Resolution # 13-1

WHEREAS, Sangamon County, the City of Springfield, the Village of Chatham, the Springfield Mass Transit District, the Illinois Department of Transportation (IDOT), and the Springfield-Sangamon County Regional Planning Commission (SSCRPC) have entered into joint agreement to create and administer the Springfield Area Transportation Study (SATS); and,

WHEREAS, the SSCRPC is responsible under that agreement for providing planning services in support of SATS and at the request of the SATS member jurisdictions; and,

WHEREAS, the SATS members have determined that it would be beneficial to their efforts to engage a consultant to develop and install a computerized Travel Demand Model covering Sangamon County and its various municipal jurisdictions; and,

WHEREAS, following a national solicitation and review of proposals from consulting firms interested in and capable of developing and providing such a model, the Technical and Policy Committees of SATS unanimously selected LSA Associates, Inc., as the vendor of choice for the Travel Demand Model; and

WHEREAS, an agreement is prepared that outlines the costs, services and technical assistance to be provided; and

WHEREAS, sufficient funds are available through IDOT and budgeted for this work.

NOW, THEREFORE BE IT RESOLVED, by the County Board of Sangamon County, in session this 9th day of April, 2008, that the Springfield-Sangamon County Regional Planning Commission is authorized to enter into a professional services contract with LSA Associates, Inc., in the amount of $144,423.00, to provide the above described services, and that an agreement be finalized and the contract awarded.

Requested By, _____, E. Norman Sims, Exec. Dir., SSCRPC

Respectfully Submitted by Public Health, Safety & Zoning Committee:

_____, Chairman

_____, Vice Chair

_____, Member

_____, Member

_____, Member

_____, Member

_____, Member

_____, Member

_____, Member

FILED
MAR 21 2008
Sangamon County Clerk

LSA ASSOCIATES, INC
TRAVEL DEMAND MODEL SERVICES CONTRACT
WITH THE SPRINGFIELD-SANGAMON COUNTY REGIONAL PLANNING COMMISSION

THIS AGREEMENT is made and entered into this _____ day of _____, 2008, between LSA ASSOCIATES, INC., hereinafter referred to as "Contractor", and the SPRINGFIELD-SANGAMON COUNTY REGIONAL PLANNING COMMISSION, hereinafter referred to as "Commission", and covers certain professional services in connection with the development, production and installation of a travel demand model for use by the Commission in cooperation with the Springfield Area Transportation Study.

I. INDEPENDENT CONTRACTOR

The Contractor shall serve as an independent contractor insofar as the performance of services hereunder is concerned. The Contractor shall comply with all laws, rules, ordinances and regulations set forth by municipal, state and federal bodies of government.

II. ASSIGNMENT

No assignment of this contract shall be made without the express written consent of the Commission. In the event that the Contractor becomes unable to fulfill the terms of the contract, written notice will be given to the Commission within 30 days, at which time the Contractor may request written consent for the assignment of the remaining contract. Assignment of the contract shall be at the discretion of the Commission.

III. KEY PERSONNEL

The Contractor agrees that its project team shall include Mr. Everett Bacon, project manager, and Mr. Sean McAtee, chief modeler. The Contractor agrees that Mr. Bacon and Mr. McAtee are key personnel, and that any changes in the project team involving these key personnel shall be made only with the approval of the Commission.

IV. SCOPE OF SERVICES

The Contractor agrees to assist the Commission in developing and implementing a Travel Demand Model, hereinafter referred to as the "TDM", which shall allow travel demand modeling covering the entirety of Sangamon County. Among the services the Contractor agrees to provide are the following as described in the scope of services included in Consultant's "Scope of Services for the Springfield Travel Demand Model", dated December 17, 2007, which is included in this agreement as Attachment A and is made part of it:

1. TDM project initiation, project management, and communications, including three (3) in-person/on-site meetings.
2. TDM software evaluation, including delivery of a Software Evaluation Spreadsheet and Software Demonstration.
3. Provision of data sources and summary for TDM, including delivery of Technical Memorandum that documents data sources and summarizes travel and other information.

4. Provision of a roadway network to the Sangamon County boundary, maintained on a single integrated network database, and including the delivery of an Electronic Roadway Network that is fully compatible with the chosen software and GIS applications, and Technical Memorandum documenting the roadway network development and attributes.
5. Development of land use and socioeconomic data to the Sangamon County boundary, including the delivery of land use and/or socioeconomic data for the base and forecast years as input to the model for determining trip generation.
6. TDM development and calibration, including delivery of model structure, a working model for validation, and Technical Memorandum documenting the assumptions, process and parameters of the model.
7. TDM validation, including delivery of a validated base year travel model and a validation report.
8. TDM interface, performance reporting and enhancements, including delivery of a customized model interface, performance report model applications, and enhancements for model applications (Enhancements I).
9. TDM documentation and training, including the delivery of a "Process, Assumptions, Parameters, and Validation Manual", technical memoranda/appendices, a "users guide", and a two (2) day on-site training session.

V. TECHNICAL ASSISTANCE

The Contractor agrees to provide on-going technical assistance to the Commission pertaining to the use, maintenance, updating, or calibration of the model at no additional cost to the Commission for a period of two (2) years after the model is delivered. Such technical assistance is understood to not include the development or provision of new enhancements to the model that are not included in the scope of work made part of this agreement. Technical assistance will be provided to Commission staff that participates in the LSA training session described in the Scope of Services in Task 9. Training of new staff or consultants is beyond the scope of this technical assistance definition. The level of effort for technical assistance is characterized as occasional phone and email correspondence/advice and possibly some minor computational work as described in the Contractor's letter dated February 6, 2008, which is included in this agreement as Attachment B and is made a part of it. No modification to the model's resource code or model results are included in this definition of technical assistance. However, if errors are found after delivery of the model, the Contractor will fix them without additional charge.

VI. SCHEDULE OF WORK AND TERM OF AGREEMENT

The Contractor shall complete the work described in the Scope of Services within twelve (12) months of approval of this agreement. This period may be extended with the approval of both parties.

The term of the agreement shall be from the effective date specified in the opening paragraph herein and shall run through the completion of all services described herein and the full installation and acceptance of the TDM by the Commission and the completion of training in its use. The provision of technical assistance by the Contractor to the Commission will continue as noted in Section V, above.

VII. FORCE MAJEURE

Neither party shall be deemed in default of this Agreement to the extent that any delay or failure in the performance of its obligations results from any cause beyond its reasonable control and without negligence.

VIII. INDEMNIFICATION

The Commission and the Contractor each agree to hold harmless, and their respective officers, employees, agents, and representatives, from and against liability for all claims, losses, damages, and expenses, including reasonable attorney's fees, to the extent such claims, losses, damages, or expenses are caused by the indemnifying party's negligent acts, errors, or omissions. In the event claims, losses, damages, or expenses are caused by the joint or concurrent negligence of the Commission and the Contractor, they shall be borne by each party in proportion to its negligence.

IX. INSURANCE

The Contractor shall minimally maintain insurance as follows and provide the Commission with documentation of same: General Liability in the amount of $1,000,000 per occurrence and $2,000,000 aggregate; Workers Compensation in the amount of $1,000,000; Automobile in the amount of $1,000,000; and Professional Liability in the amount of $2,000,000 per occurrence and $4,000,000 aggregate.

X. GOVERNING LAW

This agreement and the rights and obligations of the parties identified in it shall be governed by, and construed according to, the laws of the State of Illinois.

XI. ENTIRE AGREEMENT

This agreement and its attachments contain the complete and entire agreement, in terms of obligations, responsibilities, duties and services to be provided to the Commission by the Contractor. Any additional statements of promises, verbal agreements, or commitment of additional services not identified in this agreement shall be presented in writing, signed by both parties, and committed to this document in their entirety. Any agreed modifications or amendments to this agreement shall be in effect until such time as termination of the agreement is reached.

XII. TERMINATION

This agreement may be terminated for cause by either party after a minimum of 30 days notice is provided to the other party. This agreement may be terminated without cause by either party after a minimum of 90 days notice provided to the other party. The parties may agree to waive the notice of termination period. However, such agreement must be in writing and signed by both parties.

Upon such termination the Contractor shall cause to be delivered to the Commission all such work product as was produced prior to the agreement's termination with the understanding that this work product becomes the property of the Commission. The Contractor shall be paid for any services completed based upon the percentage of tasks under the scope of work that have been completed up to the date of termination.

XIII. MODIFICATION/AMENDMENT

Any modification or amendment of this agreement must be in writing and signed by both parties to this agreement.

XIV. COMPENSATION

The Commission agrees to pay $144,423 for the services to be performed by the Consultant. This compensation to be paid in monthly installments based upon an invoice detailing expenses incurred to be submitted by the Contractor to the Commission on the last day of each month. Invoices shall be submitted to:

Springfield-Sangamon County Regional Planning Commission
200 South 9th Street, Room 212
Springfield, IL 62701-1629

The Consultant shall not be compensated for any work performed in addition to that set forth in Attachment A unless the parties specifically so agree in writing.

XV. NOTICE

All notices given or so sent hereunder shall be sent by United States mail, postage prepaid, addressed to the respective party at the address set forth in the signature section hereof, or to such other address as the parties may designate in writing from time to time.

XVI. EXECUTION

This agreement shall be executed by the duly authorized representatives of the Commission and the Contractor as indicated below:

For the Commission

NAME:_____

TITLE:_____

SIGNATURE: _____

DATE: _____

ADDRESS: _____

For the Contractor

NAME:_____

TITLE:_____

SIGNATURE: _____

DATE: _____

ADDRESS: _____

SCOPE OF SERVICES

for the

SPRINGFIELD TRAVEL DEMAND MODEL

DECEMBER 17, 2007 (DRAFT)

TASK 1 – PROJECT INITIATION, PROJECT MANAGEMENT, AND COMMUNICATIONS

The update of the Springfield – Sangamon County Regional Planning Commission's (SSCRPC) travel model will involve a number of agency staff representatives, possibly local government representatives, federal and state agency coordination, and of course, the Springfield Area Transportation Study (SATS) Technical Committee. Throughout the duration of this project, it will be important to maintain communication with these project stakeholders. This task provides for the development of an organizational framework for updating the model, which defines management and reporting structures, meeting schedules, key decision points, and schedule milestones so that the calibrated model is accountable to the SSCRPC policy body, Technical Committee, staff, and other community stakeholders. Task 1 consists of project initiation (i.e., Kickoff Meeting); staff communication and coordination; Technical Committee support; and coordination with other project partners.

Project Initiation

At the onset of the project, it will be necessary to establish the details of the update process that will lead to the successful development of the SSCRPC travel model. Since it is so important to develop working relationships among the local agency staff members and consultant staff, a Kickoff Meeting will be held during the project initiation phase in the SSCRPC offices with the appropriate project stakeholders. The Kickoff Meeting should be held in conjunction with a SATS Technical Committee meeting (same day or the day after) or the Committee members should be present at the Kickoff Meeting.

Topics at this kickoff meeting will include the discussion of each task and their and their corresponding schedules and deliverables, including specific discussion on the introductory tasks, such as data availability, the existing model's operation and validation, land use vs. socioeconomic basis for trip generation, and network and Traffic Analysis Zone (TAZ) development. Growth and socioeconomic data should be discussed as well. In addition, LSA will begin discussion of the software evaluation at this meeting by providing a visual presentation of the various products to be considered. This meeting will be an ideal opportunity to discuss local transportation issues and concerns as well. Finally, the electronic GIS and file formats and other related items should be reviewed. It is envisioned that representatives from SSCRPC, Illinois Department of Transportation (IDOT), FHWA, and other state and federal partners would participate in the Kickoff Meeting or the SATS Technical Committee as necessary to maintain coordination rather than hold separate meetings.

Staff Communications and Coordination Meetings

LSA proposes that regular coordination meetings be established once a month to ensure that project coordination, issues, deliverables, and work efforts are being continually addressed. These meetings will be conducted via teleconference and include the pertinent LSA model team members required by the agenda. Participation on behalf of the SSCRPC staff will be at the discretion of the SSCRPC Project Manager. Others may also be invited/ requested to participate.

LSA's Project Manager will develop the agendas for these staff coordination meetings in advance of the meeting and will have the SSCRPC Project Manager review and approve the agenda for distribution to members of the management team. It is envisioned that representatives from IDOT, FHWA, possibly local governments, and other state and federal partners would participate in these meetings as necessary to maintain coordination rather than hold separate meetings.

SATS Technical Committee Support

LSA understands that the SATS Technical Committee will oversee the work effort and provide direction on the issues, operation, data, and results related to the model's update. LSA will provide written briefings including technical memoranda for the Technical Committee's review and comment. How the study process interfaces with the Committee is critical to the success of the planning effort. We propose to involve Committee members by seeking direction in a step-wise fashion at key milestones. Typically, we will address the Committee near the end of each work phase so that they can provide direction regarding the completion of the current work phase and the beginning of the next. However, we will also provide monthly progress reports to the Committee for months in which meeting with them is not warranted.

This group will play a critical role in designing the program and schedule for developing a quality model in a timely manner. They will also assist staff in the review of work products, analysis, and documents as necessary and appropriate. Ultimately, the Technical Committee will recommend the draft model and documentation for final review and approval. As such, it will be extremely important to develop strong working relationships within and among the committee, staff, and consultants.

With regard to Committee support, this scope of services assumes the basic premise that the Technical Committee will review materials at one meeting and be asked to take action at a subsequent meeting. Materials will be reviewed by SSCRPC staff prior to distribution to the committee, and the mail outs are assumed to occur one week prior to the meeting. We also realize that the schedule may require some modification to this process in order to expedite the work effort. It is recognized that all comments and questions on deliverables will be transmitted through the MPO staff to the consultant. It is also recognized that there may be times when a Committee member might participate on a conference call with staff and consultants to discuss comments and questions on a specific task/technical memorandum.

This scope includes three (3) in-person/on-site meetings by the consultant with the SATS Technical Committee – one at the beginning in conjunction with the Kickoff Meeting, one approximately midway though the model development schedule, and one near the end of the model update schedule in order to review the model's results, operation, validation, etc. It is possible that one of these meetings could occur via web teleconference.

TASK 2 – SOFTWARE EVALUATION

LSA has extensive experience with each of the current top-tier transportation modeling packages and will help SSCRPC identify the most appropriate software package based on specific planning needs. LSA will provide a feature comparison of TransCAD (Caliper Corporation), VISUM (PTV America), and Cube (Citilabs). While only one of these software platforms is natively based in GIS, all three provide GIS-like capabilities and are compatible with the ESRI ArcGIS platform. EMME/3 will also be included in the evaluation but a demonstration might not be possible. A comparison of software platforms will include considerations/criteria such as:

- Differing technical strengths and limitations of each software considered in the context of SSCRPC needs
- Acquisition and support costs of each software platform
- Ease of use and the expected learning curve for those familiar with Tranplan and/or ArcGIS software
- Minimal out-year maintenance costs (including both ease of use, update, and maintenance as well as the actual out-of-pocket costs for annual software maintenance agreements)
- Opportunity to share information and procedures with professionals in other regions in the state and region (as measured by what software other regions in the state are using and the opportunity to form a model users group around a particular software)

Deliverables

- Software Evaluation Spreadsheet
- Software Demonstration

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Task 3 – Data Sources and Summary

One of the first tasks that LSA will undertake is an inventory and analysis of available data to support the model's development. It is LSA's understanding that a household travel survey is not available for the Springfield region, so LSA will obtain data from other regions of similar size and character as well as national data (e.g., NHTS, CTPP). Valuable information can be obtained from this data, including trip generation rates, auto occupancies, trip length frequencies, mode use, and work trip relationships.

Transit ridership data from the existing fixed route system will be used to estimate mode shares for the transit analysis component in the model. Other transit information and available survey data will be reviewed for use in developing the model. It may be desirable to reference onboard transit surveys from communities of similar size and character.

Traffic count data is vital to the model's accuracy, which is determined through the model validation process. It appears that the traffic count data available to the region is comprehensive. LSA will obtain this data from all available sources and develop a traffic count database for the MPO. The counts provide valuable information by time-of-day, vehicle classification, and for estimating special generator traffic and external travel among other uses. It is LSA's understanding that the traffic counts will be available in electronic format and already associated with a roadway link as defined in the state's GIS system. Other counts not in this format will be added to the network by LSA. This scope also includes some funds to provide for the collection of up to 15 additional traffic counts by an outside vendor if necessary to provide additional count coverage on specific roadway functional classifications or on screenlines.

Above all, observed data provides the technical foundation for the travel model. LSA recognizes the difficulty for medium-sized MPOs in collecting all of the data that would be desirable. Obviously, the more data that is available the better, but virtually any level of data available can be accommodated and accurate, consistent, and reliable model developed for the Springfield region. LSA will be clear in the model's documentation where the data to develop each model component was derived, and LSA will communicate the opportunities and limitations of the model in this regard.

Some of the other regions in the vicinity of the Springfield area that might be suitable for obtaining data include Bloomington/Normal, Peoria, Champaign/Urbana and others. Rockford and the quad cities regions might not be as suitable due to the influence of the Chicago urban area. Also, any data from Champaign/Urban region should be used with caution due to the influence of a major university.

Deliverable

- Technical Memorandum that documents data sources and summarizes travel and other information.

Task 4 – Roadway Network

LSA will organize the roadway network so that base year, interim year, and forecast year attributes can be maintained on a single integrated network database. In addition, multiple potential network improvements, or "alternatives", can be stored in this integrated database. Alternatives and groups of alternatives can then be easily activated or deactivated through the use of a simple and user friendly scenario-based interface. This network organization technique provides ease of use, enforces network consistency between scenarios, and can be provided with no additional cost as compared to the traditional multiple network approach. Also, this approach greatly improves the ability to display network comparison plots using TransCAD maps (or other software) and in other GIS mapping programs such as ArcMAP.

LSA will start with the county-maintained street centerline file and refine and enhance it to reflect the updated base year and to be compatible with the chosen travel model software. The network from the existing MPO model might also be referenced for supplementary information. The roadway network's development will be coordinated with the traffic analysis zone structure so that logical TAZ boundaries can be established along appropriate infrastructure delineations. Google Earth and Microsoft Live Maps will also be utilized to refine lane configurations, grade separations, and confusing roadway connections.

LSA will review speed and capacity tables for reasonableness and suggest changes as necessary. Speeds, capacities, and alpha and beta values for volume-delay functions will be stored in a lookup table that will be applied to the roadway network based on attributes such as number of lanes, facility type, and area type.

LSA will ensure that ID compatibility between the dataset and centroid layer will be maintained through the use of a separate TAZ field in the centroid layer. Macros will link socioeconomic data, skim matrices, and trip tables with this TAZ field instead of the node ID number. This approach simplifies the process required when editing the centroid layer, particularly in the context of zone splits. The geographic file containing the roadway network will not need to be exported to a new file to reconcile zone numbers and IDs when centroid changes are made.

LSA will develop an initial base year roadway network with number of lanes, speeds, capacities, functional classifications, area types, centroids and connectors, and other variables necessary for the model's processing and reporting functions. The SSCRPC project manager and Technical Committee members will have the opportunity to review the network configuration and variable assumptions for initial use in the model's calibration and validation.

LSA will develop the roadway network to the Sangamon County boundary.

Deliverables

- Electronic Roadway Network that is fully compatible with the chosen software and GIS applications
- Technical Memorandum documenting the roadway network development and attributes

TASK 5 – LAND USE AND SOCIOECONOMIC DATA DEVELOPMENT

Often it is the MPO that is responsible for preparing the regional socioeconomic base year estimates and horizon year forecasts for use in the model. Other times it is another local or state agency that provides these services. In still other cases, it is the MPO's consultant. LSA possesses unique capabilities in utilizing available parcel and land use information to develop the socioeconomic data using GIS techniques and land use planning concepts. As stated previously, LSA is a comprehensive planning firm with extensive experience examining land use and transportation relationships. Through these efforts, our staff has acquired the capability to convert parcel data and land use plans into socioeconomic variables for use in travel models. These conversions use floor area ratios (FARs), employee to square foot conversion factors, and other informatio n to establish the socioeconomic estimates. We have extensive experience with building permits, Census, Public Use Microsample (PUMS), and CTPP data sources to support these conversions.

LSA will review the TAZ layer provided by SSCRPC from the existing model and adjust it for use by the updated and converted travel model as necessary. LSA may recommend an alternate method for storing socioeconomic data, utilizing an Access database that can be easily maintained and linked to the travel model. Such a database would contain socioeconomic data for all necessary model runs and can include datasets such as "2030A" to facilitate testing of multiple land use scenarios.

LSA will develop base year data using household and population estimates from the US Census augmented with building and demolition permit data available from the MPO. Base year employment data will be developed from statewide data (e.g., workers comp insurance database of employers, etc.).

LSA will develop future year socioeconomic projections using Land Use to Socioeconomic conversion factors to develop the population, households, and employment data necessary to drive the modeling process. These will be carefully calibrated against the base year data so that appropriate relationships remain and so the socioeconomic data appropriately reflects the intent of the land use growth projections. The base year data will serve as the basis for this analysis so that growth occurs in the appropriate locations and builds upon existing development.

As an alternative approach, it may be desirable to develop a land use based model rather than a socioeconomic based model. Each has their pros and cons, and the decision tends to be made by the MPO's specific desires and the data that is available to support the effort. For example, if population, household, and/or employment figures are available for the base year and as control totals for forecast horizon years, it might be more desirable to develop a socioeconomic model. If however the MPO tends to utilize land use data and forecasts in their planning activities, a land use based model might be more desirable. These issues can be discussed at the Kickoff Meeting.

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LSA will develop the TAZ structure and land use/socioeconomic data to cover all of Sangamon County.

Deliverables

- Land use or socioeconomic data for the base and forecast years as input to the model for determining trip generation

TASK 6 – MODEL DEVELOPMENT AND CALIBRATION

The model development and calibration task is an important step in the model development process and will be closely coordinated with SSCRPC staff and the Technical Committee. Calibration activities will include the establishment of the model framework for each of the four steps, time-of-day factors, speed feedback processing, and other issues. LSA will lead a discussion to establish the model framework with the committee and staff. Questions to be address might include:

- What are the needs (i.e., planning activities) that the updated model will need to discuss?
- What level of transit planning capability is necessary to support the MPO?
- What will the data support?
- Should data be borrowed from other regions of similar size and character?
- What is the appropriate balance of complexity, ease of use, and ongoing model maintenance?
- Who will be using the model and what are their experience levels and interests?
- What level of information will be forecasted (e.g., socioeconomic data) and what is the best structure to accommodate it?
- What model enhancements are desired by SSCRPC and what is the appropriate model structure to accommodate them?

Once the model framework is established, or at least generally understood, LSA will acquire locally collected data, travel surveys, and other available data as described in Task 3 to estimate calibration parameters for each model process. Generally, a cross-classified trip production model that uses household size, household income or a surrogate income variable (e.g., auto ownership) might be proposed. The trip attraction model might use regression equations or other commonly used trip attraction rate formats. Special generator locations will be evaluated for potential application in the model based on traffic count analysis and a comparison with ITE Trip Generation rates. The trip distribution model is proposed to be based on a gravity model. Trip purposes should be reviewed and additional trip types may be included in the updated model. Production and/or attraction allocation models may be incorporated. For example, it might be desirable to include a home-based university (HBU) trip purpose and/or special generator to address the University of Illinois Springfield Campus. The Capitol complex or other locations might also be treated as a special generator if the data warrants. Several options exist for a mode choice model structure, which we will review with the Technical Committee. In addition, several traffic assignment techniques are available within the various software products that will also be discussed.

A mode split process will be incorporated into the modeling process to split transit, auto, and non-motorized (if applicable) trips into their separate components for further processing by the time of day and assignment modules. The mode split module will be set up to accommodate changes in transit ridership assumptions (i.e., mode splits) and their impact on the roadway system.

Another important element of the input data task will be the development of external trips for the Springfield region. These are typically defined as external-external (EE) trips and internal-external (IE) trips. EE trips traverse the county (or modeling domain) without a true destination within the region although convenience stops are allowed. IE trips on the other hand have one trip end within the region and the other outside. LSA will utilize all available data from SSCRPC, IDOT, and other data sources to develop a reasonable set of IE and EE trips for review by staff and the Technical Committee.

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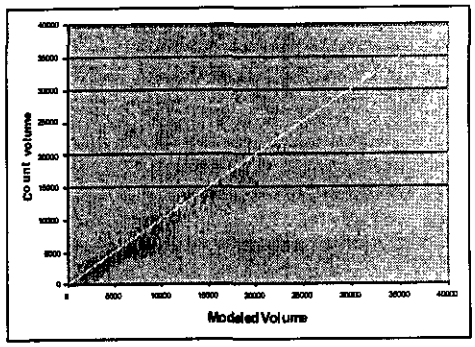
Deliverables

- Model Structure
- Working Model for Validation
- Technical Memorandum, documenting the assumptions, process, and parameters of the model (subject to change in the validation phase)

TASK 7 – MODEL VALIDATION



LSA will validate the base year model to observed conditions using available traffic count data, survey data (e.g., time of day factors), and independent target data such as the Highway Performance Monitoring System (HPMS) for estimating regional vehicle miles of travel. The validation process looks at the results of the complete model operation in a more detailed and comprehensive fashion than the calibration process that addresses each model step individually. As a result, it may be desirable to adjust trip generation, trip distribution, or other model parameters to match overall VMT results or other regional travel characteristics. Validation will be carried out to meet the guidance of IDOT and the MPO (if applicable) and other nationally recognized guidance documents such as the FHWA *Model Reasonableness and Checking Manual*.In this regard, LSA will apply a comprehensive assortment of statistical measures to verify the model's validation.

A key component of the validation process is the testing of base horizon (future) year scenarios. This is an important step in the validation process that is often overlooked until the first planning application of the model. By that time, the pressures of the planning project make updates to the model particularly troublesome. Instead, LSA will conduct validation tests that also include a detailed analysis of future conditions. How those conditions compare to anticipated outcomes based on the amount and location of future growth and other changes in the region will allow for final adjustments to the model before the update can be deemed complete. At each modeling step, LSA will ensure that the results are consistent with expectations given the changes incorporated. To accomplish this efficiently, a standardized validation report will be created that will compare data (e.g. assignment statistics) between these different sources.

Screenlines and cutlines will be defined for the model so that the larger regional travel patterns can be understood and the model validated to match them as close as possible. LSA will work with the staff to identify the appropriate screenlines based on available traffic count locations and physical barriers that might be used to define those major movements, such as across a river or to/from an Interstate facility.

LSA proposes to use the Technical Committee as the primary peer review group for the model's structure, development, and validation. LSA would also encourage SSCRPC to identify modelers from larger MPOs in reasonable proximity to the region (e.g., St. Louis, Chicago) that might be able to participate as Peer Reviewers. LSA welcomes the opportunity to work with other modelers because of their unique experiences and insights.

Deliverables

- A Validated Base Year Travel Model
- Validation Report

TASK 8 – MODEL INTERFACE, PERFORMANCE REPORTING, AND ENHANCEMENTS

LSA not only develops travel models, but extensively applies travel models in the development of long-range transportation plans, corridor studies, and traffic studies. This varied experience has led to the development of a very intuitive, easy to use interface and scenario management system. This system allows customized control of model settings and options, detailed control of input and output file settings, fully automated travel model algorithms, and batch capabilities allowing for the evaluation of multiple network and data scenarios at one time.

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This system focuses the power and flexibility of the TransCAD software platform (or other selected travel model software) to provide the tools that are most important to our clients.

The interface proposed for the SSCRPC travel model is designed to minimize redundant tasks (such as identifying multiple input files for each model run) and reduce the opportunity for human error. Input directories and filenames, model parameters, run options, scenario names and descriptions, and output paths are all contained in a well organized scenario editor. Groups of scenarios can be saved together in lists to facilitate detailed management of multiple related or unrelated roadway and data options or alternatives.

The proposed model interface is directly linked to the network format. This interface allows the user to choose from a variety of network years and alternatives contained in the network file. This feature, while simple in concept, provides far reaching benefits. Most importantly, many independent or related alternative roadway improvements can be tested individually or in combination without the need to maintain a separate network file for each alternative and combination of alternatives. A user can therefore create an extensive list of scenarios, each set up to activate a particular roadway improvement, and then run all of these scenarios overnight. When the process completes, model results, summary reports, and maps will be ready for analysis.

Although the interface simplifies the model run process, it also provides access to powerful tools provided with the software. For example, the interface allows the user to perform one or more select link or node analyses by creating a select link/node query. Results from the select analysis will be computed for each assignment period and will be summed to provide 24-hour results as well. Other model components such as speed feedback, mode model options, and convergence criteria are also made available through the interface.

A model summary report containing performance and validation statistics will be generated automatically each time the travel model is run. This report is provided in a well organized, easy to read format that can be readily copied to other software programs (such as a spreadsheet program) for further analysis and comparison of alternatives. Report options can be specified so that all available data is presented, so that reports are provided only for particular sub-areas, or so that only particular statistics are presented. It is also often useful to include a "mini-table," a simplified one-page report that contains statistics most useful in comparison of multiple alternatives. Documentation of the user interface and summary report will be provided in a self contained model user's guide. In addition, all provided resource code will be internally documented with embedded comments.

The following standard features will be included in the updated SSCRPC model:

- **Menu Driven Scenario Manager and Dialog Boxes**: Streamlines the modeling process and assures accuracy of data file inputs. Provides a simplified menu driven approach for running the model without having to memorize the more complicated input procedures and file requirements.
- **Standardized Performance Report Module**: Provides a series of consistent data summaries such as vehicle miles of travel, hours of congestion and performance by roadway classification and Level of Service.
- **Standardized Mapping**: Maps would include bandwidth volume and color-coded level of service map for each alternative that can visually be compared between alternatives.
- **Project Tracker**: This is a select zone assignment module that determines the amount and distribution of traffic from a particular zone or project throughout the network.
- **Facility Tracker**: Similar to the Project Tracker except in this module, the traffic traveling along a given link or through a specific intersection is assessed as to which project or zone the traffic originates.
- **NCHRP Post Processing Module**: Standardized and automated procedures to adjust forecasts based on differences between existing counts and base year model results.

Deliverables

- Customized Model Interface
- Performance Report Module and Summary
- Enhancements for Model Applications

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TASK 9 – DOCUMENTATION /TRAINING

LSA recognizes the importance of high quality model documentation. By providing comprehensive, complete, and well organized documentation, the value of the model as a reliable and defensible tool is enhanced. Documentation will be provided as desired by SSCRPC. It is LSA's practice to include topics relating to model processes, parameters, and functions in the body of the documentation, with additional detailed information such as sample calculations, research details, and technical memoranda as appendices to the report. It is LSA's goal that a skilled technician could reproduce travel model results using only the model documentation and off-the-shelf software.

As with model documentation, LSA recognizes the importance of a high quality model user's guide. LSA's model user's guides are written to be detailed enough that an inexperienced user can successfully run the model and test basic alternatives and specific enough that advanced modelers will find the information useful. To enhance the usability of the user's guide, illustrative screenshots are used frequently to demonstrate actions needed to run the travel model.

Modern travel model software vendors offer very powerful and flexible travel forecasting software packages. With this power and flexibility often comes a steep learning curve. LSA has provided customized training sessions to many of our clients, targeted at users with varying levels of experience in travel demand modeling, GIS, and computer use in general. LSA proposes to provide a two-day training session for SSCRPC staff. The training session will be tailored to meet the needs of attendants, which would be ascertained through a pre-training survey.

In general, he training session would cover the following material:

- Model installation and basic operation;
- User interface and scenario management;
- Network and land use alternatives testing;
- Interpretation of model results;
- Operation and application of model enhancements;
- Model and data maintenance; and
- Basic resource code format and function.

All training will be provided in an interactive environment where participants are kept engaged through the use of interactive examples and exercises. To retain the interest of both novice and experienced users, exercises will range in difficulty from basic to complex and will contain optional steps directed towards advanced participants. LSA can provide demonstration versions of the TransCAD software to install on computers at a local computer training facility provided by SSCRPC. If the final model is ready and available by the training date, LSA will install the model software and resource code on SSCRPC computers.

LSA proposes to conduct the training session about three weeks prior to completion of the project so that SSCRPC staff will have ample time to use and test the travel model interface. This will allow additions and changes to be made to the interface based on comments from the intended users. Staff members who are involved with the development of the travel model will be provided with draft versions over the course of the project so that they will have the opportunity to provide feedback as the model is developed.

In addition to the training, LSA will be available via phone or email to discuss issues and applications that may arise after the model is developed, validated, documented, and delivered. LSA guarantees the model to be error free, and will fix any errors that might be identified after the model is delivered at no charge to the client. This is unlikely to occur, which is one reason LSA can offer these services free of charge after product delivery.

Deliverables

- Model Documentation, including 1) Process, Assumptions, Parameters, and Validation Manual, 2) Technical Memoranda/Appendices, and 3) Users Guide
- Informational Model Presentation Materials (2 display boards, 1 PowerPoint presentation, handout based on the presentation)
- Training Session (two days)
- Ongoing availability to discuss issues and applications that may arise with the model's use after delivery.

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DIRECT COSTS

Direct costs include the following:

- Printing/Postage (1.0% of labor costs)
- Travel – 6 person trips have been budgeted for this project (2 for Kickoff Meeting, 2 for intermediate/mid-term Technical Committee meeting, and 2 for the final Technical Committee meeting and training).
- Traffic Counts – 15 locations at $150 per location are budgeted.
- Software Licenses – Two software licenses can be purchased for the TransCAD, Cube/Voyager, and Vissum software. However, it may be desirable for the MPO to consider only one software license and possibly a viewer license to further reduce costs. In either case, the budget provides for the licenses but does not include annual maintenance agreements with the software vendor.

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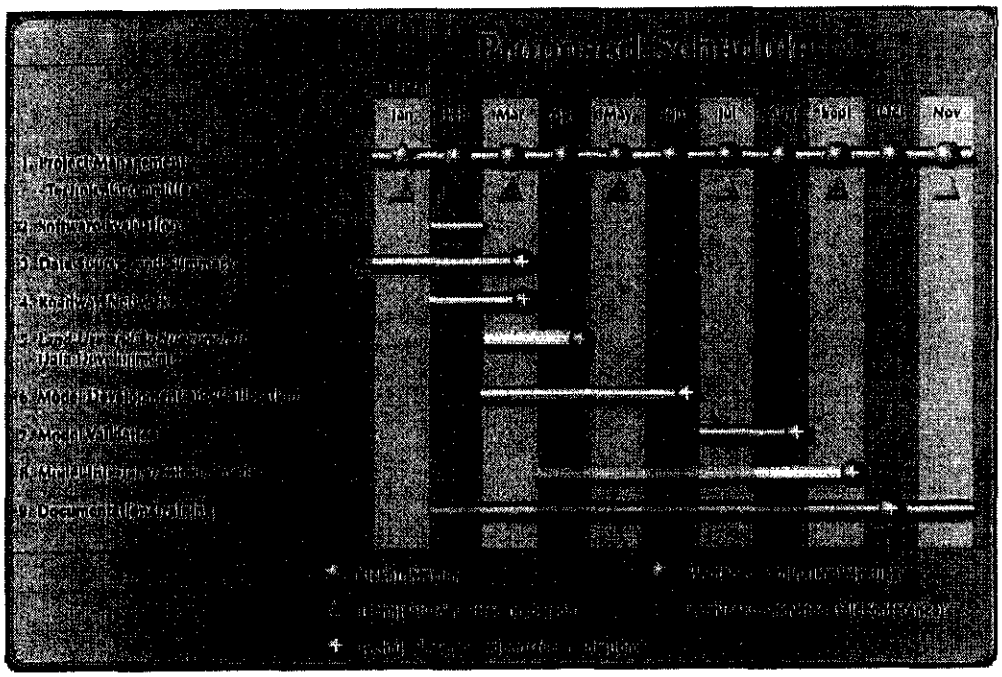
SCHEDULE

The schedule shown below identifies the tasks and milestone dates associated with completion of the project in a one year time frame. The schedule and tasks are flexible to meet the needs of the SSCRPC.



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Springfield - Sangamon County Regional Planning Commission
Springfield Travel Demand Model
Proposed Budget - December 17, 2007

		Personnel Rates and Hours									
Tasks	Task Descriptions	Ray Mce	Everett Bacon	Stephen Schuplbach	Stan McAtee	Ravikumar Pasikurthy	Scott Ladzinski	Amy Rebben	Elisa Palmer	Hours by Subtask	Total Task Labor
		$175	$140	$90	$110	$90	$90	$36	$80		
1	Project Management	0	68	0	60	02	0	5		135	$16,700
2	Software Evaluation	0	5	0	20	00	0	0	2	5	$2,900
3	Data Sources and Summary	0	322	43	61	6	0	4	11	13	$12,264
4	Roadway Network	0	8	0	20	36	00	0	6	4	$6,560
5	Land Use and Socioeconomic Data Development	0	408	04	0	0	0	48	02	08	$18,928
6	Model Development and Calibration	0	361	67	85	6	0	0	01	86	$20,100
7	Model Validation	0	48	0	48	36	0	16	0	148	$15,816
8	Model Interface/Enhancements	0	4	0	34	58	00	0	9	6	$9,520
9	Documentation/Tr aining	0	36	0	60	4	12	0	8	120	$13,720
	TOTALS	0	277	120	396	206	14	68	14	1,085	$116,508
									Direct Expenses (1.0%)		$1,165
									Travel (6 person trips @$750 each)		$4,500
									Traffic Counts (15 @$150 each)		$2,250
									Software Licenses		$20,000
									Total		$144,423

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other offices: berkeley, irvine, colma, san luis obispo, pt. richmond, riverside, rocklin, carlsbad, palm springs

February 6, 2008

Mr. Norm Sims
Executive Director
Springfield – Sangamon County Regional Planning Commission
200 South 9th Street, Room 212
Springfield, Illinois 62701

Dear Mr. Sims:

Your issue about out-year cost to maintain the model and keep it up to date is a good one. We certainly understand your desire to minimize costs after the model is delivered. I can offer you the following statements in this regard.

Error-Free Guarantee

LSA will deliver an error-free model that is easy and intuitive to use. It will be thoroughly tested so that any bugs or errors can be identified and fixed prior to delivery to you. Due to the extensive validation process, the model will have been run by LSA staff numerous times before it is transmitted, so I can assure you that the automated model will be refined and will produce reliable, consistent, and intuitive results. During the validation and training processes, you and your staff will have ample opportunity to run the model and provide feedback on desired changes well before it is finalized. If after delivery you find any error in the model, we will fix the error free of charge. I doubt this will happen as it hasn't occurred in the seven years that Sean and I have built over 15 models, but it is a possibility so I wanted to make a statement to guarantee your satisfaction.

Software Versions

As you know, the software version that we use to build the model will undoubtedly change over time. For example, TransCAD recently issued version 5.0 which replaces the older version 4.x of their software. Models developed in the older version will not run in version 5.0 without some changes to the resource code. These are fairly minor changes, but it is an effort nonetheless.

On the other hand, TransCAD will continue to support the 4.x versions of the software, so those models will be viable for years to come with no additional resources or maintenance. Typically, the software version is updated when the planning assumptions become too out-of-date for use. This might be due to new 10-year Census data, a new regional household survey, or other data or socioeconomic assumptions made available. For example, my guess is that your existing model would run just fine since the software is still available, but I would think that the assumptions built into that model are completely outdated. Since the new model will update those planning assumptions and require a new calibration and validation, it makes sense to update to a more modern software version at this time.

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As part of the model update, we will advise you on the current and upcoming software versions and collaborate on the best one to use. For example, we have been developing the Ann Arbor, Michigan model using TransCAD 4.8 for the past year. However, we made minor changes to the code and have switched the platform to TransCAD 5.0 since it is now available. We will be delivering the new model in a month or two to the client in the newest version, but frankly it would have worked just fine to keep it in version 4.8 too.

Planning Assumptions and Calibration/Validation

Once we deliver the new model with a validated base year (2005?) and a forecast horizon year (2035?), you could easily add new horizon years as long as the input data is reasonably consistent with the data that defines the base and other horizon years. For example, if you have a model for the years 2005 and 2035 and you wanted to add a 2045 analysis, a new socioeconomic dataset would need to be developed that is consistent with, or builds on, the 2005 and 2035 data. We can provide guidance on how to do this, train your staff on the details, and document the process when we deliver the model. Other than basic network updates and adjusting the external trips, this would not require any other changes to the model structure or the resource code.

On the other hand, it is reasonable to assume that at some point the socioeconomic data in the model will become out-of-date. This could take a number of years, but certainly once the 2010 Census figures are released (in 2013 or 2014), it would be a good time to think about updating the model's base year socioeconomic data and validation to 2010. This might be 7 to 10 years from now. At that time, the data could simply be updated and the model re-validated without any significant changes to the resource code. However, it is likely that a new software version would be available, and there might be new procedures or planning questions you'd like the new model to address, so a more rigorous model update might be in order by that time.

What I'm trying (poorly) to point out is that once we deliver the model to you, you could conceivably use it for several years without any changes until such time that you feel it's assumptions are out-of-date. In other words, outdated planning assumptions will at some point trigger the desire to update the model, but the resource code and software won't require any changes or any real maintenance until then.

Past Successes

Another measure that I hope instills confidence with regard to minimal out-year model maintenance costs is the large number of models we have developed that are in-line with your desire – no required out-year maintenance costs.

North Front Range Colorado – This model covers a large area of about 500,000 people in northern Colorado. We have been the MPO's modeling consultant for the past five years and most of the three years prior to that. All of the work we have done for the MPO has been done at their request to add a new function to the model (i.e., air quality emissions model, intersection turning movement, and level of service forecasting module, etc.) or to update planning assumptions.

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We recently completed their model update and re-validated the model from a 2001 base year to 2005. At that time, the model version was updated as well. However, at no time have we ever had to fix errors in the model after delivery, nor has any maintenance been required of the model.

Lawrence, Kansas – We rushed to complete this model conversion and update in order to meet the MPO's schedule for their Long-Range Transportation Plan last summer. The model was finished on time, and the MPO recently completed their transportation plan using the model's results. During that time, we have not performed any maintenance work on the model, nor have there been any errors to fix even with the compressed schedule. Recently, the MPO asked that we add a Cost Estimator module and an Air Quality/Emission Estimator module to their module, but these were new functions that the MPO desired. I find it rewarding that many of our clients ask us to further enhance their models with new features after we have delivered it. To me, it demonstrates that they are using the model and have enough confidence in its basic travel and system performance results that they want to push its capabilities even further by using its results to feed other measures, such as infrastructure costs and emissions estimates.

Mesa County/Grand Junction, Colorado – We developed a new model last year for this small/medium sized community on the Colorado western slope. While the model has not required any maintenance, the client desired to have a small amount of money set aside in the contract to serve as an on-call fund for special requests. This is a small MPO with a staff that must conduct numerous functions. Therefore, they do not have a dedicated modeling staff. As a result, their model is run periodically by different staff persons. There are occasions in which their staff calls us to answer questions or guide them on applying the model for a given task, but these tend to be associated with their sporadic use of the model.

These are just a few of the models we have recently developed that have not required any out-year maintenance costs. We have developed other similar, successful models in Erie, Thornton, Durango, Arvada, Boulder, and Longmont, Colorado; Flagstaff, Arizona; Farmington, New Mexico; and locations in California.

Model Maintenance vs. Assistance/Advice

Other than updating planning assumptions at some point in the future, you should not expect to have any maintenance related needs associated with the model for several years. However, we recognize that your staff must perform many functions and won't be full-time modelers. As a result, the modeler might have some questions or need a quick refresher on a particular topic associated with the model. Anytime this occurs, please have your staff call or email LSA for information. We often field questions from previous clients because it is quicker and easier for us to quickly address a question rather than the client having to call the software vendor, who might not be familiar with specific aspects of the model. We offer this service to you and our clients free of charge because it makes good business sense and rarely requires much in the way of actual resources other than a few minutes on the phone. As I've stated previously, if real errors are found after delivery of the model, we will of course fix them without additional charge as well.

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LSA ASSOCIATES INC.

Mr. Norm Sims
February 6, 2008
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I hope this provides you with an additional level of confidence in the model products you will receive from LSA. LSA will deliver a tested, error-free, reliable, and easy-to-use model that will not require subsequent maintenance to keep it running. If you have any questions in this regard, please do not hesitate to contact one of us.

Sincerely,

LSA Associates, Inc.

Everett Bacon
Principal/Project Manager

Sean McAtee
Senior Transportation Planner