

## APPENDIX 3



# Chicago Metropolitan Agency for Planning

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## Memorandum

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To: Kermit Wies, Deputy Executive Director for Research and Analysis  
From: Claire Bozic, Senior Analyst  
Subject: Kankakee Rail Modeling Results  
Date: December 3, 2007

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### Background

In support of the Kankakee Rail Study, CMAP has modeled the new service to estimate the number of riders who might use the service in 2030. The service was coded into the expanded “zone07” zone system and the region’s model was run through 4 iterations in the usual fashion. The roadway network was not revised for this project.

### Rail Network Coding

The Kankakee rail service was added to the region’s transit network as indicated by the consultant (fares, parking, parking costs and service levels) and consistent with the rest of the rail system coding (zone connectivity, zonal access and egress).

The base regional rail network also included the STAR Line starting along the northwest corridor and extending all the way to Indiana with a transfer point on the Metra Electric. The SouthEast Service was included but did not have a connection to the STAR Line. The network included an extension of the Metra Electric line to Peotone. All itineraries that previously started in University Park were extended to start at Peotone.

The 5 new Kankakee line stations were coded in the locations specified by the consultants, with an additional station coded adjacent to the Metra Electric Peotone station and attached by a bi-directional transfer link to simulate the necessity to change trains to continue the journey from the Kankakee line on to the areas served by the Metra Electric. The transfer link is 0.06 miles long, resulting in a time penalty of 1.2 minutes.

### Bus Network Coding

The regional network included all buses modeled for the development of the long range transportation plan. Notably, the network includes Pace’s planned network of Transit Signal Priority Corridors and the new downtown BRT distribution system.

The city of Kankakee area currently also has a bus system. However, the Kankakee area bus system had not previously been coded and modeled, and the roadway network is too sparse to fairly represent it. Since this study is not focused on local transit circulation, but rather on rail line ridership, transit access to the new stations was represented by adding centroid connectors from all zones that would have access to the new line via transit. The connectors were

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assigned a link length to produce a travel time of roughly what would be expected if the bus were traveling at 15 miles per hour with a circuitry factor of 1.4 applied to the airline distance. An exhibit attached to the end of this document shows the connected zones.

#### **Zone System and Socioeconomic Information**

The zone system in Kankakee County is rather coarse. Unlike other areas of the region, the “trip generation zones” are the same geography as the “traffic analysis zones.” Within these zones, the household and employment information was based on an aggregation of the finer grained development data produced by the Al Chalabi Group for use in this analysis. Exhibits showing the Kankakee County zone system, households and employment assumed for each zone can be found attached to the end of this document. A table presenting the same information is shown below.

Modeled 2030 Households, Employment and Workers

Trip Generation Zone	Traffic Analysis Zone	Households	Employment	Workers
15210	1753	281	906	377
15211	1754	4,549	6,451	5,777
15212	1755	328	61	453
15213	1756	1,574	1,594	2,109
15214	1757	822	157	1,003
15215	1758	480	186	667
15216	1759	1,900	3,044	2,622
15217	1760	3,392	4,217	5,156
15218	1761	3,968	4,982	5,158
15219	1762	4,399	6,802	5,631
15220	1763	4,112	11,673	5,181
15221	1764	4,786	9,234	5,456
15222	1765	4,046	6,707	5,017
15223	1766	4,652	7,072	5,862
15224	1767	1,697	3,354	2,121
15225	1768	2,003	1,887	2,544
15226	1769	407	300	537
15227	1770	998	785	1,367
15228	1771	911	2,018	1,203
15229	1772	3,085	1,283	3,856
15230	1773	923	1,007	1,135
15231	1774	1,394	609	1,701
County Total		50,707	74,329	64,933

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### Trip Distribution and Mode Share

The trip tables resulting from the application of the regional model are shown below. The trip distribution model resulted in approximately 14,000 (3%) daily person trips leaving the county for the Central Area or other locations within Cook County. Because these trips are in production-attraction format, this implies approximately 7,000 round trips made to the Chicago Central Area or Cook County.

Total Person Trips (P/A Format)

Origin Zone	Destination District				Total
	Kankakee	Chicago Central Area	Other Cook	Other	
1753	2,886	0	19	1,635	4,540
1754	29,505	4,159	363	5,220	39,247
1755	1,285	0	196	1,026	2,507
1756	8,444	0	930	3,884	13,258
1757	3,391	0	0	2,632	6,024
1758	2,639	0	0	1,146	3,785
1759	14,507	0	5	2,367	16,878
1760	28,792	2,662	57	2,106	33,617
1761	35,892	2,356	39	1,697	39,984
1762	42,262	563	73	616	43,514
1763	42,971	232	28	139	43,370
1764	41,688	170	19	128	42,004
1765	35,292	218	12	151	35,673
1766	39,396	284	17	143	39,840
1767	12,161	0	650	2,944	15,756
1768	14,806	0	746	2,564	18,116
1769	2,351	0	0	860	3,211
1770	7,287	0	0	883	8,169
1771	8,457	0	1	440	8,898
1772	24,372	72	3	46	24,492
1773	0	0	0	0	0
1774	9,092	0	64	1,951	11,107
Sum	407,478	10,715	3,220	32,579	453,992
	90%	2%	1%	7%	100%

When the trips were faced with the choice of taking transit, 8,150 (76%) of the trips made to the Central area took place on transit, while very few took transit to other areas in Cook County. Note that the Kankakee County-to-Kankakee County transit trips are zeroed out because the internal transit system was not represented. In total, 8,278 transit trips left the county. A comparison of the modeled 2030 travel times by auto and by rail shows that a rail trip to the Chicago Central Area is expected to take about 1.5 hours, while the auto trip will take over 2 hours.

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Transit Person Trips (P/A Format)

Traffic Analysis Zone Origin	Destination District				Total
	Kankakee	Chicago Central Area	Other Cook	Other	
1753	0	0	0	0	0
1754	0	3,204	12	49	3,265
1755	0	0	0	0	0
1756	0	0	0	0	0
1757	0	0	0	0	0
1758	0	0	0	0	0
1759	0	0	0	0	0
1760	0	2,091	2	7	2,100
1761	0	1,801	0	40	1,841
1762	0	406	2	5	413
1763	0	150	0	0	150
1764	0	109	0	1	110
1765	0	151	0	2	153
1766	0	198	0	3	201
1767	0	0	0	0	0
1768	0	0	0	0	0
1769	0	0	0	0	0
1770	0	0	0	0	0
1771	0	0	0	0	0
1772	0	40	0	5	45
1773	0	0	0	0	0
1774	0	0	0	0	0
<b>Sum</b>	0	8,150	16	112	8,278

*The Kankakee County to Kankakee County trips are zeroed out because the internal bus transit system was not represented.*

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#### Transit Mode Share

Origin Zone	Destination District		
	Chicago Central Area	Other Cook	Other
1753		0%	0%
1754	77%	3%	1%
1755	0%	0%	0%
1756	0%	0%	0%
1757		0%	0%
1758		0%	0%
1759		0%	0%
1760	79%	4%	0%
1761	76%	0%	2%
1762	72%	3%	1%
1763	65%	0%	0%
1764	64%	0%	1%
1765	69%	0%	1%
1766	70%	0%	2%
1767		0%	0%
1768	0%	0%	0%
1769		0%	0%
1770		0%	0%
1771		0%	0%
1772	56%	0%	11%
1773			
1774		0%	0%
sum	76%	0%	0%

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### Network Assignment Results

The raw network assignment results show trips in production-attraction format. Approximately 2700 trips (1,350 people) board within Kankakee County and also alight there, as shown by the alighting side of the table. 8200 trips (4100 people) are transfer alightings at Peotone, where they transfer to continue the journey to downtown.

P/A Format Assignment Results by Node

Station	Boarding			Through Passengers	Alighting		
	initial	transfer	total		Final	Transfer	Total
South Kankakee	0	0	0	0	0	0	0
Kankakee	2,391	0	2,391	0	0	0	0
Bradley	1,123	0	1,123	2,259	132	0	132
Bourbonnais	4,217	0	4,217	1,618	1,764	0	1,764
Manteno	3,242	0	3,242	5,013	822	0	822
Peotone (transfer station)	0	0	0	0	51	8,204	8,255
<b>Total</b>	<b>10,973</b>	<b>0</b>	<b>10,973</b>		<b>2,769</b>	<b>8,204</b>	<b>10,973</b>

When the transit trip table is modified to disallow transit riders boarding and alighting at stations within Kankakee for short trips, the results are somewhat different. Be aware that when trips are excluded because they are alighting in Kankakee County, the boarding end, also in Kankakee County, is eliminated. Consequently, boardings are likewise reduced.

P/A Format Assignment Results-Excluding Intra County Rail Trips

Station	Boarding			Through Passengers	Alighting		
	initial	transfer	total		Final	Transfer	Total
South Kankakee	0	0	0	0	0	0	0
Kankakee	509	0	509	0	0	0	0
Bradley	563	0	563	509	0	0	0
Bourbonnais	3,941	0	3,941	1,072	0	0	0
Manteno	3,242	0	3,242	5,013	0	0	0
Peotone (transfer station)	0	0	0	0	51	8,204	8,255
<b>Total</b>	<b>8,255</b>	<b>0</b>	<b>8,255</b>		<b>51</b>	<b>8,204</b>	<b>8,255</b>

The final table below shows daily boardings converted from production-attraction format to daily boarding totals. Of interest here is that trips were assigned to board at the station nearest the zone where the trip originated. Station boarding figures could be adjusted to reflect travelers accessing the line via a station with more parking, or even to account for the fact that the station a household's trips were assigned to may not actually be the closest one because the zones are quite large. Parking quantities provided by the consultants for each station are also shown. The line experiences 11,000 daily boardings, or approximately 5500 riders using the service in the morning and in the evening.

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Daily Node Boardings Allowing Intra Kankakee Rail Trips

O/D Format		P/A	P/A	O/D	Parking
Station	Node #	Boarding total	Alighting Total	Daily Boardings	
South Kankakee	43005	0	0	0	2,000
Kankakee	43004	2,391	0	1,196	500
Bradley	43003	1,123	132	628	500
Bourbonnais	43002	4,217	1,764	2,991	2,000
Manteno	43001	3,242	822	2,032	500
Peotone (transfer station)	43000	0	8,255	4,128	2,000
Total for Line				10,973	7,500

*Note: these boardings include approximately 2000 people who board in Kankakee and alight in Bradley and Bourbonnais.*

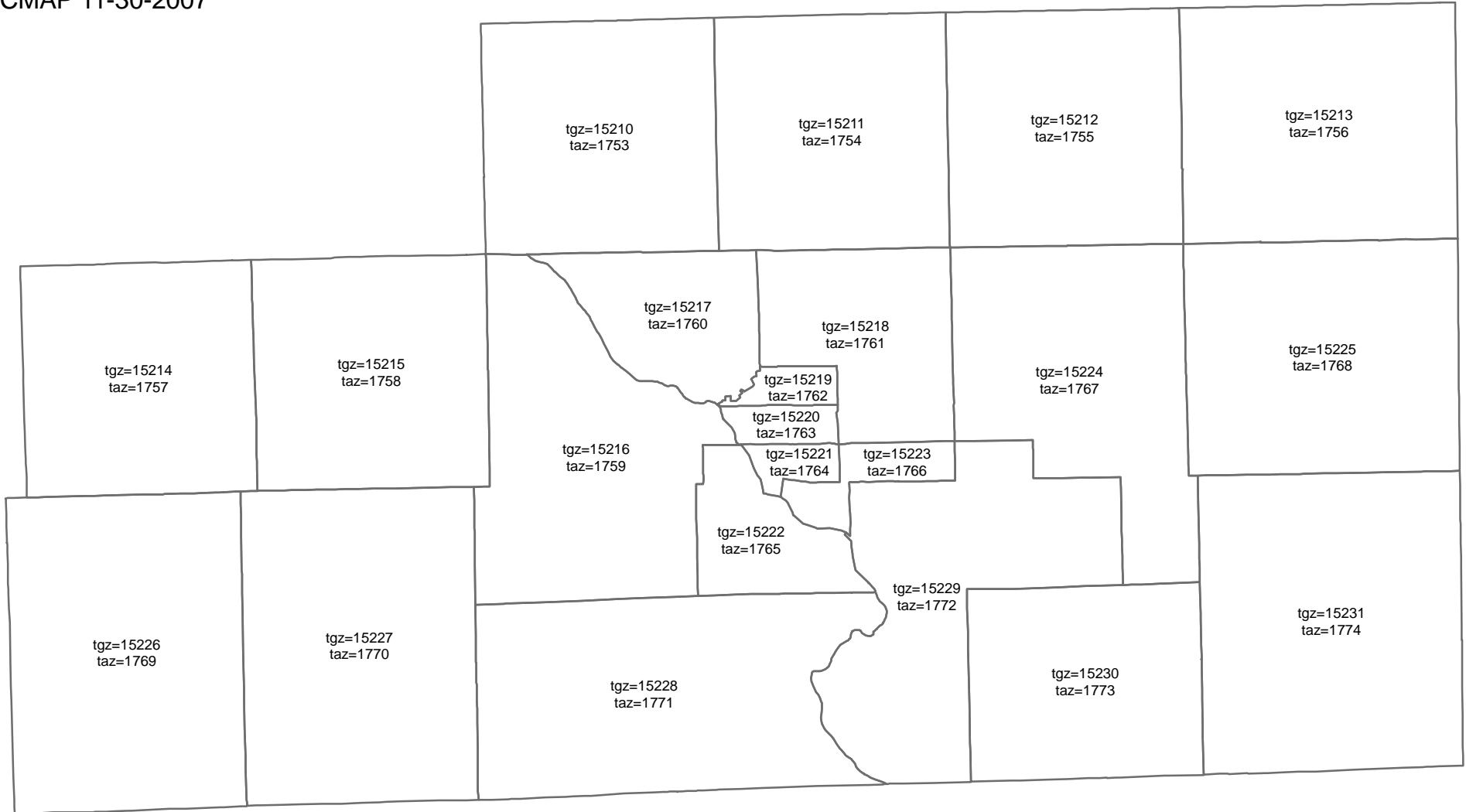
When rail trips that both originate and are destined within Kankakee County are excluded from the results, the line attracts approximately 4100 riders who use the service twice daily and are counted as 8200 boardings.

Daily Node Boardings Excluding Intra Kankakee Rail Trips

O/D Format		P/A	P/A	O/D	Parking
Station	Node #	Boarding total	Alighting total	Daily Boardings	
South Kankakee	43005	0	0	0	2,000
Kankakee	43004	509	0	255	500
Bradley	43003	563	0	282	500
Bourbonnais	43002	3,941	0	1,971	2,000
Manteno	43001	3,242	0	1,621	500
Peotone (transfer station)	43000	0	8,255	4,128	2,000
Total for Line				8,255	7,500

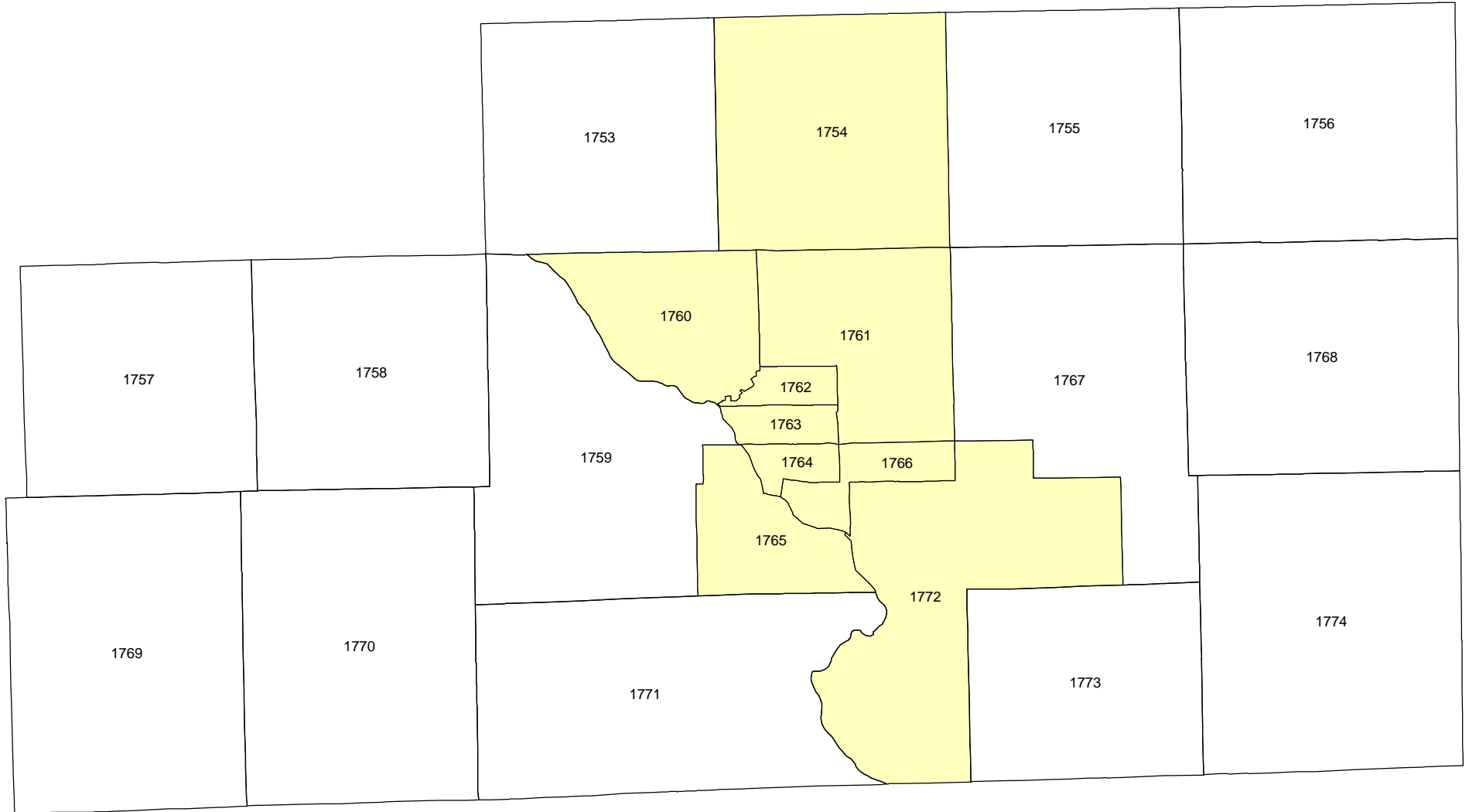
Kankakee County 2030 Analysis Zones  
Trip Generation Zones (tg) 15210 - 15231  
Traffic Analysis Zones (taz) 1753 - 1774

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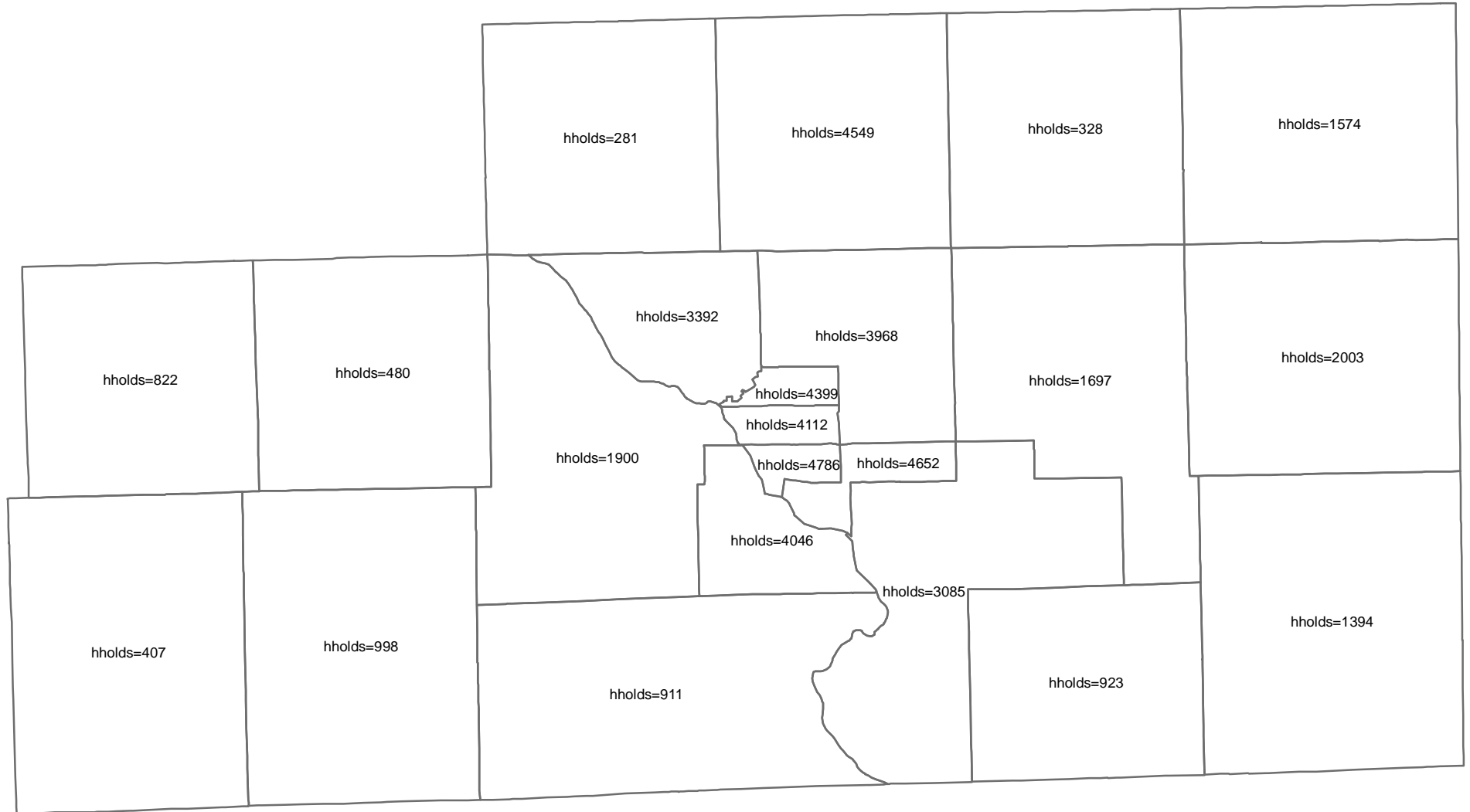
Traffic Analysis Zones Connected to Rail Stations by Bus Access Links

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# Kankakee County 2030 Households

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# Kankakee County 2030 Employment

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