

Executive Summary

In March of 1998, the City of Kansas City, Missouri issued a solicitation for proposals from professional Consulting Engineers to develop a strategy to define and analyze alternative approaches to meeting the existing and future traffic signal needs in the city, with an aim towards providing optimum traffic movements and progressive flow patterns in the city. After several other local agencies requested consideration of participation in the process, the project was reformulated to take on a regional flavor, headed by the Mid-America Regional Council (MARC). The basis of this regional project was to focus on a number of corridors with regional significance from a traffic movement standpoint. This project was given Notice to Proceed in March of 1999, and in late 1999, the project was given the name Operation Green Light.

The project format was based on a series of monthly workshops where the consulting team, lead by BRW, Inc. of Phoenix, Arizona, conducted discussions on certain monthly topics, and then interacted with the Technical Advisory Committee for input and further discussion. The results on this study are intended to represent the majority viewpoint of the Technical Advisory Committee (TAC).

During the initial phases of the project, a Steering Committee, consisting of upper management participants of each local agency, was formed to undertake the task of determining the administrative and intergovernmental aspects of regional signal operations. The Steering Committee chose to pursue formation of a regional traffic signal operations authority to conduct day-to-day management and operation of the regional signal system.

During the conduct of this regional study, the consultants gathered information on existing signal control systems and communications infrastructure at over 1,400 traffic signals in the Kansas City region and developed a geographic information system (GIS) based inventory map which was provided to each agency.

During the course of the monthly project workshops, agency participants were briefed on a variety of technical issues regarding various operational strategies, necessary

hardware to support such strategies and a wide range of communications alternatives and approaches. Early on in the process, one workshop focused on establishing system goals and objectives, which served as the guidelines for selection of system components and features.

Subsequent workshops identified system elements, the parts and pieces that make up the physical portion, identified areas where signal control by a regional system would likely be beneficial, and developed an implementation plan to carry the concept to reality.

The approach selected with the Technical Advisory Committee was to implement a temporary radio communications system in areas where no existing traffic signal communications was in place and replace controller units with a uniform type capable of communication to other such system controllers to exchange data and coordinate the signals.

Eventually, the radio system would be phased out and replaced with a fiber optic backbone, linked to the new Scout freeway management system. That system would be capable of supporting the transmission of video and data from over 250 proposed CCTV sites, anticipated to be developed at a cost of approximately \$10 million.

Costs of the multi-phase project are shown on Table 5 on the next page, taken from Chapter 7 of this document. Estimated costs range from approximately \$5.7 million for the first phase, with a Buildout total cost of over \$30 million, plus an additional \$26 million for the regional fiber optic communications system.

Guidance on planning of the operations and maintenance costs necessary to continue successful operations once the system is implemented are provided.

An evaluation of the expected benefits of a regional traffic signal management system were modeled to determine the impact on air quality, as a result of improved traffic signal operations. The study concluded that the commutative effects of improved traffic flow will result in a reduction in hydrocarbons of 9% and a reduction in carbon monoxide of 14%.



Table 5. Cost Estimate by Phase - Priority Corridors & Remaining Study Signals

PHASE	Description	Total Number of Intersections	Design Cost	Central Hardware & Software	Controller & Cabinet (Installed)*	Radio Cost (Installed)	Signal Timing	System Management	Contingencies	Total Cost
I	Original Corridors	316	\$600,000	\$1,500,000	\$1,712,500	\$747,000	\$300,000	\$300,000	\$515,950	\$5,675,450
	Missouri Portion	178		\$1,110,000	\$1,287,500	\$525,000	\$168,000			\$3,090,500
	Kansas Portion Shared	138	\$600,000	\$390,000	\$425,000	\$222,000	\$132,000	\$300,000	\$515,950	\$1,415,950
IIA	Additional Corridors	117	\$100,000	\$100,000	\$1,150,000	\$267,000	\$100,000	\$50,000	\$176,700	\$1,943,700
	Missouri Portion	90		\$83,000	\$962,500	\$219,000	\$77,000			\$1,341,500
	Kansas Portion Shared	27	\$100,000	\$17,000	\$187,500	\$48,000	\$23,000	\$50,000	\$176,700	\$326,700
IIB	1 st Priority Interchange Ramps	94	\$100,000	\$100,000	\$675,000	\$267,000	\$100,000	\$50,000	\$129,200	\$1,421,200
	Missouri Portion	62		\$94,000	\$675,000	\$213,000	\$66,000			\$1,048,000
	Kansas Portion Shared	32	\$100,000	\$6,000	\$0	\$54,000	\$34,000	\$50,000	\$129,200	\$279,200
IIC	2 nd Priority Interchange Ramps	56	\$50,000	\$50,000	\$225,000	\$129,000	\$50,000	\$25,000	\$52,900	\$581,900
	Missouri Portion	36		\$41,000	\$187,500	\$102,000	\$32,000			\$362,500
	Kansas Portion Shared	20	\$50,000	\$9,000	\$37,500	\$27,000	\$18,000	\$25,000	\$52,900	\$127,900
III	Regional TOC		\$500,000	\$5,000,000				\$100,000	\$500,000	\$6,100,000
IV	Communications System		\$2,250,000	\$22,500,000				\$750,000	\$750,000	\$26,250,000
V	Remaining Study Signals on MARC Corridors	497	\$500,000	\$500,000	\$3,887,500	\$1,176,000	\$500,000	\$250,000	\$681,350	\$7,494,850
	Missouri Portion	318		\$345,000	\$2,625,000	\$879,000	\$320,000			\$4,169,000
	Kansas Portion Shared	179	\$500,000	\$155,000	\$1,262,500	\$297,000	\$180,000	\$250,000	\$681,350	\$1,431,350
VI	Remaining Study Signals not on MARC Corridors	420	\$400,000	\$400,000	\$4,037,500	\$999,000	\$400,000	\$200,000	\$643,650	\$7,080,150
	Missouri Portion	319		\$288,000	\$2,887,500	\$753,000	\$304,000			\$4,232,500
	Kansas Portion Shared	101	\$400,000	\$112,000	\$1,150,000	\$246,000	\$96,000	\$200,000	\$643,650	\$1,243,650

* Includes new 2070 controller and cabinet at all locations with other than type 170 controller.