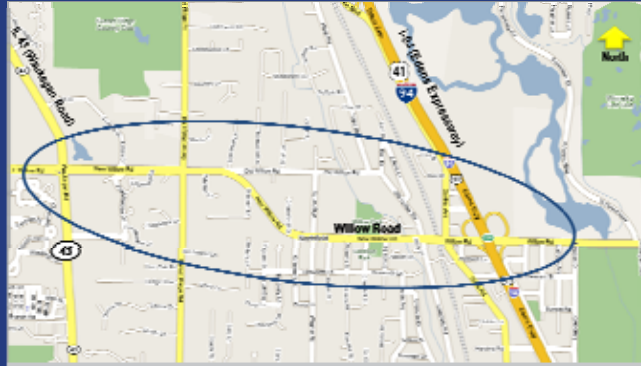


Community Advisory Group Meeting #8

Willow Road Study

Illinois Route 43 (Waukegan Road) to
Interstate 94 (Edens Expressway)

March 10, 2011



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Tonight's Topics

- Continue Discussions from CAG Meeting #7
 - Purpose and Need Document
 - 2040 No-Build Traffic Forecasts
- Introduction of Round #1 Evaluation
 - Purpose and Need Screening
 - Flaw Analysis
- Introduction of Preliminary Findings

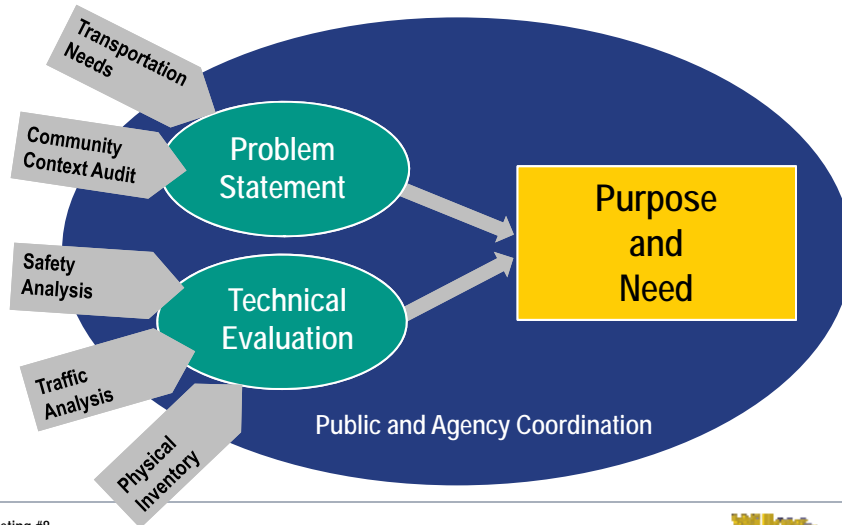


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Purpose and Need



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Purpose and Need

■ Purpose

The purpose of the proposed action is to address existing and 2040 transportation needs along Willow Road, from Illinois Route 43 (Waukegan Road) to Interstate 94 (Edens Expressway). The specific needs of the project include improving or enhancing safety for all users, improving mobility, and improving the facility condition and design. These needs will be addressed through either local, regional, or a combination of improvements.

■ Needs

- Safety
- Mobility
- Facility Condition and Design

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CAG Discussion

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2040 Traffic Forecasts

- CMAP Regional Plan is updated every 4 years
- New traffic forecasts are generated based on an updated look at the Chicagoland area in the future

www.cmap.illinois.gov/2040

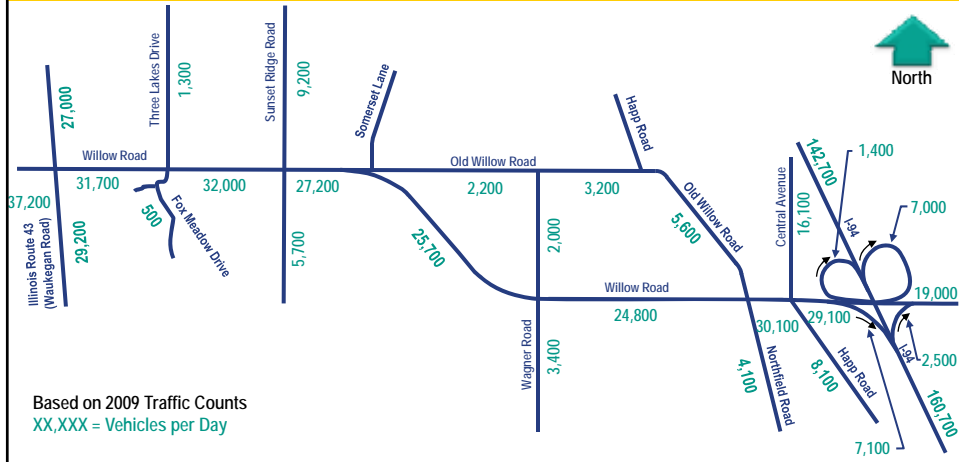


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Existing (2009) Annual Average Daily Traffic (AADT)



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2040 No-Build AADT



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16 Build Alternatives and 3 Corridor Specific Options

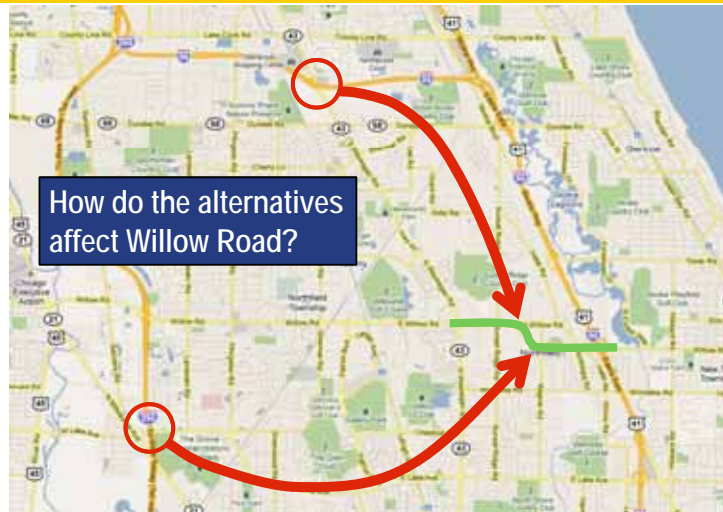


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Alternative Development and Evaluation Process



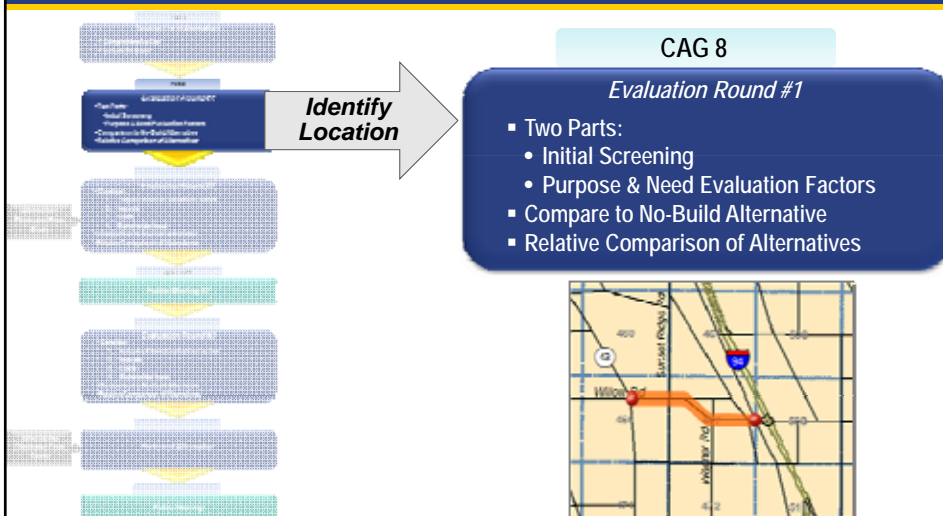
How do the alternatives affect Willow Road?

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Alternatives Development and Evaluation Process



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Alternatives Development and Evaluation Process

Methodology for Evaluation Round #1

Initial Screening and Purpose & Need Evaluation Factors
Identify Location

Level of Detail:	Tools:	Comparison Criteria:
<ul style="list-style-type: none"> • High level analysis • Identify location of alternatives 	<ul style="list-style-type: none"> • Highway Safety Manual • Travel Demand Model • Highway Capacity Manual • Existing Aerial Photography • Maps and GIS 	<ul style="list-style-type: none"> • Calculated safety performance <ul style="list-style-type: none"> • Vehicles • Pedestrians • LOS at Willow Road/Sunset Ridge Road intersection • Facility condition and design • Flaw analysis

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Purpose and Need Screening

- **Safety**
 - Section of Willow Road between Sunset Ridge Road and Wagner Road
 - Pedestrian Safety at Willow Road and Sunset Ridge Road intersection
 - HSM Predicted Average Crash Frequency (crashes per year)
- **Mobility**
 - Willow Road and Sunset Ridge Road Intersection
 - Level of Service, Intersection Delay, Queue Lengths
- **Facility Condition and Design**
 - Improvements to Willow Road itself

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Flaw Analysis

- Impacts
 - Potential Displacements
 - Land Acquisitions
 - Floodplains and Floodways
- Conceptual Level Construction Costs
 - Assumes reconstruction for all alternatives (2011 Dollars)
 - Does not include engineering, land acquisition, and other unique features
 - Costs used for relative comparisons in Evaluation Round #1
 - Costs will be refined at each round

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Navigating Around the Alternative Exhibits

Alternative 5 – Willow Road 2-Lane with Roundabouts

- Title Block
- Key Map
- Legend
- Project Summary
- Evaluation Round #1 Results

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Example Regional Alternative

Alternative 9: Full Interchange I-294 at Dundee Road



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Evaluations for Round #1 – Safety

Purpose and Need Screening

▪ Safety

▪ Methodology

- Followed HSM for Segment and Intersection Analysis
- Relative comparison, not an absolute prediction of crashes

▪ Assumptions

- Each Build Alternative compared to the No-Build
- 2040 AADT volumes used
- Old Willow Road at Willow Road Skewed/Y-Intersection closed for local Willow Road Alternatives
- Engineering detail will be added at each round

▪ Findings

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Evaluations for Round #1 – Safety

ALTERNATIVES		SAFETY (Calculated for the Willow Road Segment from Sunset Ridge Road to Wagner Road)	
Number	Name	Predicted Ave Crash Frequency (Crashes/Year)	Predicted Pedestrian Crash Frequency Willow Road at Sunset Ridge Road Intersection (Crashes/Year)
	No-Build	12.3	0.149
Willow Road Alternatives			
1	No-Build Plus	8.0	0.112
2	Willow Road 2-lane with median	6.6	0.112
2A	Willow Road 2-lane with median (2005 Plan)	6.7	0.112
3	Willow Road 4-lane with median	Painted Median - 13.0 Curbed Median - 6.2	Painted Median - 0.120 Curbed Median/Ped Refuge - 0.051
4	Willow Road 3-lane unbalanced with median	2 Ln WB - 9.9 2 Ln EB - 9.6	2 Ln WB - 0.112 2 Ln EB - 0.116
5	Willow Road 2-lane with roundabouts	6.9	0.081
Other Parallel Route Alternatives			
6	Dundee Road Add Lanes - IL 43 to I94	12.2	—
7	Lake Avenue Add Lanes - IL 43 to I94	12.0	—
Interchange Alternatives			
8	Full Interchange I294 at Lake Avenue	12.8	—
9	Full Interchange I294 at Dundee Road	12.2	—
10	Full Interchange I94 (Edens Spur) at I294	12.8	—
11	Full Interchange I94 (Edens Spur) at IL 43	12.2	—
12	Eliminate Eastbound Lane drop on Edens Spur	12.8	—
13	Full Interchange I94 at Dundee Road	12.2	—
14	Full Interchange I94 at TOWER Road	12.8	—
15	Full Interchange I94 at Willow Road	12.5	—
16	Full Interchange I94 at Lake Avenue	12.2	—

- Regional alternatives perform worse, minimal change to Willow Road safety
- Performance ranges from 6.2 to 13.0 crashes per year
- Pedestrian Crash Frequency for Willow Road at Sunset Ridge Road intersection
 - 4-Lane with Curbed Median, performance best at 0.051 crashes per year



Evaluations for Round #1 – Safety

Pedestrian Safety at Willow Rd/Sunset Ridge Rd Intersection

Alternative	Lane Configuration	Pedestrian	
		Predicted Crash Frequency (Crashes/Year)	Predicted Crash Frequency (1 crash every X years)
No-Build*	2-Lane Undivided	0.149	7
1	2-Lane Undivided	0.112	9
2 & 2A	2-Lane with Painted Median	0.112	9
3	4-Lane with Painted Median	0.120	8
3	4-Lane with Curbed Median, Pedestrian Refuge	0.051	20
4A	Unbalanced 3-Lane with Median, 2 Lanes Westbound	0.112	9
4B	Unbalanced 3-Lane with Median, 2 Lanes Eastbound	0.116	9
5	2-Lane with Median and Roundabout	0.081	12



* No countdown pedestrian signals installed

- Local Willow Road Alternatives range between:
 - 4-Lane with Curbed Median, Pedestrian Refuge is 1 crash every 20 years
 - No-Build is 1 crash every 7 years
 - Regional Alternatives perform similar to No-Build

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CAG Discussion

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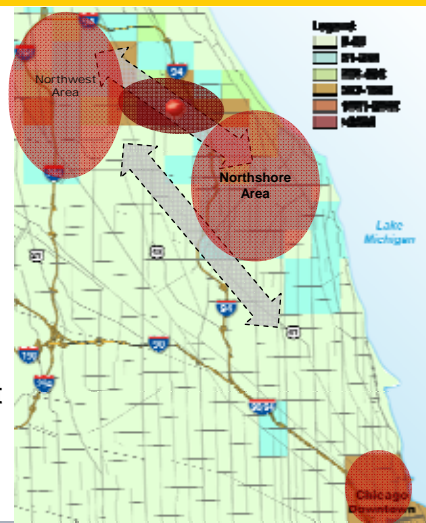
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Travel Pattern Analysis

What were the findings?

- Predominant travel pattern is between northwest and southeast
- New access or improved capacity elsewhere can alter travel patterns
- Model considers factors such as trip lengths, travel patterns, and levels of congestion
- Regional alternatives do not offer sufficient new access or added capacity to affect Willow Road



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Evaluations for Round #1 – Mobility

■ Mobility

■ Methodology

- Used 2040 No-Build AADT and forecasted 2040 Build AADT
- Used CMAP's Travel Demand Model to develop forecasts for the build alternatives
- Used HCS to analyze LOS and queue lengths

■ Assumptions

- 11-foot lane widths
- Included pedestrian volumes
- Regional build alternatives assumed no improvements on Willow Road

■ Findings

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Evaluations for Round #1 – Mobility

ALTERNATIVES		MOBILITY (Analyzed for the Willow Road at Sunset Ridge Road Intersection)			
Number	Name	Intersection LOS (A thru F)	Intersection Delay (seconds)	Queue Length Westbound Willow Rd (feet)	Queue Length Southbound Sunset Ridge Rd (feet)
No-Build					
		F	157	1,830	820
Willow Road Alternatives					
1	No-Build Plus	F	154	1,990	550
2	Willow Road 2-lane with median	F	151	2,220	370
2A	Willow Road 2-lane with median (2005 Plan)	F	151	2,220	370
3	Willow Road 4-lane with median	D/E**	65	990	400
4	Willow Road 3-lane unbalanced with median	2 Ln WB - F 2 Ln EB - F	2 Ln WB - 143 2 Ln EB - 131	2 Ln WB - 650 2 Ln EB - 2,910	2 Ln WB - 410 2 Ln EB - 410
5	Willow Road 2-lane with roundabouts	F	225	420	5,000
Other Parallel Route Alternatives					
6	Dundee Road Add Lanes - IL 43 to I-94	F	157	1,990	550
7	Lake Avenue Add Lanes - IL 43 to I-94	F	145	1,840	550
Interchange Alternatives					
8	Full Interchange I-294 at Lake Avenue	F	169	2,150	550
9	Full Interchange I-294 at Dundee Road	F	157	1,990	550
10	Full Interchange I-94 (Edens Spur) at I-294	F	162	2,150	550
11	Full Interchange I-94 (Edens Spur) at IL 43	F	157	1,990	550
12	Eliminate Eastbound Lane drop on Edens Spur	F	169	2,150	550
13	Full Interchange I-94 at Dundee Road	F	164	1,990	550
14	Full Interchange I-94 at Tower Road	F	169	2,150	550
15	Full Interchange I-94 at Willow Road	F	162	2,150	550
16	Full Interchange I-94 at Lake Avenue	F	157	1,990	550

- No-Build at LOS F
- Most Build Alternatives at LOS F
- 4-Lane with Median
 - Through movements LOS D
 - Intersection LOS D until 2035
- Delays range between 65 and 225 seconds
- Queues on Willow Rd range between 420' and over 2,000'
- Regional Alternatives lowest performing



CAG Discussion

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Evaluations for Round #1 – Facility Condition

- **Facility Condition**
 - **Methodology**
 - Does the build alternative include improvements to Willow Road itself?
 - **Assumptions**
 - Build alternatives only included improvements germane to the alternative
 - Other Parallel Routes and Interchange Alternatives did not include improvements along Willow Road corridor
 - **Findings**

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Evaluations for Round #1 – Facility Condition

ALTERNATIVES		FACILITY CONDITION
Number	Name	Reconstruct (Yes/No)
No-Build		
		N
Willow Road Alternatives		
1	No-Build Plus	N
2	Willow Road 2-lane with median	Y
2A	Willow Road 2-lane with median (2005 Plan)	Y
3	Willow Road 4-lane with median	Y
4	Willow Road 3-lane unbalanced with median	Y
5	Willow Road 2-lane with roundabouts	Y
Other Parallel Route Alternatives		
6	Dundee Road Add Lanes - IL 43 to I-94	N
7	Lake Avenue Add Lanes - IL 43 to I-94	N
Interchange Alternatives		
8	Full Interchange I-294 at Lake Avenue	N
9	Full Interchange I-294 at Dundee Road	N
10	Full Interchange I-94 (Edens Spur) at I-294	N
11	Full Interchange I-94 (Edens Spur) at IL 43	N
12	Eliminate Eastbound Lane drop on Edens Spur	N
13	Full Interchange I-94 at Dundee Road	N
14	Full Interchange I-94 at Tower Road	N
15	Full Interchange I-94 at Willow Road	N
16	Full Interchange I-94 at Lake Avenue	N

- No-Build and Regional Alternatives include no improvements to Willow Road
- Local Alternatives along Willow Road provides for reconstruction of the 60 year old roadway



CAG Discussion

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Evaluations for Round #1 – Flaw Analysis

Flaw Analysis

- Potential Displacements
 - Residential
 - Business
 - Open Space
- Potential Property Acquisition
- Potential Floodplain and Floodways
- Conceptual Level Construction Costs (2011 Dollars)
 - Does not include land acquisitions, relocations, mitigation and engineering costs
 - All roadways and bridges are reconstructed

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Evaluations for Round #1 – Flaw Analysis

ALTERNATIVES		FLAW ANALYSIS / IMPACTS			
		Potential Displacements	Potential Property Acquisition	Potential Floodplain & Floodways	Concept Level Construction Cost*
Number	Name	R-Residential B-Business O-Open Space	(acres)	(acres)	(2011 Dollars)
No-Build		none	0.0	0.0	NA
Willow Road Alternatives					
1	No-Build Plus	none	0.0	0.0	\$2 MIL
2	Willow Road 2-lane with median	none	0.0	0.8	\$18 MIL
2A	Willow Road 2-lane with median (2005 Plan)	none	0.0	0.8	\$14 MIL
3	Willow Road 4-lane with median	none	0.0	0.8	\$23 MIL
4	Willow Road 3-lane unbalanced with median	none	0.0	0.8	\$20 MIL
5	Willow Road 2-lane with roundabouts	3-R	0.6	0.8	\$20 MIL
Other Parallel Route Alternatives					
6	Dundee Road Add Lanes - IL 43 to I-94	1-R 2-B	4.5	0.6	\$51 MIL
7	Lake Avenue Add Lanes - IL 43 to I-94	5-R 8-B	4.3	0.2	\$55 MIL
Interchange Alternatives					
8	Full Interchange I-294 at Lake Avenue	141-R 7-B 1-O (cemetery)	28.2	0.0	\$60 MIL
9	Full Interchange I-294 at Dundee Road	5-R 3-B	7.7	0.0	\$75 MIL
10	Full Interchange I-94 (Edens Spur) at I-294	10-R 4-B	9.9	0.0	\$57 MIL
11	Full Interchange I-94 (Edens Spur) at IL 43	7-R	4.8	0.0	\$27 MIL
12	Eliminate Eastbound Lane drop on Edens Spur	17-B	8.1	3.9	\$38 MIL
13	Full Interchange I-94 at Dundee Road	none	6.8	4.9	\$133 MIL
14	Full Interchange I-94 at Tower Road	none	2.6	5.9	\$44 MIL
15	Full Interchange I-94 at Willow Road	4-B	7.4	22.3	\$52 MIL
16	Full Interchange I-94 at Lake Avenue	55-R 4-B	6.3	0.0	\$59 MIL

- Regional Alternatives involved most impacts and higher costs
 - Additional cost for ramps, bridges, and retaining walls
 - Typically larger footprint
- Local Alternatives involved less impacts and lower overall construction costs



CAG Discussion

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Preliminary Findings

- Evaluation Round #1 provides an initial screening
 - How well did the build alternatives meet the Willow Road Purpose and Need
- Relative comparison of alternatives to each other
 - How did the build alternatives improve Willow Road from IL 43 to I-94
- Flaw Impacts
- Regional Alternatives did not address the Willow Road project needs as well as Local Alternatives
- Willow Road Alternatives involved less impacts and overall lower construction costs than Regional Alternatives

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Preliminary Findings Summary

Evaluation Round #1												
ALTERNATIVES		PURPOSE AND NEEDS SCREENING						FLAW ANALYSIS/IMPACTS				
		SAFETY (Calculated for the Willow Road Segment from Summit Ridge Road to Wilson Road)		MOBILITY (Analyzed for the Willow Road at Summit Ridge Road Intersection)			FACILITY CONDITION	Potential Displacements	Potential Property Acquisition	Potential Floodplain & Floodways	Concept Level Construction Cost	
Number	Name	Predicted Ann. Crash Frequency (Crashes/Year)	Predicted Production Crash Frequency Willow Road at Summit Ridge Road Intersection (Crashes/Year)	Intersection LOS (A thru F)	Intersection Delay (seconds)	Queue Length Westbound Willow Rd (feet)	Queue Length Southbound Summit Ridge Rd (feet)	Restricted Vehicles	# Residential Business Open Space	(acres)	(acres)	(2011 Dollars)
Willow Road Alternatives												
1	No-Build Plus	8.8	0.112	F	154	1,990	550	N	none	0.0	0.0	\$2 MIL
2	Willow Road 2 lane with median	6.6	0.112	F	151	2,220	370	Y	none	0.0	0.8	\$18 MIL
2A	Willow Road 2 lane with median (2005 Plan)	6.7	0.112	F	151	2,220	370	Y	none	0.0	0.8	\$14 MIL
3	Willow Road 4 lane with median	Painted Median - 150 Curb Median - 6.2	Painted Median - 0.120 Curb Median/Shoulder - 0.351	DE**	65	990	400	Y	none	0.0	0.8	\$23 MIL
4	Willow Road 3 lane unbalanced with median	2 Lx WB - 9.9 2 Lx EB - 9.6	2 Lx WB - 0.112 2 Lx EB - 0.116	2 Lx WB - F 2 Lx EB - F	2 Lx WB - 143 2 Lx EB - 131	2 Lx WB - 650 2 Lx EB - 2,910	2 Lx WB - 410 2 Lx EB - 410	Y	none	0.0	0.8	\$30 MIL
5	Willow Road 3 lane with roundabout	6.9	0.091	F	225	400	6,000	Y	3/8	0.6	0.8	\$20 MIL
Other Potential Interchange Alternatives												
6	Dundee Road Adj Lanes - E, 43 to 194	12.2	---	F	157	1,990	550	N	7.6 2.9	4.6	0.6	\$31 MIL
7	Lake Avenue Adj Lanes - E, 43 to 194	12.0	---	F	146	1,990	550	N	7.9 8.0	4.3	0.3	\$30 MIL
Interchange Alternatives												
8	Full Interchange I-294 at Lake Avenue	12.3	---	F	159	2,150	550	N	147.0 7.6 1.0 (overpass)	26.2	0.0	\$60 MIL
9	Full Interchange I-294 at Dundee Road	12.2	---	F	157	1,990	550	N	5.9 3.6	7.7	0.0	\$75 MIL
10	Full Interchange I-94 (Edlers Spur) at I-294	12.8	---	F	162	2,150	550	N	10.0 4.5	9.3	0.0	\$57 MIL
11	Full Interchange I-94 (Edlers Spur) at E, 43	12.3	---	F	157	1,990	550	N	7.6 17.0	4.8	0.0	\$27 MIL
12	Eliminate Eastbound Lane Strip on Edlers Spur	12.3	---	F	169	2,150	550	N	7.6	6.7	3.9	\$38 MIL
13	Full Interchange I-94 at Dundee Road	12.2	---	F	159	1,990	550	N	none	0.0	3.9	\$13 MIL
14	Full Interchange I-94 at Forest Road	12.3	---	F	159	1,990	550	N	none	2.9	3.9	\$44 MIL
15	Full Interchange I-94 at Willow Road	12.3	---	F	160	2,150	550	N	8.0	7.7	23.3	\$32 MIL
16	Full Interchange I-94 at Lake Avenue	12.2	---	F	157	1,990	550	N	6.6 4.0	6.3	0.0	\$30 MIL

**Does not include land acquisitions, relocations, mitigation and engineering costs
**Willow Road through improvements are LOS D through the year 2040; the Intersection LOS D is achieved through the year 2035 with an Intersection Delay = 90.7 seconds; Queue Length WB = 910 feet; Queue Length SB = 380 feet

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CAG Discussion

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Next Steps

- Discuss materials at next CAG meeting (April 7, 2011)
- Discuss alternatives to carry forward to Evaluation Round #2 and show at Public Meeting
- Hold Public Meeting #2
 - Progress of Study since Public Meeting #1 (March 4, 2010)
 - Technical Analyses (Crash, Traffic, Physical Inventory, Travel Demand Model, Safety Tool Box)
 - Purpose and Need Document
 - Alternatives Studied (Findings of Round #1 Evaluation)
- Convene July CAG meeting to review public input and move to Round #2 Evaluation

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CAG Meeting #9

- Initial Comments by April 7, 2011
- Thursday, April 7, 2011
 - 6:00 p.m. to 8:30 p.m.
 - New Trier High School, Northfield Campus
- Topics
 - Follow Up Discussions:
 - Evaluation Round #1 Results and Recommendations
 - Preview Public Meeting #2
 - Introduction of Evaluation Round #2 Methodology
- Future Meetings
 - Public Meeting #2 – May 16, 2011
 - CAG Meeting #10 – July 21, 2011 (tentative)

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