requirements Operational requirements up front would include the reconfiguration of the signal timing plans to accommodate the advance signal as well as training bus drivers and enforcement personnel in the proper use of the signals. Some public communications should be developed to set driver expectations and encourage compliance by motorists.	
Hardware, Software, Communications Requirements The system would require modification of the controller configuration to add the advance transit phase as well as field wiring and installation of the signal indication. Timing would need to be modified and changes may be required in the central signal control software to accommodate the additional phase. This project has no additional communications requirements.	
Deployment Schedule This project could be designed in six months, including signal timing revisions, procured in three, and installed and implemented in four months. These times are for a recommended initial deployment which could then be expanded as needed.	
Capital Cost Capital costs for this project should run around $5,000 per signal.	
Engineering Cost Approximately $25,000 for ten signals	*O&M Cost* No additional impact
Recommended Funding Sources	

Project Title **Regional Transit Signal Priority Integration Plan**			
Project Category: Integrated Operations		*Deployment Time Frame:* Short	
Location Northeastern Illinois Region			
Description This project should develop a multi-jurisdictional integration plan for the implementation of signal priority systems in the region. This will include identification of stakeholders, inventory of signals, review of pilot deployments, simulation and analysis of priority conditions, survey of technologies, review of standards, identification of locations, analysis of cost/benefit, and production of integration plan.			
ITS Objectives Addressed *4*		*User Services Addressed* *2A, 2B, 3A*	
Recommended Lead Agency RTA		*Other Involved Agencies* CTA, Pace, Metra, IDOT, CDOT, CATS, counties, municipalities	
Technical Elements To be addressed in the plan development.			
Operational Requirements To be addressed in the plan development. The memoranda of understanding between the agencies will establish the primary operational requirements. These will define the priority strategy and checks and balances, i.e. automated versus manual priority initiation, unique bus identification, etc.			
Hardware, Software, Communications Requirements To be addressed in the plan development.			
Deployment Schedule This project has a 24 month period of performance.			
Capital Cost Varies based on type of system deployed.			
Engineering Cost $575K		*O&M Cost* None	
Recommended Funding Sources UWP (Federal Planning Funds)			

Project Title **Arterial Incident Management**	
Project Category: Integrated Operations	*Deployment Time Frame:*
Location Lake-Cook Road	
Description Design and implementation of recommendations developed under Incident and Travel Management Prototype Study, Phase I Feasibility analysis along Lake Cook Road to facilitate incident detection and management.	
ITS Objectives Addressed *2, 5*	*User Services Addressed* *4A*
Recommended Lead Agency Cook County	*Other Involved Agencies* IDOT, Lake County, area enforcement, EMS, towing
Technical Elements The project will include both incident management and traveler information elements. This will require communications infrastructure to support both fixed and mobile installations. CCTV will be needed for incident verification and assessment, arterial VMS and HAR are likely candidates for traveler information, and some arterial detection will be required. The project may also include signal preemption for emergency vehicles to reduce response times and increase safety.	
Operational Requirements Memoranda of understanding will be developed among the partners in the corridor to establish role and responsibilities among the involved agencies. An operations plan will be developed as part of the Phase II engineering analysis prior to Phase III Construction. Phase II will also include education and training for responders. Ongoing operations resources will be established in the operations plan.	
Hardware, Software, Communications Requirements Hardware, software, and communications requirements will be developed in Phase II, Engineering Analysis.	
Deployment Schedule Phase II, Engineering Analysis will require six to nine months to complete, procurement will require three to six months, and Phase III, Construction will require nine months to one year.	
Capital Cost Phase III construction approximately $2.0 million	
Engineering Cost Phase II engineering approximately $500K	*O&M Cost* $200K per year
Recommended Funding Sources CMAQ, STP, NHS	

B.4 INFORMATION MANAGEMENT

Project Title **Regional Kiosk**	
Project Category: Information Management	*Deployment Time Frame:*
Location Regional	
Description Requirements and functional design analysis to develop, deploy, regional multi-modal kiosk based information system with real time and/or scheduled travel information and other information. Initially located at high traffic, intermodal, and other activity centers.	
ITS Objectives Addressed 3, 8	*User Services Addressed* *1A, 1C, 1D*
Recommended Lead Agency RTA	*Other Involved Agencies* IDOT, ISTHA, CDOT, CTA, Pace, Metra
Technical Elements The project will include the design and development of the kiosk enclosure, kiosk user interface and functionality, connectivity to IPS, and server interface.	
Operational Requirements The project will address kiosk site selection and placement criteria and MOUs for placement and maintenance responsibility.	
Hardware, Software, Communications Requirements The kiosks will include the local processing and display hardware, communications hardware and facilities (likely leased data lines), and all software (both COTS and application specific) required for both the kiosk and the central server applications.	
Deployment Schedule Design phase – six months, implementation phase – six months	
Capital Cost $250,000	
Engineering Cost $250,000	*O&M Cost* $37,500
Recommended Funding Sources FTA, CMAQ	

Project Title **Active Transit Signing Design**	
Project Category: Information Management	*Deployment Time Frame:* Short
Location CTA, Pace, and Metra transit stations throughout the regions	
Description Develop a functional design for regional deployment of active transit signs.	
ITS Objectives Addressed 8	*User Services Addressed* *1A, 3B*
Recommended Lead Agency RTA	*Other Involved Agencies* CTA, and Pace
Technical Elements The project would address the design of all aspects of the development, installation, and operation of active transit signing. This would include display technologies, mounting, facilities coordination, ADA requirements, interface to the IPS/transit hub, network connectivity, and refresh rates.	
Operational Requirements The project would address criteria for sign placement, as well as message content and update rates for all cases of single route, multiple route, single service provider, multiple service provider, and connections as applicable. The project would also include MOU development for definition of roles and responsibilities for installation, maintenance, and operation of the signs.	
Hardware, Software, Communications Requirements Hardware requirements for the signs will be established by the selection of the display technology. Other hardware requirements to be developed include those for local (station) servers if applicable, and central servers. The system design will also establish communications protocols and media for all connections in the system. Software requirements will be defined for central servers, local servers, and sign displays, as applicable.	
Deployment Schedule System design – Nine months. System implementation to be staged as recommended in design project.	
Capital Cost $10,000 per sign	
Engineering Cost $250,000	*O&M Cost* $1,000 per sign per year
Recommended Funding Sources FTA, CMAQ	

Project Title

Travel Information Archive

Project Category: Information Management	*Deployment Time Frame:* Medium and Long

Location

Argonne National Labs

Description

Develop an electronic archive for the travel information collected by the Gary-Chicago-Milwaukee (GCM) Corridor. The project would consist of the phases, 1) Requirements and System Definition, 2) System Development, and 3) Applications of the Modeling and Analysis Framework.

ITS Objectives Addressed	*User Services Addressed*
8	*1A, 2A, 2B, 2D, 3A, 3C, 4A, 4D*
Recommended Lead Agency	*Other Involved Agencies*
Argonne National Labs	IDOT, FHWA, UIC

Technical Elements

The proposed travel information archive will allow the storage and retrieval of the essential Gateway corridor transportation system data, creating a historical record of the traffic conditions in the GCM corridor. The development of the archive will help improve the traffic load forecasts for the GCM highways and arterials, facilitating the transportation planning, traffic management, and incident management tasks of the transportation agencies in the corridor. Phase 3 would add a modeling and analysis framework that can be extended to a national level.

Operational Requirements

No operational requirements.

Hardware, Software, Communications Requirements

These requirements will be established during phase 1 of the project. Phase 2 is the basic implementation of the data archive and addresses acquiring the data, storing it in a data base, and retrieving it against specific criteria. Phase 3 will add additional processing and storage requirements and well as additional software requirements to support the modeling aspects of the system.

Deployment Schedule

Phase 1 – 6 months
Phase 2 – 12 months
Phase 3 – TBD

Capital Cost

Phase 1 - None
Phase 2 - $75K
Phase 3 - $75K

Engineering Cost	*O&M Cost*
Phase 1 - $150K Phase 2 - $150K Phase 3 - $250K	

Recommended Funding Sources

TEA 21 R&D earmarks

APPENDIX C. – BIBLIOGRAPHY

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APPENDIX D. – RESPONSE TO PUBLIC COMMENT

Strategic Early Deployment Plan for Intelligent Transportation Systems
Public Comment Document

1. Plan Development

The Strategic Early Deployment Plan (SEDP) for Intelligent Transportation Systems (ITS) was developed to promote interoperability between the various agencies involved in ITS. The SEDP provides a blueprint for integrating technology into the transportation system to ease congestion and give transportation users more information to make travel decisions. For a more detailed description of the SEDP please see the SEDP Project Summary (exhibit one).

The Advanced Technology Task Force (ATTF) was formed in 1995 to identify, evaluate, and incorporate advanced technology options into the regional planning process. The task force is made up of representatives from many of the area's governmental agencies, including the Chicago Department of Transportation, the Illinois Department of Transportation, the Illinois State Toll Highway Authority, and the Regional Transportation Authority. (See exhibit two for copy of the ATTF Mission Statement and membership.) The task force initiated the technical consultant's work on the SEDP in February 1997. The task force met every other month for two years and developed a series of technical memorandums to complete the SEDP. The technical memoranda addressed: existing transportation systems, problems and opportunities; user services and market packages; ITS activities in the region; alternative technologies; perspectives on regional integration; an immediate action plan; regional ITS architecture; a long term vision for ITS in the region; and a deployment action plan. The draft SEDP was developed based on these technical memoranda and task force input.

The Advanced Technology Task Force approved the draft SEDP at its March 26, 1999 meeting and recommended release of the plan for public comment to the Work Program Committee. The Work Program Committee approved the release of the draft SEDP for public comment at its meeting on April 16, 1999.

2. Outreach

Outreach was integrated into the SEDP from the beginning of the planning process. Plan development began with a series of interviews of agency representatives and interested parties. A User Services Workshop was held on May 20, 1997 to identify issues, establish objectives and develop user service priorities to be addressed in the SEDP. Updates on the SEDP were made periodically to the CATS Policy Committee and Work Program Committee during the development of the plan. SEDP presentations were also given at meetings of the Council of Mayors; at professional organizations including the Institute of Transportation Engineers, the American Society of Civil Engineers, and the ITS Society of America; and at conferences such as the Metropolitan Conference on Public Transportation Research and the ITS Forum. In addition, each of the meetings of the Advanced Technology Task Force was open to the public with opportunity provided for comment and discussion during plan development. Task force meeting dates and times were regularly posted on the CATS Hotline.

Outreach continued as the SEDP neared completion. About 2,200 public information cards (exhibit three) were mailed to announce the public comment period and invite people to an open house on the plan. The SEDP announcement mail list was composed of city and county officials/engineers, consultants, media, and interested individuals. As part of the public outreach and involvement, key parts of the SEDP were displayed on the CATS web site, and readers were invited to comment. Information posted on the web site were a short description of the SEDP (exhibit four), the Executive Summary (exhibit five), Table 9-2 of the SEDP (exhibit six), which displayed the projects and costs, and chapter nine of the SEDP. This information was first posted in April and there were 30 hits on this information in the months of April and May 1999.

The draft SEDP was presented to the Councils of Mayors at their transportation committee meetings. Councils visited to date include: the West Central Municipal Conference, the South Suburban Mayors and Managers Association, the North Shore Council of Mayors, the Southwest Council of Mayors, the Will County Governmental League, the McHenry County Council of Mayors, and the DuPage Mayors and Managers Conference. CATS staff will continue to make presentations on the SEDP at up-coming

scheduled meetings of the remaining Councils. In addition, CATS staff presented the SEDP to the Northeastern Illinois Planning Commission Planning Committee.

An open house was held on April 28, 1999 to present the SEDP to the public. Prior to the open house, the Executive Summary and cover letter (exhibit seven) was mailed to about 600 local government officials and other interested parties

The open house was held in the CATS main conference room on Wednesday, April 28, 1999 from 3:00 p.m. to 6:00 p.m. A media briefing was held at 2:30 p.m. The media were invited to the briefing through a media alert, released on April 26, 1999 (exhibit eight), and two press releases dated April 22, 1999 (exhibit nine) and April 28, 1999 (exhibit ten). The press were provided with an information packet containing general information on CATS, the Executive Summary of the SEDP, copies of the press releases, the SEDP summary sheet, and Table 9-2 of the SEDP describing the 60 projects included in the $136.4 million plan. David Zavattero, Deputy for Operations of the Chicago Area Transportation Study, delivered a slide show presentation on the plan (exhibit eleven). A question and answer session followed the presentation. There were approximately eight members of the press and at least four articles were written about the plan (exhibit twelve).

Eighteen people signed the sign-in sheets (exhibit thirteen), but there were between 20-25 attendees at the open house. A number of exhibits were set up, including a "What is ITS?" poster, a few large graphics from the SEDP, and an exhibit with pictures demonstrating ITS technologies included in the SEDP. Two computers, one running a thirty-minute slideshow on the SEDP and a second linked to web sites associated with the SEDP, were also on display during the open house. CATS staff was available to discuss the SEDP with individuals attending the open house.

The public response period ran from April 16, 1999 to May 14, 1999. During that time about 20 requests for the Executive summary and 5 requests for the full plan document were received and filled. The executive summary was also available in the lobby at the Chicago Area Transportation Study and over 50 were picked up by visitors to the office.

3. Response to Comments

The draft SEDP was developed to be responsive to the input received during the outreach process. Task force discussion was used to guide development of the plan.

Several comments were received during the open house. These included questions relating to the mix of projects included in the plan, discussion of the impact the plan might have on congestion and transportation system performance, and inquiries about the funding needed to implement the plan. These comments were addressed during the open house and generally did not require any modifications to the draft plan document. The comments and response were as follows:

1.) Comment: How were the projects and the types of projects included in the plan determined?

Response: The projects were developed through an interactive process that began with stakeholder interviews and the user services workshop which identified four areas for ITS in the region. These were traveler information, transportation management, public transportation, and emergency services. Stakeholders noted the importance of having a balance between highway and transit projects. The task force also indicated that it was critical to integrate the proposed projects with the significant number of on-going ITS activities in northeastern Illinois. These factors were used to develop candidate actions, which were screened to develop the proposed project list. This process is described in Chapter 3 of the draft SEDP. The projects proposed for the SEDP reflect a balance of highway and transit projects and the integrated operation of highway and transit, are integrated with on-going ITS activities, and respond to the four focus areas.

2.) Comment: What impact will the proposed plan have on congestion?

Response: The analysis done for the SEDP was qualitative and based on the experience of northeastern Illinois and other regions that have undertaken similar ITS projects. This experience indicates that congestion improvements as high as 50% might be achieved through ITS projects in specific and targeted areas. The national goal for ITS suggests that it is reasonable to achieve 15% improvements in travel time and/or delay from some types of ITS projects. While no quantitative estimate has been made for the SEDP these findings, and comparisons with the benefits achieved from the ITS operational field tests and prototype deployments, were used to guide the plan development. These are documented in "ITS: Real World Benefits", USDOT, January 1998 and "Measured Benefits of Deployed ITS Technologies", ITS America, 1996. It was noted that Chicago is a Build 2 test site for the ITS Deployment Analysis System

being developed by consultants to the Federal Highway Administration. This analytical tool will be applied to model various components of the SEDP over the next year. The estimates of project performance are expected to include delay, mode use, travel times, emissions, energy consumption, safety, and other measures. The Advanced Technology Task Force will oversee the analysis. The results will be documented.

3.) Comment: How is the plan funded? Where is the 60% funding identified coming from?
Response: The recent federal Transportation Equity Act for the 21st Century makes ITS projects eligible for all the federal funding programs. These include the National Highway System (NHS), Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), other federal funding programs, as well as specifically designated ITS integration and deployment funds. In addition, funds available from earlier programs such as the Gary-Chicago-Milwaukee (GCM) Priority Corridor have been allocated to some projects included in the SEDP. And, some SEDP projects have been funded through state only or local sources. Approximately 60% of the funding needed for the projects in the SEDP has been identified. This does not mean that all that funding is in place currently, but that there is a reasonable expectation that those funds are available for the SEDP ITS project. Table 9-3 in the draft SEDP identifies the funding status of the projects in the SEDP. The SEDP need not be fiscally constrained as is required for the 2020 Regional Transportation Plan. However since it is expected that the SEDP will be used as part of the 2020 update process it will be necessary to firm the funding status of the projects that are included in the updated regional plan. Key aspects of the funding issues are: a.) demonstration that the region has an integration strategy for ITS as described in Chapter 6 of the SEDP, and b.) demonstration that the region has a process to insure that ITS investments meet the federal requirement for consistency with the national architecture as described in Chapter 5 of the SEDP. Finally, the SEDP indicates that the region has adopted the G-C-M Gateway architecture as the regional architecture and that the Gateway architecture has been demonstrated to be consistent with the national architecture.

Several general comments were received from the Will County Land Use Department and the Illinois Department of Transportation ITS Program Office. These comments were analyzed and responded to, without any changes to the document. The

written comment received from the Will County Land Use Department (exhibit fourteen) and the written response (exhibit fifteen) are provided.

A number of comments were received regarding typographical corrections and other specific changes. These changes were summarized in a memorandum (exhibit sixteen) and the corrections were made in the final SEDP.

4. Policy Committee Approval of the SEDP

The Advanced Technology Task Force approved the final Strategic Early Deployment Plan at its May 27, 1999 meeting and recommended Work Program Committee approval of the Plan. The Advanced Technology Task Force also reviewed and approved this draft public comment document. The Work Program Committee considered and approved the SEDP and the public comment document at its June 4, 1999 meeting and recommended approval to the Policy Committee. The Policy Committee approved the final SEDP at its meeting on June 10, 1999.

List of Exhibits

Exhibit	Title
1.	SEDP Project Summary
2.	ATTF Mission Statement
3.	Public Notification Card
4.	Web Site Description of the SEDP
5.	Executive Summary
6.	Table 9-2 of the SEDP
7.	Executive Summary Cover Letter
8.	Media Alert
9.	Press Release dated April 22, 1999
10.	Press Release dated April 28, 1999
11.	Printout of Media Slide Show
12.	Newspaper articles written about the SEDP
13.	Media Briefing and Open House Sign-in Sheet
14.	Letter from Will County Land Use Department dated May 14, 1999
15.	Response to Will County Land Use Department dated June 14, 1999
16.	Memorandum Summarizing Changes to SEDP

STRATEGIC EARLY DEPLOYMENT PLAN
for an Intelligent Transportation System for Northeastern Illinois

Intelligent Transportation Systems (ITS) involve the use of electronics, communications. and computer technologies to improve travel. While many of these technologies were initially developed for military or research purposes the transportation applications of these technologies is far from "star wars". Things like global positioning satellites (GPS) and the Internet have become commonplace with entire industries growing around them. The regional vision foresees the deployment of ITS to enhance the quality of information available to users of the transportation system. ITS will also support the management and operation of transportation facilities and services to improve performance, effectiveness, safety, and security.

The Chicago Area Transportation Study (CATS) initiated development of a Strategic Early Deployment Plan (SEDP) for ITS for northeastern Illinois in 1996. The SEDP identifies both near and long term deployment opportunities. The plan is multi-modal including people and goods movements, highways and transit. **A key goal of the plan is to integrate transportation facilities with management, communication and information technologies to better serve users of the system.**

As the Metropolitan Planning Organization (MPQ) for northeastern Illinois, CATS provides a forum for consensus building on the critical ITS issues facing the regions' implementing agencies. Project sponsors include the Illinois Department of Transportation, the Regional Transportation Authority, the Illinois State Toll Highway Authority, and the Chicago Department of Transportation. The Advanced Technology Task Force coordinates the SEDP with the Gary-Chicago-Milwaukee Priority Program Plan and the 2020 Regional Transportation Plan.

The plan recognizes and supports the significant ITS initiatives already underway in the region. These include the Multi-modal Traveler Information System; IDOT's Traffic Systems Center, expressway management system, and Emergency Traffic Patrol, RTA's Travel Information Center, CTA's Bus Service Management System; the Tollway's I-Pass electronic toll system, the City of Chicago's MIST system **for** downtown intersections, ITS-Midwest's public private partnerships, and many others.

A consultant team led by TransCore began technical work in February **1997.** Regional transportation problems and ITS opportunities were identified, and on-going and planned ITS projects and services were inventoried. Outreach efforts including stakeholder interviews, an ITS forum, and a user services workshop were undertaken to help set priorities for system integration.

The SEDP brings together all the elements, fills the gaps, and takes advantage of the opportunities **for integration** in the use of transportation technology. The SEDP adopted a

regional architecture, known as the Gateway. allowing disparate systems in northeastern Illinois to work together and connect our region to the larger Gary-Chicago-Milwaukee corridor. The SEDP identifies projects in four areas:

- *Core infrastructure - Basic system elements not currently in place. Variable message signs, fiber optic communications network, closed circuit television, parking management systems, and intelligent bus and paratransit management systems. $78.5 million.*

- *Sub-regional information hubs - Key centers in the regional Gateway architecture. Gateway completion, an Illinois transit hub, a Tollway hub, and Chicago and county hubs to collect, process, receive and disseminate transportation information. $21.2 million.*

- *Integrated operations - Taking advantage of integrated systems for more effective operations. An expanded Cicero Ave. "Smart Corridor" where combinations of technologies are applied, integrated operation of expressway and arterial corridors, advance transit signing, regional transit signal priority, and arterial incident management. $24.9 million.*

- *Information management - The dissemination of ITS generated data for use by travelers and others. Real time information will help travelers make better transportation decisions and will assist operators and researchers in improving system performance. $11.8 million.*

Over 60 projects totaling $136.4 million in these key areas are identified in the SEDP. They would be implemented in the short (through 2000), medium (2001 to 2003), or long term (to 2009). Funding has been identified for about 60% of these projects. In other cases the project must compete for funding with other transportation needs.

The Strategic Early Deployment Plan is scheduled for completion in June 1999. The plan provides a critical blueprint for regional deployment of an integrated system of applied and advanced technologies as solutions to the transportation challenges facing northeastern Illinois now and in the future. ITS offers linkages between planning and operations, and transportation and communications, which the SEDP can help strengthen.

For additional information on the SEDP contact the CATS Communication Division at 312/793-3460. Comment on this regional plan for Intelligent Transportation Systems should be submitted to the CATS Communications Division at 300 West Adams St., Chicago, IL 60606, Fax 312/793-3481 before May 14, 1999.

CHICAGO AREA TRANSPORTATION STUDY
Memorandum

To:	Work Program Committee
From:	D. Zavattero
Subject:	Proposed Advanced Technology Task Force Mission Statement
Date	March 31, 1995

Background:

The emergence of Intelligent Transportation Systems (ITS) as a key component of future transportation system and development, the completion of the Gary-Chicago-Milwaukee ITS Priority Corridor Program study, the approval by the Federal Highway Administration of an Early Deployment Plan grant for the northeastern Illinois region, and the on-going efforts of the regional agencies and private sector in the ITS area has identified a need for a task force to address advanced technology issues and applications. Thus, CATS recommends formation of an Advanced Technology Task Force.

The initial charge to be recommended for adoption is to coordinate and enhance on-going and proposed advanced technology activities being undertaken by the various implementing agencies who are members of the CATS and by the private sector, to identify and evaluate advanced technology options and applications for northeastern Illinois, to develop findings and recommendations for short, medium, and long range applications of ITS advanced technologies to the transportation system serving northeastern Illinois, and to incorporate ITS and advanced technology issues into the regional planning process.

Proposed Mission Statement:

The Task Force should provide for the development, analysis, implementation, tracking and assessment of ITS and advanced technologies as part of the on-going effort in the northeastern Illinois region to improve the effectiveness of the transportation system and to enhance the quality and services provided to users of the transportation system. The Task Force should seek:

- **To prepare a long range vision and medium and short range plans consistent with that vision for the development and integration of ITS and advanced technologies in the transportation system serving northeastern Illinois.**

- **To oversee preparation of and insure wide participation in the Early Deployment Plan (EDP) for northeastern Illinois.**

- **To insure that the regional vision and plans are consistent with and compatible with the National Program Plan, the developing national architecture, and the Gary-Chicago-Milwaukee Priority Corridor Program Plan.**

- **To prepare a range of recommendations to the WPC and PC for consideration as ITS and advanced technology plans, programs, and projects for inclusion in the Transportation Improvement Program and the 2020 Regional Transportation Plan.**

- **To provide a mechanism for discussion of ITS and advanced technology issues by a broad range of implementors and non-implementors for the purposes of coordinating and insuring the consistency of the variety of on-going and proposed ITS and advanced technology applications.**

- **To facilitate implementation of advanced technologies and to maximize the benefits of these technologies to the users of the system.**

Objectives:

The following set of objectives have been prepared to respond to the Mission Statement and to reflect the comments made at meetings relating to planning and technology issues.

1.) Identify and review on-going and proposed ITS and advanced technology activities in the region. Provide a forum for discussion and coordination of technology issues and projects. Ensure compatibility of ITS projects and activities in northeastern Illinois.
2.) Provide technical and management oversight for the development and preparation of the Early Deployment Plan for ITS in northeastern Illinois.
3.) Maintain currency in the requirements and opportunities represented by the National Program Plan and the national system architecture to insure regional compatibility with national priorities.
4.) Develop a regional strategy and program to pursue and coordinate the program recommendations of the Gary-Chicago-Milwaukee ITS Priority Corridor Plan.
5.) Identify and assess a broad range of candidate advanced technology options.
6.) Structure advanced technology recommendations in accordance with guidance provided by the U.S. Department of Transportation.
7.) Prepare an educational component to educate the transportation sector and the community at large as to the need for, user service opportunities associated with, and effectiveness of ITS and advanced technology applications.

8.) Participate in the technical analysis of ITS and advanced technologies as to their applicability, implementability, and effectiveness.
9.) Ensure coordination with development of regional modeling efforts for estimating and tracking ITS and advanced technology applications. Develop and recommend specific methodologies for evaluation of ITS and advanced technology applications for consistent use in planning applications.
10.) Coordinate ITS and advanced technology applications with the TIP and long range planning process.
11.) Consider strategy options for ITS and advanced technology in northeastern Illinois.
12.) Identify a range of specific ITS and advanced technology projects and make recommendations for consideration by the WPC, and PC.

Schedule:

The initial priorities of the Advanced Technology Task Force are represented by objectives 1-7. the schedule for these efforts should conform to a time-line which provides an adopted EDP including recommendations to the appropriate groups charged with program development responsibilities including recommendations to the WPC, and PC within 18 months from the start of the EDP process. It is expected that the EDP development will require a technically qualified consultant to be directed by the Task Force and a Technical Steering Committee. The schedule for the remaining objectives needs to be addressed.

Membership:

Task Force membership is subject to discussion with an initial recommendation being provided in the draft EDP Work Scope document. The membership of the Task Force should ensure broad representation and yet maintain a workable group size. The members should represent two basic groups: public sector and non-public sector. It is proposed that Task Force select a Chairman at a subsequent meeting.

Proposed membership initially would include:

Chicago Area Transportation Study
Chicago Department of Transportation
Chicago Transit Authority
County representative
Council of Mayors representative
Illinois Commerce Commission representative
Illinois Department of Transportation - District 1
Illinois Department of Transportation - ITS Program Office
Illinois Environmental Protection Agency
Illinois State Toll Highway Authority
Illinois Transportation Universities Research Consortium

ITS Midwest
Metra
Pace
Private Sector Communications Provider representative
Private Sector Transportation Provider representative
Trucking Sector representative
Regional Transportation Authority
Enforcement Agency representative(s)
Others to be determined

The regional (or divisional) offices of the following agencies are ex-officio members of the Task Force for the purposes of notification and documentation: Federal Highway Administration, Federal Transit Administration, and U.S. Environmental Protection Agency.

CATS staff will work with these and other organizations to identify representative members. These organizations would, through consensus designate the members to represent their interests.

Procedural:

1.) All meetings will be open to public participation.
2.) The agenda will be accessible for input by anyone attending the meeting.
3.) There will be ample opportunity provided to the public for both written and oral comments on the recommendations of this Task Force.
4.) The Task Force will, in all cases, attempt to reach consensus on all recommendations.
5.) Minority opinions regarding recommendations will be submitted to the Work Program Committee along with the majority recommendations.

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/daz/gsm

COMMENTS INVITED ON PROPOSED
STRATEGIC EARLY DEPLOYMENT PLAN

The proposed blueprint for development of Intelligent Transportation Systems to improve travel is open to public review and comment from April 16 through May 14, 1999.

The **Chicago Area Transportation Study (CATS)** has developed a plan to deploy Intelligent Transportation Systems to enhance the quantity and accessibility of information about transportation conditions and improve transportation efficiency, mobility and safety through technology. To receive additional information about the proposed Strategic Early Deployment Plan, **call** the CATS Communication **Division at (312) 793-3460.**

CATS will hold an **Open House on Wednesday, April 28, from 3:00 p.m. to 6 p.m.** to discuss the proposed plan and find out about new transportation technologies. CATS is located at 300 W. Adams St., 2nd Floor, Chicago, Illinois.

Exhibit Three

STRATEGIC EARLY DEPLOYMENT PLAN

The Chicago Area Transportation Study (CATS) Work Program Committee today approved the Strategic Early Deployment Plan for a four week public comment period. The proposed plan is the blueprint for integrating technology into the transportation system to ease congestion and give transportation users more information to make travel decisions.

These technological improvements are known collectively as Intelligent Transportation Systems, or ITS, and range from computers that coordinate traffic signals to satellite technology that tracks trains and busses to provide better information to riders. The plan was developed to coordinate these individual technologies into a regional system.

"Strategic Early Deployment Plan sounds a little bit militaristic, but most of these technologies were actually developed for the military," said David Zavattero, CATS Deputy for Operations. "Hopefully, this plan will help give us the edge in the war against traffic delays, congestion, and [auto] emissions."

CATS will accept written comment on the Strategic Early Deployment Plan through May 14, 1999, and an Open House will be held on Wednesday, April 28, 1999 from 3:00 p.m. to 6:00 p.m. at 300 W. Adams St. in Chicago. The Open House will be preceded by a media briefing session at 2:30 p.m.

For more information or to obtain a copy of the Strategic Early Deployment Plan, contact the CATS Communciations Division at (312) 793-3460

- Click here to see the Executive Summary (4 pages)
- Click here to view Table 9-2 of the Strategic Early Deployment Plan
- Click here to view Chapter 9 of the Strategic Early Deployment Plan

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Exhibit Four

Chicago Area Transportation Study

To: Scot Love, Vicki Sexton. Transcore

From: Mark Thomas

Date: May 20, 1999

Subject: Revisions to Plan Document based on Public Comment Period

I have prepared a package of corrections or changes to the Plan that will address comments received during the public comment period. Comments include:

- Will County Land Use Department Comments
- Comments from IDOT, ITS office

Please provide a fax of the corrected sheets to our office prior to the printing of the Final Report.

Will County

- Figure 7.2 I-Pass **system –** Add a bi-directional tollbooth half way between U.S. 20 and Illinois **64** on Interstate **355.** Also extend the coverage of the I-Pass system south on **1-355** to Interstate **55.**
- Page 2-7 the first dash (-) bullet should read "Eisenhower Expressway/I-88/I-294 junction."

IDOT, ITS

- Page 2-9, **fifth** bullet – *Change Irving Park Railroad* to *"the* Union Pacific Railroad crossing of Irving Park Road"
- Page 2-20, second bullet under *Needfor a more intermodal perspective...* Change *i.e. need to make...* to "e.g. need to make"
- Page 2-20, next bullet change *Need* to *resolve growing conflicts...* to "Need to resolve concerns..."

- Page 3-11, Remove the following:

  "Candidate actions are categorized under the following groups to maintain compatibility with the user services:

  1. Traveler Information
  2. Transportation Management
  3. Public Transportation
  4. Emergency Management"

- Page 5-10, Remove "Weather data" from the first list of six dashed bullets under *IDOT Traffic System Center...*
- Page 5-15, number 5 starting with *A finding that projects submitted...* should have the following two changes. First line: change *(TIP) are included in* to "(TIP) are integrated into". Second last line: change *Gateway Regional Integration Coordinating Committee* to "Gateway Regional Integration Committee for the Corridor"
- Page 6-8, third sentence under SYSTEM MIGRATION change: *Inn* to "In".
- Page 7-4, second paragraph under **A. Information Systems**. In the second last sentence change: *...information, inasmuch as Public...* to "... information. Public...
- Page 7-5, second paragraph under **E. Institutional Perspective**, last sentence, change: *These would entail integration...* to "These may entail integration..."
- Page 7-6, third paragraph under **7.3.2 Traffic Signal Control**, remove the following sentence. *The leader in this area currently is DuPage County.*
- Page 7-11, first paragraph under **7.3.9 Railroad Grade Crossings**, change: *"bus buzzer"* to "Pilot Study of Advisory On-Board Vehicle Warning Systems at Railroad Grade Crossings"
- Page 9-2, under **9.2.1 Architecture Context**, replace 4th and 5th bullets:

  - *Information Management - ...*
  - *Research and Planning -...*

  with a single bullet

  - **Information Management** – Projects that support the collection, aggregation, and/or dissemination of transportation information. Applied research and planning efforts will use this information to evaluate specific regional needs and objectives.

[redacted]

CHICAGO AREA TRANSPORTATION STUDY 300 West Adams Street Chicago, Illinois 60606 (312) 793-3456 Fax (312) 793-3481

[redacted]

June 14,1999

Mr. Tyson Warner, ACIP, Planning Director
Will County Land Use Department
501 Ella Avenue
Joliet, Illinois 60433

Subject: Commentary on the Northeastern Illinois Strategic Early Deployment Plan for Intelligent Transportation Systems

Dear Mr. Warner:

Thank you for your comments on our draft plan. The deployment of Intelligent Transportation Systems will support transportation management needs, and will allow the users of the transportation system to *make* smart travel decisions. Transportation management strategies could become very useful in areas like Will County where rapid growth is anticipated. These strategies are particularly useful at times when significant infrastructure investments can not be fulfilled.

We appreciate your identification of clerical errors and have addressed them.

Many of your comments on the plan fall into two areas, Regional Transportation Issues and 2020 Goals and Objectives. These discussions were originally developed as part of CATS' Regional Transportation Plan (RTP). Our intent is to roil the Strategic Early Deployment Plan for ITS into the Transportation Management component of the RTP.

CATS has initiated an update cycle for the RTP and will have an extensive public involvement program as part of that effort. We encourage your participation in the Plan Update process. Your discussion of flex-time work schedules, use of alternate travel options. freight vs. passenger vehicle use of the system during peak periods and the relationship between land use and transportation *are* all important in the development of the plan. Please access our website at www.catsmpo.com for more information.

The remainder of your comments express concerns relating to "logic of presentation" and "potential uses" of ITS. There are many concurrent efforts in the ITS arena, one of which is the *Gary* Chicago Milwaukee (GCM) corridor coalition which has an Advanced Traveler Information System (ATIS) element that speaks on public access to travel information.

The projects that are listed in the later sections of the report are all intended for deployment. The Plan is specifically designed to show policy makers that the region's transportation agencies have agreed on a plan for ITS. The FHWA refers to this agency agreement as "integration of systems" and "interoperability of agencies" without which ITS will not reach its full potential

The non-traditional Executive Summary is intended to sell ITS. Many transportation professionals do not fully understand ITS transportation management strategies, and we feel a need to develop that understanding prior to discussion of the Plan.

The transportation community is facing new dilemmas related to the future development of our transpiration system. It is likely that we will not be able to build our way out of congestion and other related transportation problems. Instead, improved management of our existing system and better information to the traveling public are envisioned as a significant elements in the development of solutions for transportation.

If you have any questions, please call me at (312) 793-0360.

Sincerely,

David A. Zavattero
Deputy of Operations

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WILL COUNTY LAND USE DEPARTMENT
501 ELLA AVENUE • JOLIET, ILLINOIS 60433

May 14,1999

David A. Zavattero
Deputy of Operations
Chicago Area Transportation Study
300 West Adams Street
Chicago, Illinois 60606
FAX (312) 793-3481

Mr. Zavattero:

Thank you for the opportunity to review the *Northeastern Illinois Strategic Early Deployment Plan* for Intelligent Transportation Systems *(ITS)*. The Planning Division staff has the following comments:

The I-PASS System Map *appears* to have some omissions. The Army Trail Road Toll Plaza appears to be missing, and the extent of the I-PASS System should reflect its existence further south on I-355 from I-88 to I-55. *(See Figure 7-2)*

Correct "I-249" to I-294. (See 2 2, *page 2-7)*

The encouragement of Flex-Time work schedules and transit systems/schedules to support it should be included. (See *Issue No.* 8)

Making improvements, adding on to current roadways, and increasing the availability and ease of parking can make existing routes and modes more attractive, ultimately deterring the use *of* alternate options. Efforts should be sensitive to possibly discouraging alternative routes and modes. (See 3 *1.2)*

If the document is going to used to promote public support for IT§ or justify the large cost of installing and maintaining ITS systems, more user-based information should be provided. Ideal information would identify the inherent benefits to the public both on a broad and personal level. There could also be a clearer description of how this information could be acquired by the public user.

Along these lines, the Executive Summary extols the virtues of ITS, but with very little substance. The Find Report, on the other hand, could use more in-text points about the benefits of ITS. In other words, the Executive Summary should be *more* of *a summary* of the Report and less of *a* separate ''sales

ADMINISTRATION (815) 727-8631 | BUILDING (815) 727-8634 | ENGINEERING (815) 740-8140 | PLANNING (815) 727-8430 | WASTE SERVICES (815) 727-8834 | ZONING (815) 727-8850 | FAX (815) 727-8638

brochure," whereas the Final Report could be a bit more persuasive.

Along with the above comments, staff also identified some possible issues *to* consider in future research. Whereas they may not be directly tied to ITS, they do affect travel around northeastern Illinois:

- More exploration should be made of the impact of shared use between shipping trucks and automobiles during peak flow times, including incentives to encourage alternate routes or alternate times and the effect of different shipping options. *(See Issue No 11)*
- The relationship of land use to transportation is difficult to separate from any discussion of traffic congestion. Though the objectives in the report are good ones, how might ITS more specifically relate to the issues raised? *(See 3.1.2 #2)*
- What recent efforts have been made already in promoting the alternatives discussed in the report?

With the large amount of money it already costs tax payers to maintain and improve the existing transportation system, now is the time *to* start investing in the application and research of newer technology-based options. It is good to know that we have a knowledgeable and active group pursuing *these* efforts. Keep up the good work.

Sincerely,

Steven M. O'Hare
Planner

Tyson Warner, AICP
Planning Director

CHICAGO AREA TRANSPORTATION STUDY

MEETING: SEDP Open House

DATE: 4/28/99

NAME	ORGANIZATION	ADDRESS	CITY/STATE/ZIP	PHONE/FAX	E-MAIL
John DeLaurentiis	RTA	181 W. Madison		917-0772	
Angela Johnson	RTA	181 W Madison	Chicago IL	917 0781	
John Ellis	Chicago DOT	30 N. LaSalle	Chicago, IL	312-744/4608//744-8511	
J.D. Stokes	FHWA - CMO	200 W. Adams (#2410)	Chicago, IL	312-886-1606	jd.stokes@fhwa.dot.go
Steve Call	FHWA-CMO	200 W Adams (2410)	Chicago, IL	312 886-1604	
Mike Rogers	Illinois EPA	PO Box 19276	Springfield, IL	217 524-4343/217 524-4710	
Corey A. Brown	Los Alamos Technical Associates	Wacker Drive	Chicago, IL	(312)344-4466 (temp) 312-782-1684 (FAX)	www.lata.com 312 986-1234 Hyatt Hotel
Ronald Shimizu	Parsons Brinckerhoff	230 W. Monroe, Suite 350	Chicago, IL	312-803-6638	shimizur@pbworld.com
Jeff Hochmuth	IDOT	120 W Center Ct	Schaumburg, IL	847-705-4800 847-705-4803	hochmuthj@nt.dot.state.il

Exhibit Thirteen
Page 1 of 2

CHICAGO AREA TRANSPORTATION STUDY

MEETING: SEDP Media Briefing

DATE: 4/28/99

NAME	ORGANIZATION	ADDRESS	CITY/STATE/ZIP	PHONE/FAX	E-MAIL
Myung Suh	Dong-A Ilbo	4635 W Lawrence, Chi IL		(630)282 1733	
Austin Provost	Edwards and Kelcey	One N. Franklin, Suite 1800	Chicago, IL 60606	(312) 251-3000/251-3015	aprovost@ekchicago.com
Gil Jimenez	Sun-Times	401 N. Wabash	Chgo 60654	312-321-2552	
KAREN CRAVEN	CHICAGO TRIBUNE	435 N MICHIGAN	CHGO 60611	312 222 4346	
ERIC CHRISTENSON	SHADOW BROADCAST	161 N. CLARK	CHGO 60601	312-705-1717	
Jay Trotsky	Smart Route Sys	161 N. Clark #1300	Ch., IL 60601	312-782-9907	jtrotsky@smartro...
Deuanna Hendricks	C-Dot	30 N LA Salle	Chi, Ill. 60602	312(744-0334)	
Payal Kapadia	Medill News Service	6412 N. Lisp	Chicago 60611		

Agency rolls out a high-tech plan for transportation

BY GILBERT JIMENEZ
TRANSPORTATION REPORTER

ST 4/29/95

A state planning agency Wednesday released a proposed blueprint for a futuristic regional transit and transportation system to rival almost anything science fiction has come up with.

Within a few years, motorists will have real-time traffic information for major streets and highways, and commuters will know parking availability before getting *to* the park-and-ride lot.

Stoplights automatically will change to allow buses and emergency vehicles *to* pass. And before motorists get behind the wheel they'll know whether to work from home and skip the commute because of highway conditions.

The CTA will even know the exact location of all of its 1,500 buses.

That vision of tomorrow was contained in a $136 million Strategic Early Deployment Plan for Intelligent Transportation Systems, which was released by the Chicago Area Transportation Study. CATS is the federally mandated state transportation planning agency for Illinois.

The agency is planning the data network backbone of an electronic information system that will make railroad crossings safer, help drivers reach destinations faster and turn vehicles *into* computerized travel machines.

The agency's plan is *to* link information from state and city transportation and transit agencies, emergency services and weather forecasters, and then make it available in cars and home computers so travelers can make intelligent trip-planning decisions, officials said.

"We have the third-wont congestion in the nation, and we've learned that you can't build your way out of congestion. By increasing the efficiency of the system you effectively add capacity without adding new lanes or pouring tons of concrete," said CATS Deputy for Operations David Zavatero.

The plan will require development and installation of many miles of fiber optic cables, communication devices and a way to link data streams from the different agencies to be involved. Private sector manufacturers will have to come up with the devices used by consumers to tap into the information.

While the plan has a 10-year time line, Zavatero said most of the money will be spent over the next two years.

The plan is open for public review and comment at CATS offices, 300 W. Adams, through May 14.

Technology in 10-year plan to improve commuting

Trib 4/29/94

By Karen Craven
TRIBUNE STAFF WRITER

The Chicago Area Transportation Study unveiled a 10-year, $188.4 million plan Wednesday that officials said would provide better information and smoother commutes for drivers and public transportation users.

Attacking problems such as a 30-minute wait for a CTA bus that arrives with two more right behind it and traffic lights that remain red even when no cross-traffic is within sight, the Strategic Early Deployment Plan seeks to bring what is referred to in other parts of the country as "smart travel" to northeastern Illinois. Proponents say the system also will make more information readily available on the expressways, in part with alternate routes displayed on computerized screens when delays occur.

Aside from upgrading technology, officials said, the key is better communication between transit agencies, from the Illinois Department of Transportation to the Chicago Department of Transportation and from the Illinois State Tollway Highway Authority to the Regional Transportation Authority. Those agencies will implement the CATS plan.

"We've really got every kind of transportation here," said David Zavattero, CATS' deputy for operations, who is leading the project. Yet northeastern Illinois recently was ranked the third-worst urban area nationwide in terms of traffic congestion, Zavattero said.

CATS said the regional agencies will better coordinate some 60 future capital projects. As part of those projects, the agencies will integrate commuter-friendly systems through fiber optics, satellites and other means that link them together, said Zavattero.

The blueprint also includes technology that, for example, would allow a bus to get back on schedule by overriding traffic signals. The system is to be installed within the next two years.

Satellite technology already is being installed to reduce delays and bunching of buses.

The blueprint is open to public review and comment through May 14. It is to be finalized in June, when it will be presented to the Metropolitan Planning Organization of Northeastern Illinois.

Multimedia traffic map to boost commuters' road IQ

BY CHRIS FUSCO Daily Herald Staff Writer

If knowledge is power, Chicago-area commuters should be getting stronger during the next decade.

Satellites, computers and the Internet will give us the ability to better gauge travel times on the tollways and get more detailed updates on roadwork, and help Pace and Chicago Transit Authority buses stay on schedule.

Eventually, a single Web site could allow us to compare up-to-the-minute conditions on expressways and rail and bus lines. It even may go so far as to identify the availability of parking at Metra stations.

The concepts are part of a new "intelligent transit" plan by the Chicago Area Transportation Study, which coordinates regional transportation projects throughout northeastern Illinois. More than two years in the making, the $136.4 million plan includes more than 60 projects that would use technology to reduce transit delays and make roads more efficient.

"It will really give you flexibility in trip planning," Regional Transportation Authority spokesman David Loveday said of the plan. "When you want people to use mass transit ... that's very important."

In the suburbs, the plan includes spending $4 million to get readings and pictures from I-PASS devices and cameras to pass along information about tollway traffic and construction, said David Zavattero, CATS' deputy for operations. The information would be broadcast over the next two years using 22 new digital road signs. giving motorists peace of mind.

"Part of road rage," Zavattero said, "is the uncertainty and frustration of not knowing what's down the road."

In Lake and DuPage counties, the plan calls for spending nearly $4 million on "traffic management centers" that would decrease congestion by integrating traffic signals. But prototypes of those centers would not be running until at least 2001, according to the plan.

Also in the suburbs, Pace could take advantage of technology CTA soon will start using that allows drivers to partly control traffic lights so they can make it through them when they run behind schedule.

The technology for these projects already is available,

Zavattero said. Whether all get implemented is a question of funding. CATS reports that 85 percent of the money needed for projects over the next two years has been secured. After that, it will be up to transit agencies to work with the federal government and private industry to make the plan become reality.

Daily Herald

THE URBAN TRANSPORTATION MONITOR

O' 13, NO 9 MAY 14, 1999

ew Center for Climate Change and nvironmental Forecasting Established

o Address Transportation Greenhouse Gas ***Emissions Issues***

ar r this month, the U.S. Department ' Transportation announced plans to eate a "Center for Global Climate ha ge and Environmental Forecast- g. According to the U.S. DOT, the nter will enable the department to con- bi :information and participate more rc ully in the Administration's efforts address this long term challenge. "he nter will provide expertise to conduct se ch and to develop solutions that ll reduce greenhouse gases while also complishing other social goals as- gn to the department by Congress. It ll ordinate climate change issues. and dress environmental issues and strate- es ith a broader view than the depart- en ,individual programs (e.g., gauging all transportation modes the benefits emerging advanced technologies; as- ss g the implications of the increasing pl yment of alternative fuels).

Thecenter also will provide a standing all cal support capability for climate- at ! issues, and other evolving cross- partmental environmental considera- ns It will marshal the expertise resi- nt l all the department's modal ad- nistrations. and be managed by an in- rmodal steering committee of high el rogram mangers led by the Office th Secretary. **It** will provide the base coordinating **and** sharing research, al ting strategies, developing policy, d stering and demonstrating multi- odal approaches that will reduce greenhouse gases from the transportation sector.

The initial level of effort for the center will be on the order of $1 million per year, for staff and dedicated research by the Volpe National Transportation Systems Center. and other specialized organizations and consultants.

Challenges from global climate

Please *turn to* ***Page 3***

Chicago's SEDP Completed—Unique in Terms of Emphasis on Public Transit

The Chicago Area Transportation Study (CATS) has produced **a** proposed plan for integrating information technologies into the regional transportation system to reduce delays and congestion and increase the efficiency of area roadways.

The **$136.4**million Strategic Early Deployment Plan (SEDP) for Intelligent Transportation Systems uses computers, satellites. electronics, and communications technology to integrate **signal** timings, provide better information for transportation users, and help transit to stay on schedule and avoid delays. While many of the individual technologies **already** exist in isolated corridors or small-scale pilot programs, this new plan is the blueprint for development of a regional system in which all these technologies work together.

After more than **two** years in the making. the SED? is designed to be implemented over the next 10 years and **includes** more than 60 projects throughout the region. The plan links together subre-

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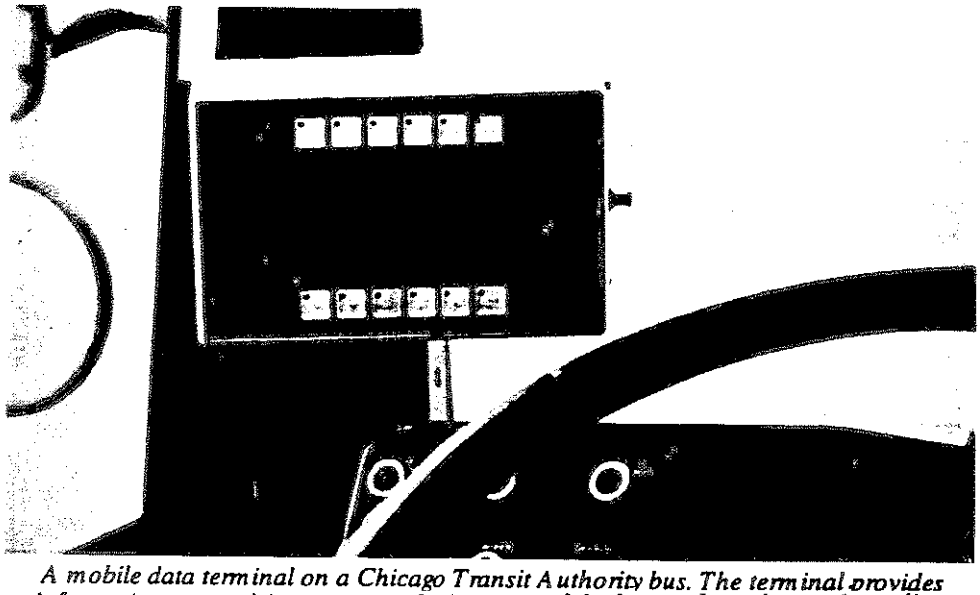


A mobile data terminal on a Chicago Transit Authority bus. The terminal provides information to bus drivers, ***reports*** *the location of the* ***bus,*** *and can be used to adjust traffic signals to give the bus priority.*

Inside

Most "Wasteful" Road Projects in U.S. Identified

"Roads to Ruin" Report Issued

According to Taxpayers for Common Sense and Friends of the Earth, taxpayer-financed road projects are increasing sprawl development, hurting businesses, and harming the environment. The two groups published a report "Road to Ruin" which identifies the 50 most wasteful highway projects in the country and ranks the 10 worst.

The 50 worst projects named in the report are located in 26 states. The state of Michigan leads the list With five wasteful road projects. Pennsylvania and Virginia have four each, and California has three.

The Road to Ruin report examines the most wasteful roads in America, ranks the top 10 that arc the most serious threat to taxpayers and communities and summarizes why each road is "unneeded and wasteful."

The 50 worst projects in the report were all nominated by local citizen organizations and individuals, then researched by Taxpayers for Common Sense and Friends of the Eanh staff. The Road to Ruin Top 10 were selected by ranking the roads by cost to the taxpayers, impact on the environment. and whether they induce sprawl.

Top 10 Worst Roads in America

1) *Corridor H in West Virginia* was originally proposed in 1966 and would cost over a billion dollars to build. It would cut through a national forest and fragment one of the largest roadless areas on the east coast. The road would also bulldoze historic Civil War battlefields.

2) *Stillwater Bridge in Minnesota* is an oversized bridge that would cost more than $120 million and harm the St. Croix River. a congressionally designated Wild and Scenic River. The bridge also would increase sprawl into neighboring Wisconsin.

3) *Route 710 Highway in Califomia* would cost over $311 million per mile to build, raze 1,300 homes and businesses, destroy 70 historic properties. and worsen serious air quality problems.

4) *I-69 Highway Extension in Indiana* would exceed $1.1 billion to build. Compared to upgrading existing roads. I-69 would cost $600 million more to build, while only save 10 minutes in travel rime. It also would destroy 5,000 acres of farmland and forests.

5) *Grand Parkway in Texas* would cost federal taxpayers $1.8 billion. In addition to being a redundant fourth loop around Houston, the Grand Parkway would slice through a number of state parks. increase sprawl and worsen air quality in the region.

6) *U.S. I in Florida* is a 20-mile project in the Florida Keys that would cost federal taxpayers $136 million and negatively impact the only coral reef in the continental U.S., as well as Everglades National Park. U.S. 1 would induce sprawl in the Upper Keys and make hurricane evacuations more difficult.

7) *U.S. 23 in Michigan* would cost federal taxpayers over $640 million to build. It would also force a record loss of wetlands in Michigan. This project would duplicate an existing road that is already being widened to four lanes, increase sprawl and destroy valuable farmland.

8) *Denali National Pad Second Access Road* in Alaska is an $80 million road proposal that would duplicate an existing road and run through the pristine Denali National Park. one of the nation's premier national parks.

9) *Western Transportation Corridor in Virginia* is estimated to cost between $1 billion and $1.5 billion. The proposed project would encourage sprawl and traffic while exposing rural areas to increased development.

10) *Legacy Highway* in Utah would cost the federal taxpayer more than $1.4 billion. This highway would duplicate a road that is currently being Widened. destroy countless acres of farmland and increase sprawl devclopment. This proposed road would also cup through a Western Hemispheric Shorebird Reserve Network Site that millions of shorebirds depend on for secure and pristine wetlands.

Road Io Ruin is available on the Taxpayer for Common Sense website at www.taxpayer.net.

Continued from Page 1

Chicago's SEDP Completed—Unique in Terms of Public Transit

gional programs so that he communicate with other program and form a cohesive regional system.

In addirion to CATS. the SEDP ion sors include the Illinois Departm t o *Transportation*, the Regional *Transpor* tation Authority. the Illinois Stat Tol Highway Authority. and the Chicag De partment of Transportation. The plan was deuloped to conform with the goals ofthe 2020 Regional Transportatio lan and the standards of the Gary-Chicago-Milwaukee Priority Corridor. Eventually, all the Intelligent Transport ion Systems from Milwaukee to Nort est Indiana would be linked together to share system information.

Many other metropolitan eas around the country have developed their own SEDPs, but the Chicago ar a is unique in terms of its emphasis on blic transit.

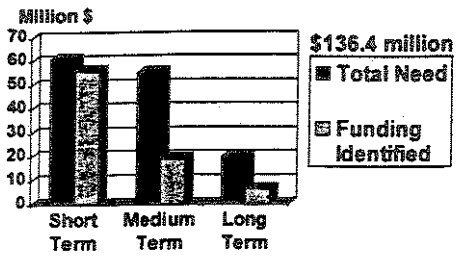
One of the first programs to be implemented under the plan would be to tfit more than 1500 CTA buses with satellite tracking systems that will help keep buses on schedule. Transit vehicles will lso have the ability to partly control t ffic lights so they can make it through intersections when they're running b ind schedule.

In the future, transit riders will be able to look up at small signs at transit ops and find out when the next bus or ain will arrive. Transit users will be able to check the Internet on thex home computer and find out when to leave hon for the next train or bus, thus elimin ing long waiting times in inclement weather.

Closed circuit cameras at str gic points on area expressways will help give highly-accurate travel time information to motorists, and new information gns will keep drivers informed of delays on- struction, closings, or congestion further down the road.

For more information on the S P, contact the CATS Communication Division at (312) 793-3460, fax (312) 793-3481.

Funding the Plan



Next Steps - SEDP

- Inform the Public
  - ➡ *Open House and Press Briefing*
- Respond to Comments
  - ➡ *Consideration and Modification*
- Finalize the Plan
  - ➡ *Policy Committee Approval*
- Implementation
  - ➡ *Continue Outreach*
  - ➡ *Update 2020 Plan*
  - ➡ *Develop Projects*

SEDP

Strategic Early Deployment Plan for Intelligent Transportation Systems

Chicago Area Transportation Study

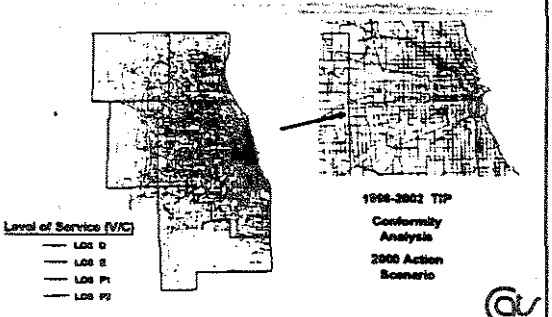
Regional Snapshot

- 3rd Worst Congestion in US
- 251 Annual Hours Delay per Capita
- $4 Billion Annual Cost
- Severe Ozone Non-Attainment Area

Background

- Regional History of ITS
- Gary-Chicago-Milwaukee (G-C-M) Priority Corridor
- 2020 Plan - Management Strategies
- Strategic Early Deployment Plan
- CMAQ Project Proposals

AM Peak Hour Congestion



Management Strategies

- Rideshare
- Bicycle and Pedestrian Environment
- Parking Mgmt.
- Park & Pool Network
- Transit Incentives

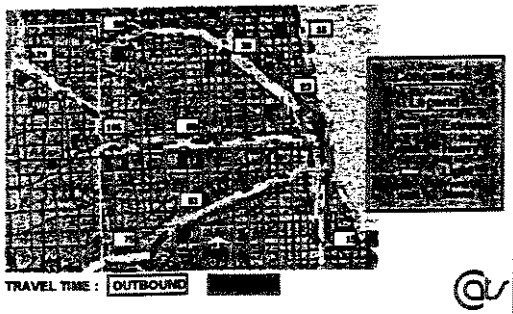
Includes ITS

- Signal Coordination
- HOV Priority
- I-Pass 2000
- APTMS (BSMS)
- ATIS/ATMS (Gateway/TMCs)

SEDP User Services

- Traveler Information
- Transportation Management
- Public Transportation
- Emergency Management

Real Time Congestion



Core Infrastructure

- VMS - Tollway, IDOT
- Core Fiber Installations
- CCTV Implementation
- Parking Management Systems
- Datapipe Connectivity - CDOT
- Intelligent Bus, Paratransit Mgmt. - CTA, Pace

$78.5 million

Subregional Hubs

- "Gateway" Completion
- Illinois Transit Hub
- Tollway TMC
- CDOT Hub
- Countywide Centers Development

$21.2 million

Integrated Operations

- "Smart Corridor" - Cicero Ave.
- Interagency Signal Coordination
- Integrated Corridor Operations
- Transit Signal Priority
- Arterial Incident Management

$24.9 million

Information Services

- Active Transit Signing
- Regional Kiosk
- Public - Private Partnerships
- Travel Data "Archive"

$11.8 million

Deployment Action Plan

- Core Infrastructure
- Subregional Hubs (Traffic Management Centers)
- Integrated Operations
- Information Management Services

Total $136.4 million

[redacted]

PRESS RELEASE

PRESS RELEASE

GO AREA TRANSPORTATION STUDY 300 West Adams Street Chicago, Illinois 60606 (312) 793-3456 Fax (312) 793-3481

[redacted]

FOR IMMEDIATE RELEASE — April 28. 1999

CONTACT: John C. Thomas. Public Involvement Coordinator
(312) 793-3460

STRATEGIC EARLY DEPLOYMENT PLAN USES "SMART WEAPONS" IN THE WAR ON TRAFFIC CONGESTION AND DELAYS

New CATS Plan makes public transit and roadways more efficient

CHICAGO-- The Chicago Area Transportation Study (CATS) has produced a proposed plan for integrating information technologies into the regional transportation system to reduce deiays and congestion and increase the efficiency of area roadways.

The $136.4 million Strategic Early Deployment Plan (SEDP) for Intelligent Transportation Systems uses computers, satellites, electronics. and communications technology to integrate signal timings, provide better information for transportation users, and help transit to stay on schedule and avoid delays. While many of the individual technologies already exist in isolated corridors or small-scale pilot programs, this new plan is the blueprint for development of a regional system in which all these technologies work together.

After more than two years in the making, the SEDP is designed to be implemented over the next 10 years and includes over *60* projects throughout the **region.** The plan links together subregional programs so that they communicate with other programs and form a cohesive regional system.

In addition to CATS, the SEDP sponsors include the Illinois Department of Transportation, the Regional Transportation Authority, the Illinois State Toll Highway Authority, and the Chicago Department of Transportation. The plan was developed to conform with the goals of the 2020 Regional Transportation Plan and the standards of the Gary-Chicago-Milwaukee Priority Corridor. Eventually, all the Intelligent Transportation Systems from Milwaukee to Northwest Indiana would be linked together to share system information.

(more)

"We have the third worst congestion in the nation. and we've learned that you can't Just build your way out of it." said CATS Deputy for Operations David Zavattero. "By increasing the efficiency of the system. you effectively add capacity without adding new lanes or pouring tons of concrete."

Many other metropolitan areas around the country have developed their own SEDPs. but the Chicago area is unique in terms of its emphasis on public transit.

One of the first programs to be implemented under the plan would be to outfit more than 1500 CTA busses with satellite tracking systems that will help keep busses on schedule. Transit vehicles will also have the ability to partly control traffic lights so they can make it through intersections when they're running behind schedule.

In the future, transit riders will be able to look up at small signs at transit stops and find out when the next bus or train will arrive. Transit users will be able to check the Internet on their home computer and find out when to leave home for the next train or bus, thus eliminating long waiting times in inclement weather.

Closed circuit cameras at strategic points on area expressways will help give highly-accurate travel time information to motorists, and new information signs will keep drivers informed of delays, construction, closings, or congestion further down the road.

The Strategic Early Deployment Plan is currently subject to public review and comment through May 14,1999, and is scheduled to be finalized in June, 1999. For more information on the SEDP, or to submit a comment, contact the CATS Communication Division at (312) 793-3460.

####

[redacted]

PRESS RELEASE
PRESS RELEASE
PRESS RELEASE

GO AREA TRANSPORTATION STUDY 300 West Adams Street Chicago, Illinois 60606 (312) 793-3456 Fax (312) 793-3481

[redacted]

FOR IMMEDIATE RELEASE
CONTACT:

April 22. 1999
John C. Thomas. Public Involvement Coordinator
(312) 793-3460

CHICAGO AREA TRANSPORTATION STUDY (CATS) APPROVES TRANSPORTATION TECHNOLOGY BLUEPRINT FOR PUBLIC REVIEW

CHICAGO– The Chicago Area Transportation Study (CATS) Work Program Committee today approved the Strategic Early Deployment Plan for a four week public comment **period.** The proposed plan is the blueprint for integrating technology into the transportation system to ease congestion and give transportation users more information to make travel decisions.

These technological improvements are known collectively as Intelligent Transportation Systems, or ITS, and range from computers that coordinate traffic signals to satellite technology that tracks trains and busses to provide better information to riders. The **plan** was developed to coordinate these individual technologies into **a** regional system.

"Strategic Early Deployment Plan sounds a little bit militaristic, but **most** of these technologies **were** actually developed for the military," said David Zavattero, CATS Deputy for Operations. "Hopefully, this plan **will** help give **us** the edge in the war against traffic delays, congestion, and [auto] emissions."

CATS **will** accept written comment on the Strategic Early Deployment Plan through May 14, 1999, and an Open **House** will be held on Wednesday, April 28,1999 from 3:00 p.m. to 6:00 p.m. at **300** W. Adams St. in Chicago. **The** Open House will be preceded by a media briefing session at 2:30 p.m.

For more information or to obtain a copy of the Strategic Early Deployment Plan, contact the CATS Communication Division at *(3* **12)** 793-3460.

####

Exhibit Nine

April 26,1999

Contact: John C. Thomas
(312) 793-3460

MEDIA ALERT

The Chicago Area Transportation Study (CATS) will hold a media briefing about the proposed Strategic Early Deployment Plan for Intelligent Transportation Systems at 300 W. Adams St., 2nd Floor, Chicago on Wednesday, April 28,1999 at 2:30 p.m. We will outline the plan and answer media **questions** about Intelligent Transportation Systems (ITS) and current transportation planning issues. The briefing will be followed by **an** Open House to discuss **the** plan with members of the public and transportation professionals.

WHAT: Media Briefing Session/Open House

WHEN: Briefing Session: Wednesday, April 28,1999 **at** 2:30 p.m.
Open House: Wednesday, April 28,1999 from 3:00 p.m. to ***6*** p.m.

WHERE: CATS, 300 W. Adams St., 2nd Floor, Chicago

The Strategic Early Deployment Plan is currently subject to public review and comment through May 14,1999 at 4:30 p.m. CATS will accept written comments about the **plan** by mail or in person at 300 W. **Adams** St., 2nd Floor, Chicago, IL 60606, via e-mail **at** cats@pop.state.il.us, or by **fax** at (312) 793-3481.

Exhibit **Eight**

[redacted]
CHICAGO AREA TRANSPORTATION STUDY 300 West Adams Street Chicago, Illinois 60606 (312) 793-3456 Fax (312) 793-3481
[redacted]

April 23, 1999

To: Interested Parties

Enclosed is the **Executive Summary of the Strategic Early Deployment Plan for ITS**. The Plan provides a blueprint for the use of Intelligent Transportation Systems to improve travel in northeastern Illinois. The Plan has been developed by the Chicago Area Transportation Study (CATS) through a cooperative process with regional transportation agencies and stakeholders.

The Plan proposes to deploy transportation technologies to enhance the quality of information available to users and operators. ITS will continue to be used in the region to improve transportation efficiency, mobility, and safety.

The Plan is open for public review and comment from April 16 through May 14, 1999. CATS will hold an **Open House on Wednesday, April 28, from 3:00 p.m. to 6:00 p.m.** to discuss the proposed plan and to find out about new transportation technologies. You are invited to attend the Open House at CATS offices at 300 W. Adams St., 2nd Floor, Chicago, Illinois.

To receive additional information about the proposed Strategic Early Deployment Plan call the CATS Communication Division at (312) 793-3460.

David A. Zavattero
Deputy for Operations

Exhibit Seven

CATEGORY	SHORT TERM (1999-2000)	MEDIUM TERM (2001-2003)	LONG TERM (2004-2009)	VISION (2010+)
Arterial Incident Management (Lake-Cook Road)	Phase II, Engineering Analysis $500K	Phase III, Construction $2 M		Regional arterial incident management strategy
[illegible]				
RTA Regional Kiosk	Design study - $50K	Design and pilot deployment - $500K		Pending evaluation of pilot deployment
Active Transit Signing				
RTA Active Transit Signing Design	Phase I, Short Term Plan $50K Phase II, Design, Develop, Test Prototype $100K	Phase III, Limited implementation $350K plus implementation cost (not available at this time)	Future expansion of system	Integrated traveler information delivery through active signing at regional transit stations.
CTA Active Transit Signing		Deploy 600 active signs - $6M	Deploy 400 active signs - $4M	
Travel Information Archive	Phase I, Requirements $150K Phase 2, Basic Implementation $225K	Phase 3, Modeling Support, $325K		Common repository and archive for regional travel data across all modes

	SHORT TERM	MEDIUM TERM	LONG TERM	TOTAL
Cost	$61.0M	$55.4M	$20.0M	$136.4M

Exhibit Six
Page 3 of 3

Table 9-2: Summary of Deployment Action Plan Project Costs and Time Lines

CATEGORY	SHORT TERM (1999-2000)	MEDIUM TERM (2001-2003)	LONG TERM (2004-2009)	VISION (2010+)
Fiber Installation				
IDOT		IDOT Fiber (I-290E to Loop) - $1.13M	IDOT Fiber (I-290W to I-294, I-90 to tollway). $3M est.	Regional fiber optic coverage along all major free/toll-ways
ISTHA	Tollway fiber network			
CTA		Red Line (Loop to Howard) - $660K	Brown Line - $1.5M Blue Line - $5.1M	
CCTV Surveillance				
IDOT	I-W T CCTV (Circle Interchange area, I-55) - $800K		IDOT CCTV (I-290W to I-294, I-90 to tollway) - $2M	Full CCTV coverage along all major freeways
ISTHA	Continued installation of CCTV at key locations - $1M	Continued installation of CCTV at key locations - $1M		Full CCTV System Coverage
Lake County Arterials	Demonstration installations at eight locations - $300K	Future deployment phase	Future deployment phase	Coverage of key intersections throughout County
VMS Deployment				
IDOT	Deployment of additional VMS locations - $1.5M	Deployment of additional VMS locations - $1.5M		VMS at strategic locations throughout the freeway system
ISTHA	Deployment of 22 initial VMS locations. $5.5M	Deployment of 10-15 additional VMS locations. $3.25M		VMS at strategic locations throughout the tollway system
Parking Management System Pilot	Phase II, Puking Management System design and prototype - $350K	Phase III, Parking Management System limited deployment - $400K plus implementation cost (unavailable at this time)	Future deployment of Parking Management Systems	Pending evaluation of pilot
CDOT Data Pipeline	C W T Data Pipeline implementation (cost included in C W T TMC)			Interconnectivity of all traffic management centers and the Gateway
Intelligent Transit Vehicles and Systems				
CTA BECS/BSMS	Equip 1,473 buses with MDT, GPS Equip 264 buses with BSMS Upgrade BECS buses to BSMS - $34.1M	Install BSMS on remainder of fleet - $4M		Fully instrumented fleet with integrated AVL and management system

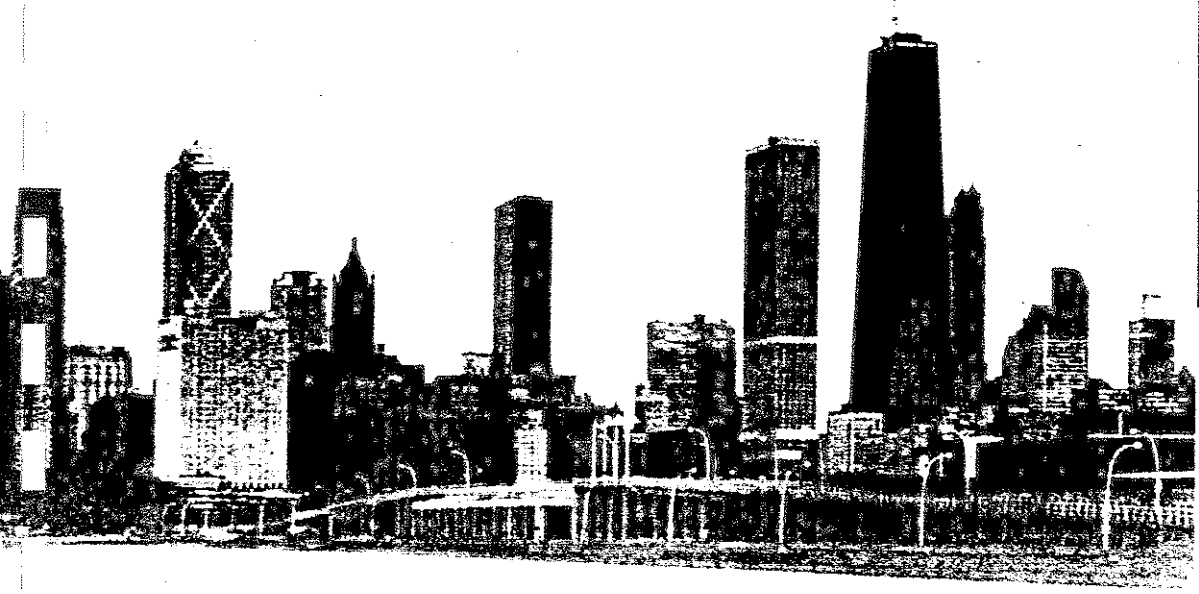
Exhibit Six
Page 1 of 3

CATEGORY	SHORT TERM (1999-2000)	MEDIUM TERM (2001-2003)	LONG TERM (2004-2002)	VISION (2010+)
Pace Intelligent Bus System	Design of Pace Intelligent Bus System - $1M	Implementation of Pace Intelligent Bus System - $7M Equip private carriers $2M		Fully instrumented fleet with integrated AVL and management systems
Paratransit Management System	Design of Pace Paratransit Management System - $200K	Implementation of Pace Paratransit Management System - $1.2M		
[illegible]				
Gateway Completion	Gateway Core: CTA, District 15, Northwest Central Dispatch, ISTHA, *999, TSC, Chicago 911, ETP, INDOT, WISDOT	Gateway Enhancements: DuPage County, IDOT District 1 CAD, Lake County, CDOT, RTA, O'Hare Airport, CDSI, Borman $3M	Gateway Deployment $3M	Interconnectivity of all traffic management centers and the Gateway
Development of Transit Hub	Phase I, Feasibility Study - $150K	Phase II, Conceptual Design - $150K	Phase III, Development and Integration of Transit Hub - $400K	Expand traveler information system for transit users
Development of TMCs				
ISHTA	Continued Expansion of ISTHA TMC - 4M	Continued Expansion of ISTHA TMC - 2M		Integrated architecture of regional traffic management centers through the Gateway
CDOT	Design of CDOT TMC - $500K	Integration of CDOT TMC - $4M		
Lake County		Lake County TMC $1.8M		
DuPage County	Feasibility/concept - $400K	DuPage County TMC $1.8M		
Other counties				
[illegible]				
Expansion of Cicero Smart Corridor	Phase I $4 million	Phase II $2.3 M Phase III $2.3 M		Migration of smart corridor elements throughout the region
Interagency Signal Coordination	Pilot deployment of 10 arterials - $700K			Interagency coordination on key arterials throughout the region
Integrated Corridors (Pilot & Deployment)	Pilot $3.5 M	Deployment $3.5 M	Development of future corridors	Integrated corridor operations regionally
Advance Transit Signaling	Pilot deployment of 10 signals - $75K			Implement design standards pending evaluation of pilot deployment
Transit Signal Priority				
RTA Regional Transit Signal Priority Integration Plan	Inventory, location selection, simulation $560K Technology analysis and selection $300K	Initial implementation -$200K plus cost per vehicle/signal (unknown at this time)	Future implementation of interoperable transit signal priority	Regionwide deployment of transit signal priority along key routes
CTA Transit Signal Priority	Deploy at 200 signals - $1M	Deploy at 600 signals - $3M	Deploy at 200 signals - $1M	

Exhibit Six
Page 2 of 3

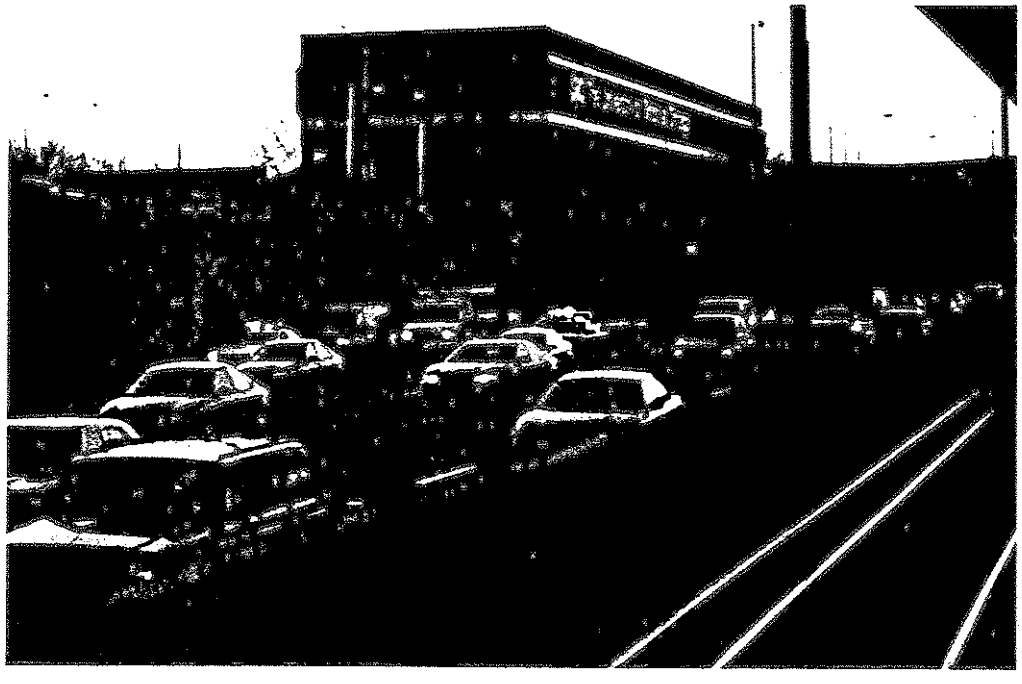
SEDP

Executive Summary



Strategic Early Deployment Plan for ITS

The Strategic Early Deployment Plan provides a blueprint for the use of intelligent transportation systems to improve travel in and around northeastern Illinois.



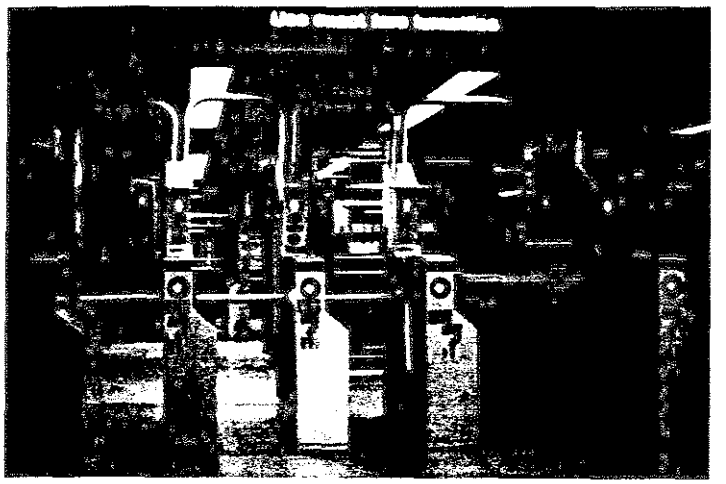
A Vision For Transportation Technology . . .

ITS will be deployed to enhance the quality of information available to users of the transportation system. It will also support the management of transportation facilities and services to improve performance, effectiveness, safety, and security.

The Transportation Challenge in Northeastern Illinois

Northeastern Illinois is the 3rd largest urban area in the US and home to over 7 million people. it faces significant transportation challenges such as:

- Worsening congestion
- Transportation delays
- Increased impacts of incidents
- Declining transit use
- Limited information
- Air quality concerns
- Limited resources and funding

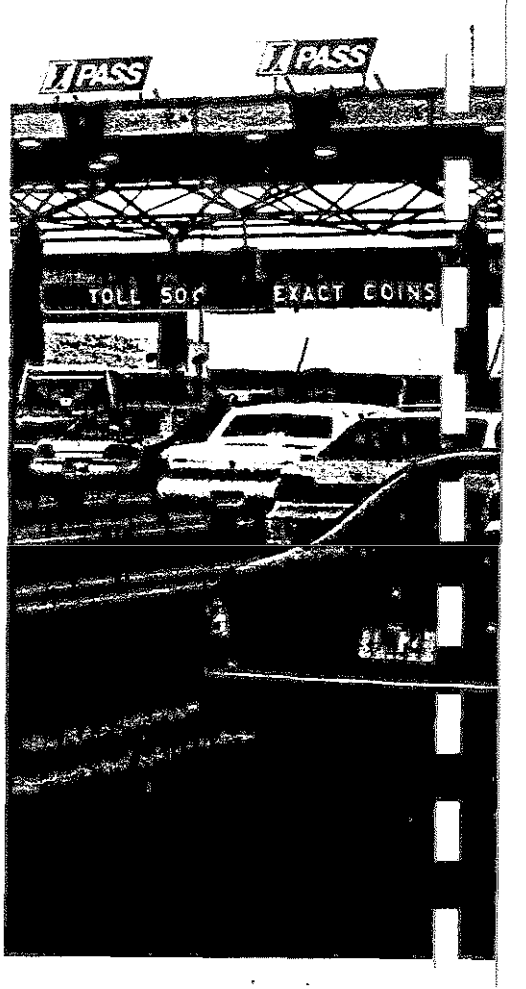


ITS, or Intelligent Transportation Systems, combines computer electronics and communications technologies with management strategies in an integrated manner to improve efficiency, mobility, and safety. Information is the key component and product of ITS.

Why Do We Need a Strategic Plan for ITS?

Regional transportation agencies see a significant benefit in **ITS.** When developed properly, ITS can reduce rush hour congestion and delays, speed drivers though toll plazas, save lives through faster emergency response times, give travelers choices through information, and help transit systems work better and safer. All this while helping to reduce the environmental impacts of transportation.

ITS projects work most effectively when they are a part of comprehensive, integrated systems. This means more than physical connections! it means cooperation between agencies and coordination between operators.



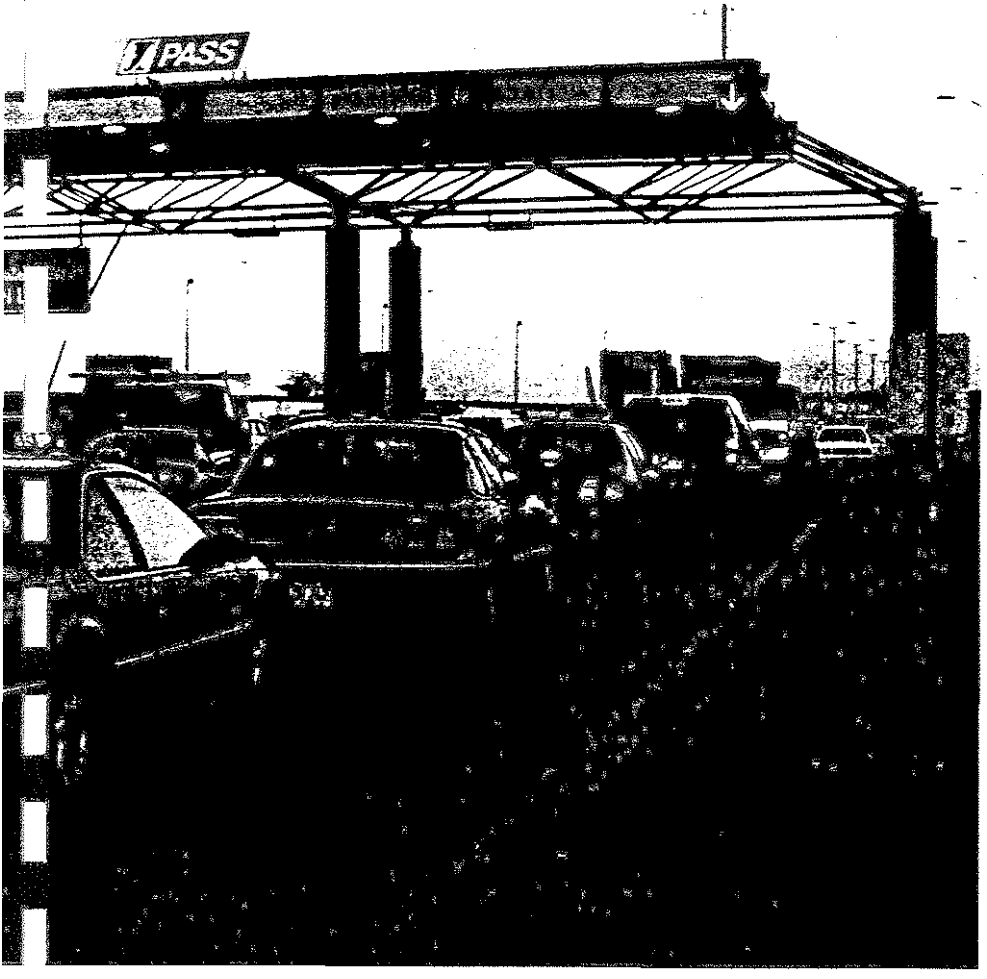
Effective deployment of ITS must be a partnership between public agencies, the private sector, and the users of the transportation system.

Cities across the US have made significant gains in the battle against reduced mobility with technology solutions like electronic toll collection, transit management systems, incident management programs, and traveler information systems. Closer to home, IDOT has been a leader in the deployment of technology **for** transportation management since the **1950's.** More recently, other regional agencies have developed their own initiatives, such **as** the Tollway's I-Pass 2000 electronic toll collection system and CDOT's Advantage 21 program, and transit initiatives such as RTA's Traveler Information System, CTA's Bus Service Management System and Pace's Intelligent Bus System.

Integration provides consistent, accurate, and reliable information to agencies, emergency services, and motorists – enhancing efficiency, mobility, and safety.

The benefits **of** these local initiatives are significant and will grow as these programs are fully implemented. However, there are even more opportunities for the future **of** ITS in northeastern Illinois. Many of these potential benefits come from the ***integration*** of existing and future ITS deployments. Integration optimizes the benefits of ITS in the same way an office computer network enhances productivity over an isolated personal computer.

The Strategic Early Deployment Plan for ITS was developed to realize these benefits and to help ensure that our regional system is integrated and interoperable. The SEDP looked at the current ITS activities in the region, along with the challenges to transportation. Based on this analysis and through interactive workshops with regional stakeholders, a vision was developed and a focused approach was identified to further the region's ITS initiatives.



Interoperability supports the coordinated management of the transportation system.

To implement this vision, the SEDP adopted the regional framework, known as the Gateway, allowing disparate systems to work together. The SEDP then developed a Deployment Action Plan that identifies projects needed over the short term (1999-2000), medium term (2001-2003) and long term (2004-2009).

The Plan

- **Core Infrastructure**
  - Expand variable message signs
  - Develop fiber optic communication networks
  - Install more closed circuit television
  - Implement parking management systems
  - Deploy intelligent bus system
  - Develop paratransit management systems
- **Sub-Regional Hubs**
  - Complete regional Gateway
  - Develop transit hub
  - Build tollway hub
  - Develop city and county hubs
- **Integrated Operations**
  - Expand Smart Corridors
  - Coordinate regional traffic signals
  - Integrate expressway and arterial operations
  - Provide signal priority for transit
  - Deploy incident management systems for arterials
- **Information Management**
  - Provide real-time transit information
  - Develop regional kiosk systems
  - Archive information for operations and planning

Core infrastructure provides an electronic connection for ITS systems. The Gateway and sub-regional hubs facilitate the exchange of information and improved regional operations. Integrated operations increase efficiency by using information and advanced control techniques to manage the transportation infrastructure. The collection and dissemination of transportation information provides benefits directly to the traveling public.

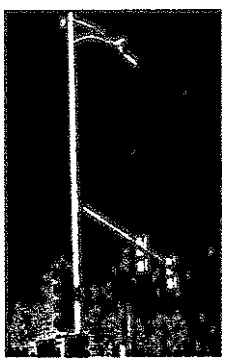
Implementing the Plan

These projects are the foundation of the Deployment Action Plan developed undd the SEDP. They help insure that advanc technologies and ITS will be used effectively in the future. The plan, detailed in the S)P final report, provides information on projects, integration, and funding. The plan is a living document that will be update 4 s new needs are identified, new technologies evolve, and as funding is allocated.

To fund the plan requires:

Short Term	1999-2000 $61.0 million
Medium Term	2001-2003 **$55.4** million
Long Term	2004-2009 $20.0 million
TOTAL	**5136.4 million**

About 60% of the funding needed for the plan has been identified. In other cases the project must compete for limited resources



For more information call the CATS Communicati..ns Division at 312 793-3460

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Thanks to Thomas Smith, formerly with the Chicago Department of Transportation, who served as the previous Chair of the Task Force

The Advanced Technology Task Force (ATTF) provides a regional forum for the development, analysis, implementation, tracking, and assessment of Intelligent Transportation **Systems** and advanced technologies to improve the effectiveness of the transportation system and enhance the quality of services to users.

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The Work Program Committee reviews and makes recommendations to the Policy Committee on transportation matters presented to CATS and carries out and other duties the Policy Committee shall assign to it. It coordinates the activities of the comminees, subcommittees and task forces reporting to the Work Program Committee.

Chicago Area
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