

Cook DuPage Corridor Smart Corridors Plan and Design

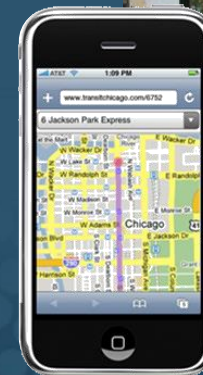
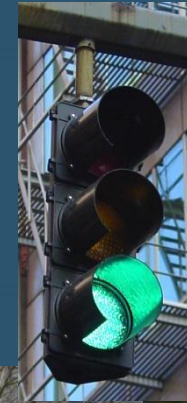
presented to
Regional Transportation Operations Coalition

presented by
Cambridge Systematics, Inc.
Jacobs Engineering

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Smart Corridors

- **Purpose:**
 - » Improve travel for all modes (vehicles, freight and transit) through low cost operational/ITS solutions
- **Potential ITS and Operational Improvements**
 - » Traffic Management
 - » Transit Management
 - » Traveler Information
 - » Incident Management



CDP SC Study – In Line with a New Focus on Operations Planning - Nationwide

“Need to create an integrated program to optimize the performance of existing roadway infrastructure.....

through the implementation of specific systems and services – on a coordinated program basis.....

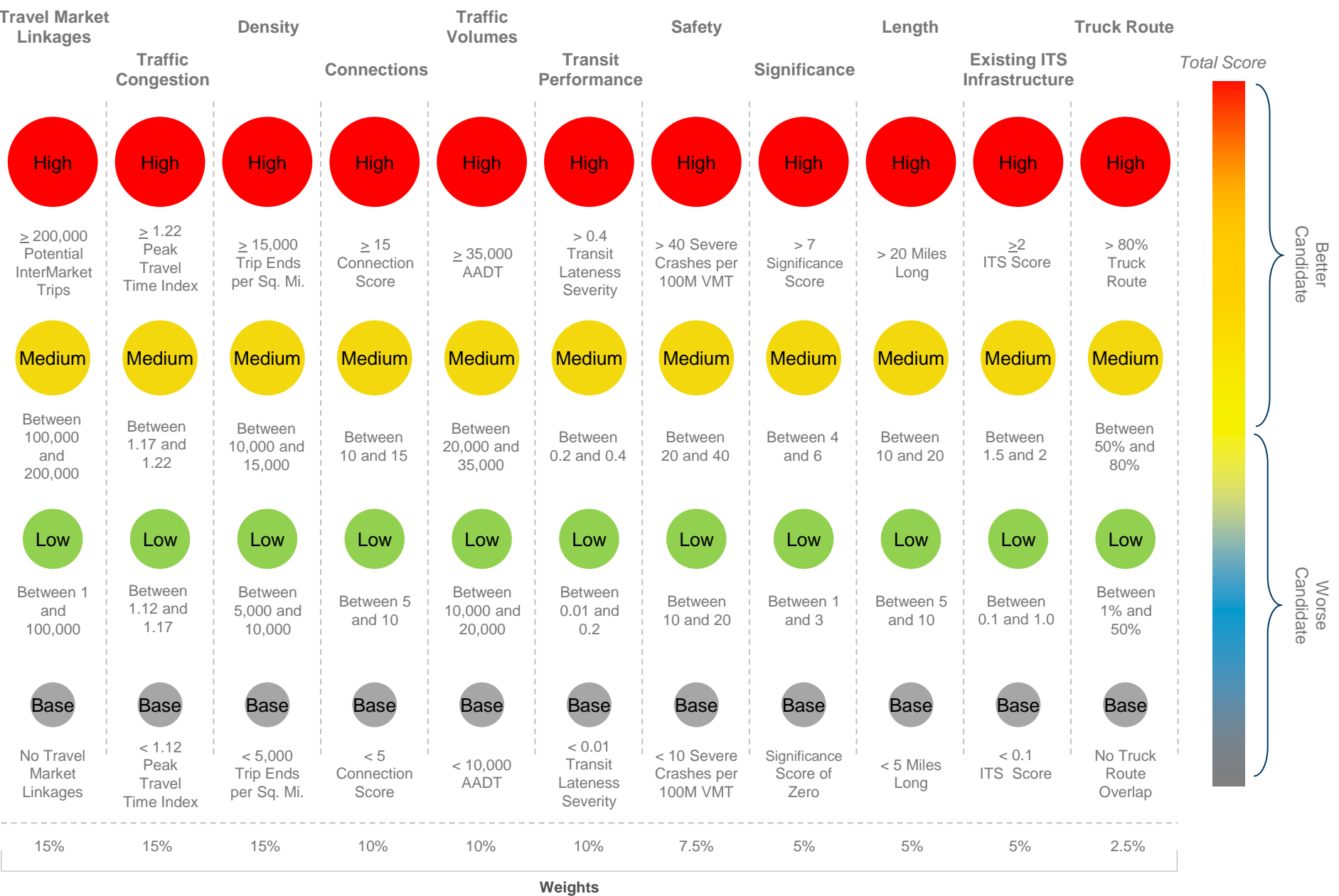
that preserve capacity, improve reliability and safety, and enhance the environment.”

Terminology: Operations Planning combines ITS, TSM, Traffic Operations, and Demand Management **systems** with necessary **cooperative actions in real time**

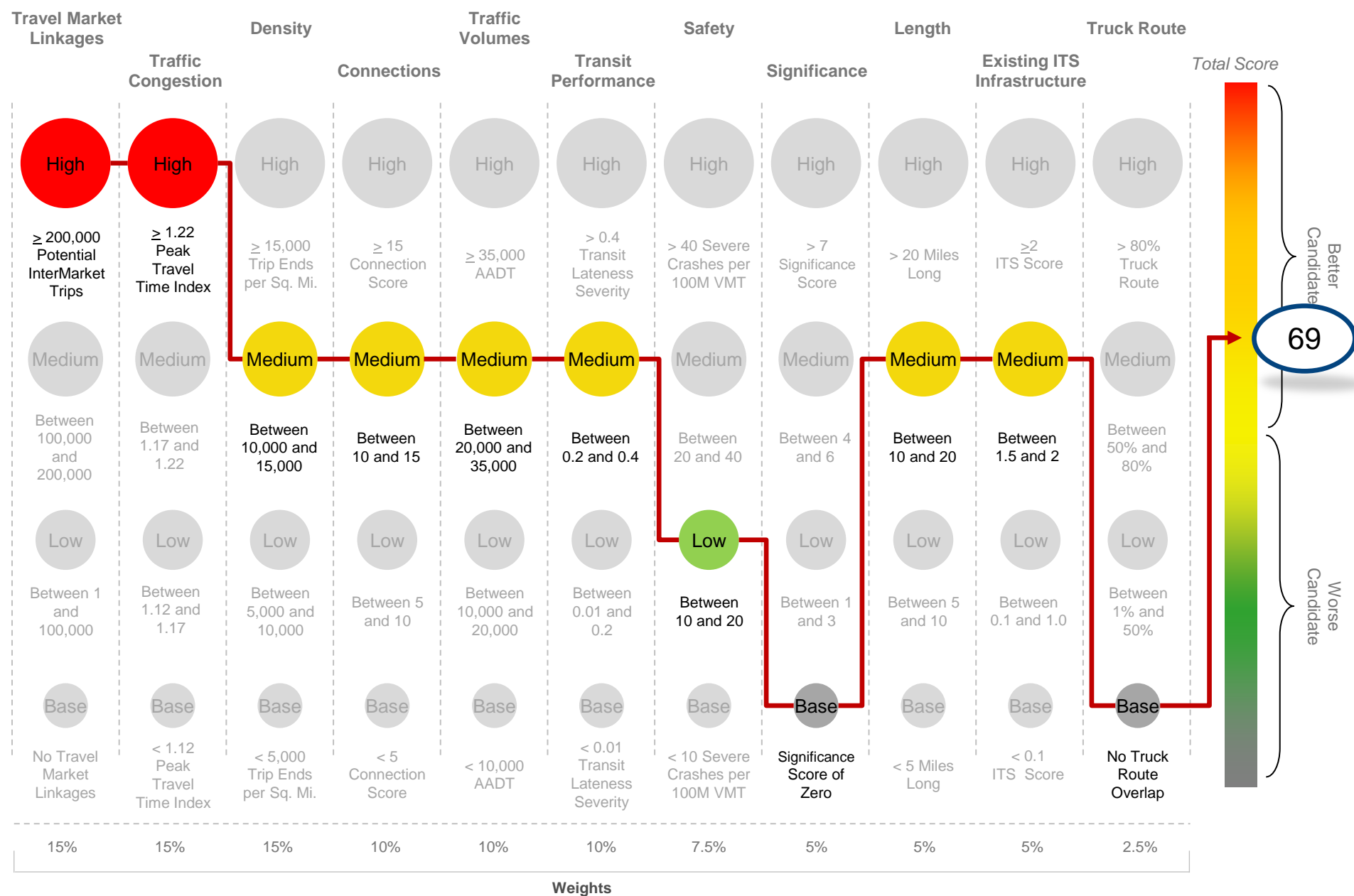
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Phase I Prioritization Approach

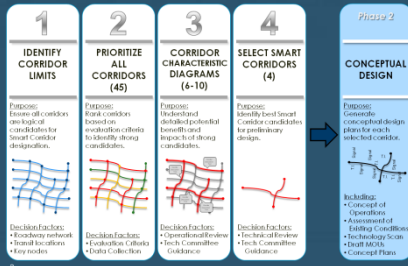


Scoring Example – Des Plaines River Road

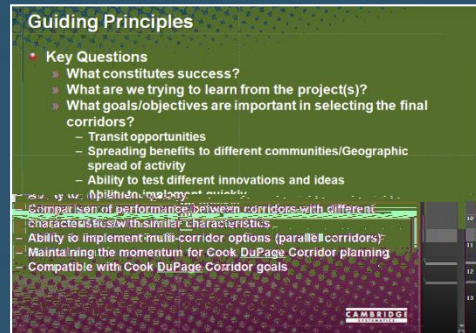


Corridor Selection Process

Review of Process



Guiding Principles



Prioritization Results

Finalist Corridors Prioritization Results

Corridor	Market NE	Links	Traffic Congestion	Pop & Emp Density	Connectivity	Traffic Volumes	Transit Perf.	Safety	Significance	Length	ITS Info.	Transit Rte	Score
Harlem Avenue	N	H	H	M	H	M	H	H	H	M	H	H	87
Cermak @ Midlandfield	E	M	H	M	H	M	H	H	H	M	H	H	79
Marion @ La Grange @ Archer	N	M	H	M	H	M	H	H	H	M	H	H	72
Irving Park Road	E	H	M	M	M	M	M	M	M	M	M	M	70
North Avenue	E	H	M	M	M	M	M	M	M	M	M	M	70
Roosevelt Road	E	H	M	M	M	M	M	M	M	M	M	M	69
Ogden Avenue	E	H	M	M	M	M	M	M	M	M	M	M	66
553 (Rohlfing)	N	H	M	M	M	M	M	M	M	M	M	M	64
559	N	H	M	M	M	M	M	M	M	M	M	M	63

Note: NE = North/South or East/West (N=North/South, E=East/West) • H=High • M=Medium • L=Low • B=Baseline

Flyovers Video "9 Corridors in 9 Minutes"



Corridor Descriptions

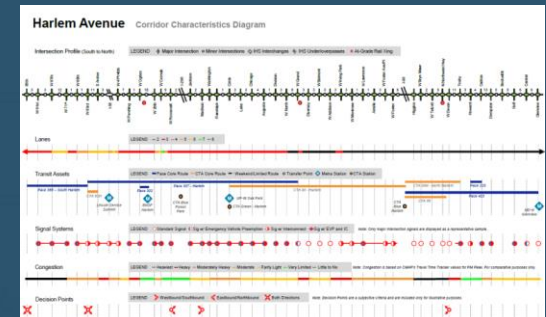
HARLEM AVENUE

Description The Harlem corridor as it is defined is the longest north-south corridor, running from 95th Street up to Glenview Road. It varies in character several times during this length. The corridor begins at a cloverleaf interchange with Highway 12/20 near I-294 and continues north through mixed residential and commercial areas in Bridgeview. The corridor passes Toyota Park (home of the Chicago Fire) and the Belford Park Rail Yard. Traffic volumes are high approaching I-55 from the south w/ Summit on the west and Chicago on the east. After crossing the Chicago Sanitary and Ship Canal and I-55, traffic volumes dip as the corridor passes by a BP processing facility and several nature preserves. The corridor is surrounded by a mix of dense commercial and residential land uses past Ogden, the Harlem Metra Station on the BNSF Line, Morton West High School, and the commercial district around Cermak. North past Roosevelt, the corridor connects with I-290 and the Harlem-Forest Park Blue Line CTA Station. The Harlem Green Line is at Central Avenue on the west end of Oak Park. After North Avenue, the corridor narrows to two-lanes to accommodate on-street parking, eventually hitting the Harlem-Grand Metra station on the Milwaukee District-West Line. Harlem continues north through dense residential and commercial past Irving Park, where there is a large pocket of auto-oriented retail space. As the corridor crosses the Kennedy (I-90), it passes near the CTA Blue Line again.

The corridor carries north all the way to the Glenview Antrak/Milwaukee District North station after passing through slightly less dense residential and commercial and passing a few landmarks such as St. Adalbert Cemetery.

This corridor is a Strategic Regional Arterial with heavy transit coverage by Pace, CTA, and Metra. It has several signal interconnects and is a strong candidate for Transit Signal Priority technology.

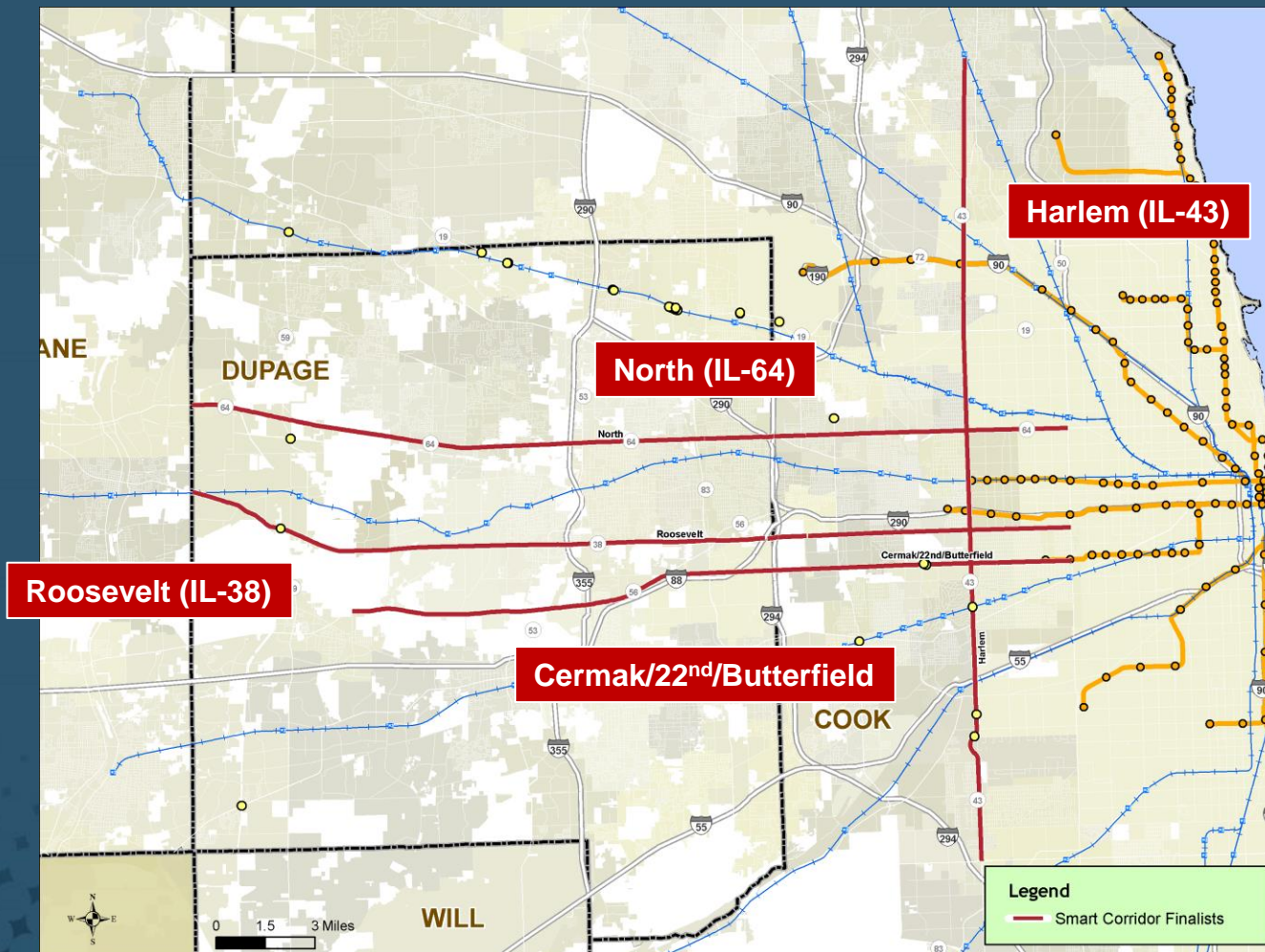
Corridor Characteristic Diagrams



Corridor Selection

Objective of Current Phase

Develop conceptual designs and plans for four Smart Corridors in the Cook DuPage Corridor in order to improve travel for all modes through low-cost solutions and ITS



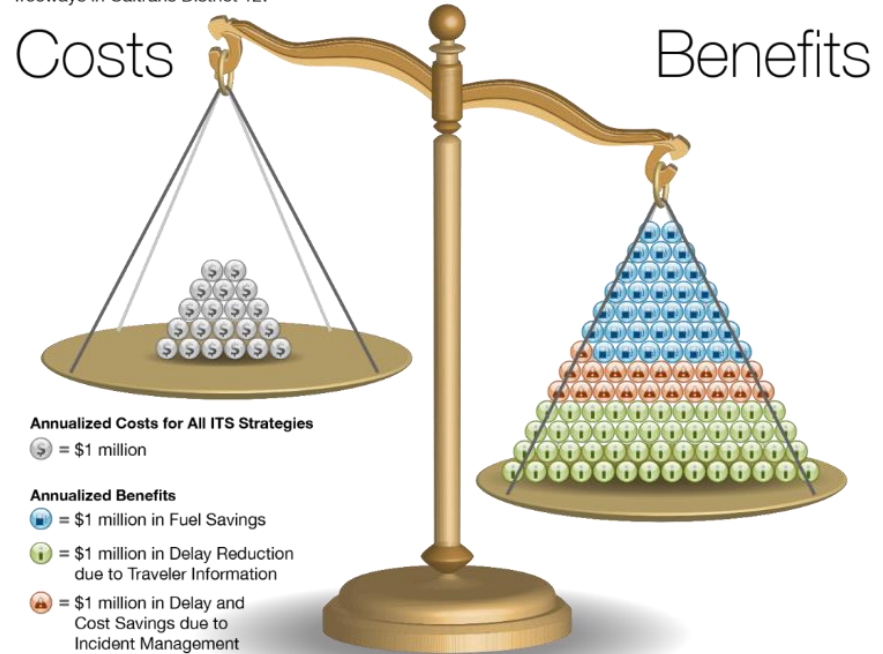
Current Phase Tasks

- Existing Conditions
- Stakeholder Feedback
- Technology Scan
- Conceptual Design for 4 Corridors
- Maintenance and Operations Plans
- Evaluation Tool

District-Wide Annualized Freeway Costs and Benefits

Estimated annualized costs and benefits associated with ITS Strategies on freeways in Caltrans District 12.

CAMBRIDGE
SYSTEMATICS



\$4.0 million

Annual costs of all ITS strategies on arterials

\$20.0 million

Annual costs of all ITS strategies on freeways

5.2 To 1

Benefit to Cost Ratio for freeways

\$70 million

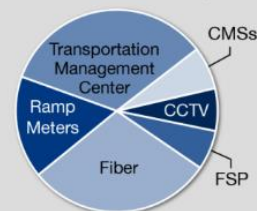
Annual delay and cost savings from freeway incident management

\$104 million

Overall annual benefit from all ITS strategies on freeways

Costs by ITS strategy

For arterials and freeways.

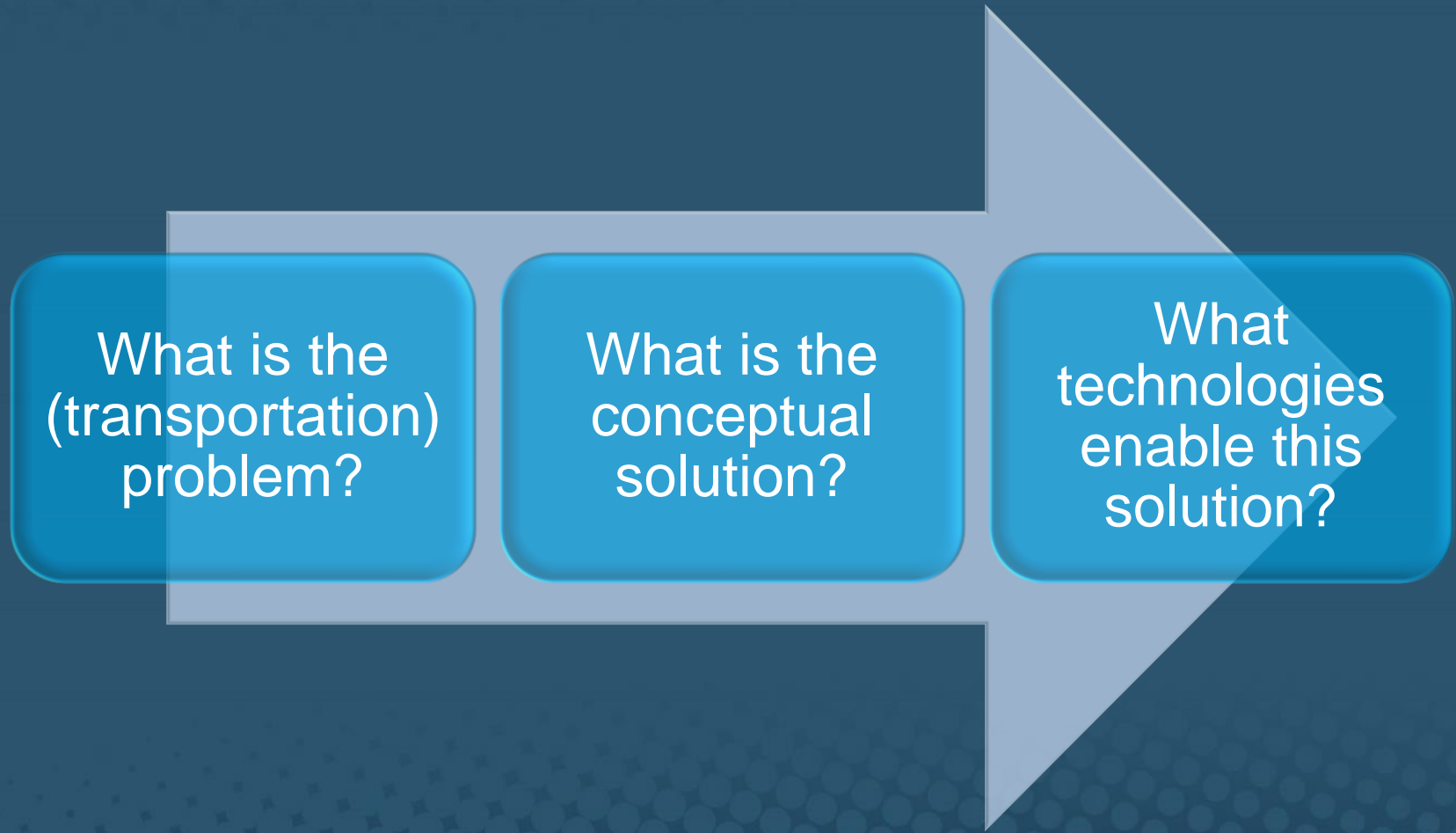


Per-mile Annualized Freeway Costs and Benefits

Average benefits: \$524,000/mile. Average costs: \$101,000/mile.



Evolution of Conceptual Design



Conceptual Design – North Ave

- **Problem #1:** *North Ave receives unpredictable traffic surges due to being a parallel alternate route to Interstate 290.*
- **Conceptual Solution:**
 - » Continuously adjust traffic management strategy to accommodate changes
 - » Improve roadway surveillance



Adaptive Traffic Signals



CCTV Cameras

Conceptual Design – North Ave

- Problem #2: *North Ave has limited traveler information for alternate route guidance.*
- Conceptual Solution:
 - » Monitor North Ave roadway conditions
 - » Provide en-route traveler information to motorists



Dynamic Message Signs &
Travel Time System

Conceptual Design – North Ave

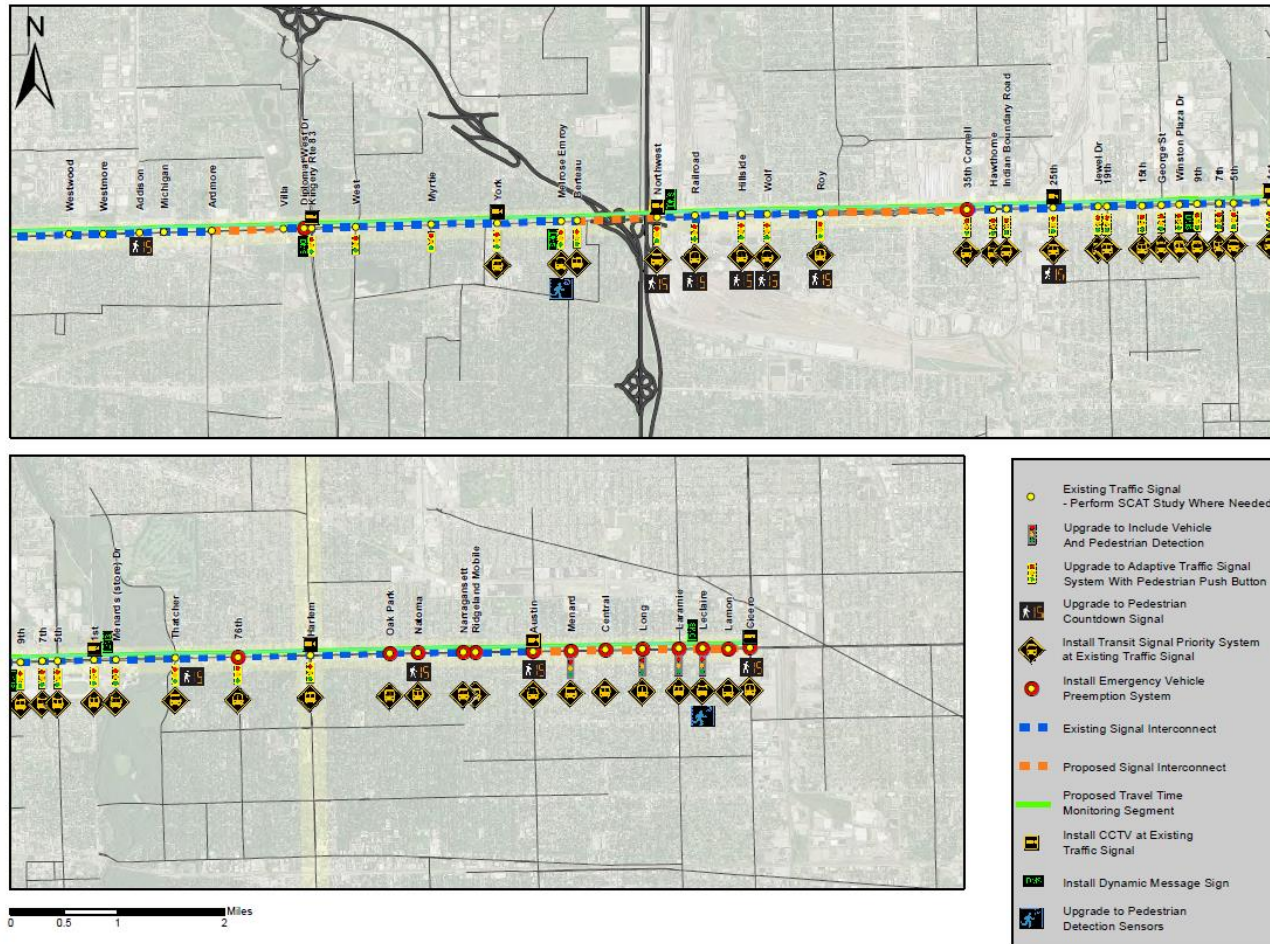
- **Problem #3:** *Transit service performance for bus routes along North Ave is heavily dependent on corridor traffic conditions.*
- **Conceptual Solution:**
 - » Provide transit signal priority service to CTA and Pace bus service routes.



Transit Signal Priority
(Source: safety.fhwa.dot.gov)

Conceptual Design – North Ave

Smart Corridor Recommendations - North Ave



Conceptual Design – North Ave

North Ave ITS: \$8 Million



Divide Into Geographic Segments



Divide Into Conceptual
Solutions

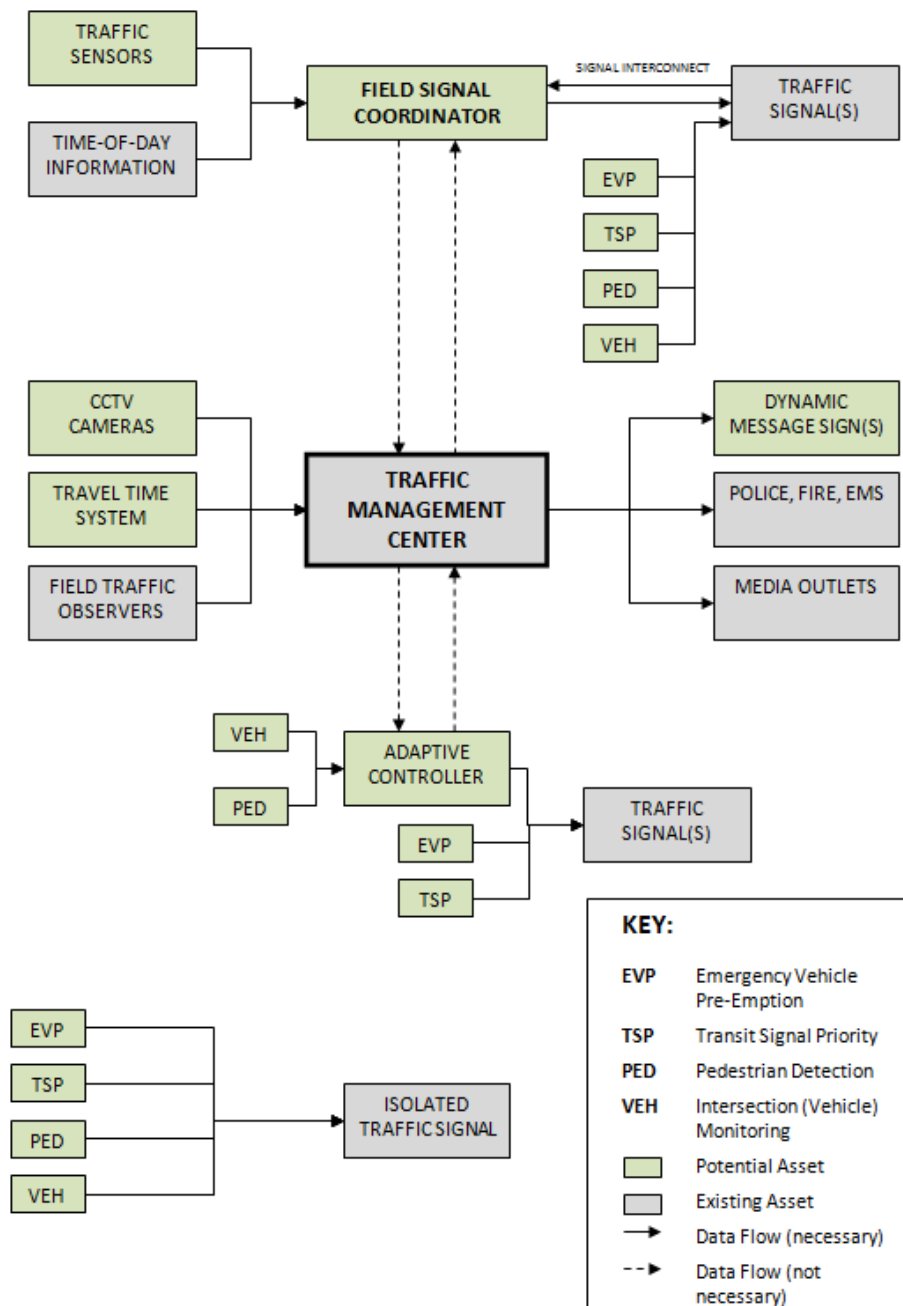


Select Your
“Buildable Units”

Conceptual Design – North Ave

Buildable Unit Code	Route	Limits	Design Elements	Project Cost	Priority	Recommended Prerequisite
2F-1	North	I-290 to 35 th	Travel Time System	\$24,000	High	5I-3, 2F-3, 2F-4
2F-2	North	WB, in advance of I-290	Dynamic Message Sign	\$90,000	High	2E-1, 2C-3, 2F-4
2F-3	North	Roy to 35 th	Interconnect	\$300,000	High	
2F-4	North	Berteau to Northwest	Interconnect	\$240,000	High	
2F-5	North	Northwest to Roy	SCAT Study/ Adaptive Traffic Signals	\$200,000	High	2F-4
2F-6	North	Northwest to Roy	Transit Signal Priority	\$62,500	High	2F-4
2G-1	North	1 st to Harlem	Travel Time System	\$15,000	High	5I-2, 2F-3, 2F-4
2G-2	North	35 th to 1 st	Travel Time System	\$21,000	High	5I-2, 2F-3, 2F-4
2G-3	North	WB, in advance of 1 st	Dynamic Message Sign	\$90,000	High	2F-1, 2E-1, 2F-3, 2F-4
2G-4	North	35 th to Harlem	SCAT Study/ Adaptive Traffic Signals	\$731,000	High	2F-3, 2F-4
2G-5	North	York to Harlem	Transit Signal Priority	\$212,500	High	2F-3, 2F-4
2G-6	North	76 th	Emergency Vehicle Preemption	\$10,000	High	
2G-7	North	35 th	Emergency Vehicle Preemption	\$10,000	High	

SMART CORRIDOR FUNCTIONAL REQUIREMENTS



THANKS FOR YOUR TIME

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