

SECTION 3: SCOPE OF WORK

A. Background

The State of Oregon through the Oregon Department of Transportation (ODOT) must address both legislation and guidelines for travel demand and land use planning that have been developed at the federal and state levels. ODOT has established the Transportation and Land Use Model Integration Program to respond to these requirements. ODOT is nearing completion of the first part of this program — a comprehensive update of its travel demand modeling capability. That program includes review and development of models that are part of the traditional “four-step” process as well as a comprehensive program of survey research into travel patterns and tripmaking behavior that addresses mode choice, individual and household decision making and multipurpose tripmaking.

This Request for Proposals (RFP) addresses the second part of the Transportation and Land Use Model Integration Program — the development of statewide economic, demographic and commodity flow forecasts and integrated land use models. The proposals submitted in response to this RFP will address technical issues designed to complement the work undertaken to date for the travel demand modeling program, and to provide the basis for integrating the models developed through the travel demand modeling program with consistent data bases and analytic methods for assessing metropolitan and countywide land use patterns. ODOT’s intent is that the models address both the integration of transportation and land use planning required by state and federal planning guidelines, and the need to have a more consistent and comprehensive basis for analyzing transportation and land use policies developed under Oregon’s Statewide Planning Program. Under this program, data bases and land use allocation models will be developed for metropolitan and countywide planning and analysis. The Land Use Model Integration Program will also address the need to develop long-term economic and demographic forecasting on a statewide basis, and the need to prepare substate forecasts of economic and demographic activity that can be used to plan for freight and goods movement, and commodity flows within and through the State of Oregon as required under the federal Intermodal Surface Transportation Efficiency Act (ISTEA).

Historically, land use models have been developed at either the county or the metropolitan level to respond to local transportation planning needs as part of the process of estimating travel demand. More recently metropolitan areas have revised and updated their land use modeling capabilities to address new federal planning requirements under ISTEA, to explore ways to provide explicit linkages between proposed transportation facilities and future land uses, and to attempt to evaluate the policy implications of Oregon’s Statewide Planning Program. Such efforts require large commitments of staff time and agency resources available only at the largest of the metropolitan planning agencies in the State. Moreover, the emphasis in ISTEA and through the Oregon Transportation Plan (OTP) and the Transportation Planning Rule (TPR) stress the kinds of comprehensive, coordinated and consistent planning data bases, models and assumptions that can be best developed jointly by state and local planning efforts.

Recognizing the need to address the interests of ODOT, other state agencies engaged in planning under Oregon's Statewide Planning Program, Metropolitan Planning Organizations (MPOs), Council of Governments (COGs), city and county planners in the area of land use modeling, ODOT sponsored a Land Use Modeling Workshop on November 20-21, 1995 in Salem, Oregon¹. On the first day of the conference, participants summarized the current state of the practice for land use modeling throughout the Northwest, described the tools that they were currently using and those that were under development (both nationally and at the local level), and assessed the need for coordinating data bases, surveys and models at both the state and metropolitan level to address ISTEA and statewide planning issues.

On the second day of the conference, participants identified the policies and guidelines in the OTP and the TRP that would be most important to analyze using the data and models likely to be developed under the Land Use Model Integration Program. The participants also focused on the important role of the state as a provider of comprehensive twenty to thirty year forecasts of the kinds of economic, demographic, and intrastate passenger/commodity flow information needed to develop effective and coordinated land use and travel demand models at the metropolitan, city and county level. Finally, the workshop participants prepared a set of recommendations for a workplan that ODOT could consider as they developed their Land Use Model Integration Program.

This Request for Proposals (RFP) is based on the results of the November 1995 workshop, a review of the overall goals and objectives of ODOT in developing a comprehensive Land Use Model Integration Program, and extensive discussions with members of ODOT's Modeling Steering Group, Metropolitan Planning Organizations, city and county planning directors regarding their needs and perspectives on the usefulness and possible application of land use modeling in the State of Oregon. The following background discussion summarizes some of the major goals and objectives of the Land Use Model Integration Program and presents a discussion of the roles and responsibilities of the study participants.

GOALS AND OBJECTIVES OF ODOT'S LAND USE MODEL INTEGRATION PROGRAM

The Oregon Land Use Model Integration Program has four important goals. These goals are designed to provide the basis for a truly statewide system of land use and transportation analysis that is comprehensive, consistent and coordinated and that address key elements of ODOT's mission in the areas of statewide transportation planning and statewide planning.

Goal #1: Develop Long Term Economic, Demographic, Passenger and Commodity Flow Forecasts for Statewide and Substate Regions, and Maintain Data Bases Needed

¹ Results of the proceedings and recommendations that were produced at the Workshop are available from ODOT in two documents: "Land Use Model Workshop Proceedings", December 1, 1995 and "Proposed Work Plan for Oregon Department of Transportation for Land Use Modeling Assistance", December 1, 1995.

for Periodic Updates. *The State should provide long range forecasts (i.e., for a minimum of twenty years) of sufficient detail to support travel demand modeling, land use allocation models, and policy analysis as required under ISTEA, the Statewide Planning Program and the TPR. These data bases and forecasts should directly support statewide planning for intrastate commodity flow analysis and freight and goods movement, and should provide the level of detail necessary to provide control totals to metropolitan, city and county planning agencies for use in developing and applying land use allocation models and travel demand models. Forecasts and data bases available at the substate level should include interregional commodity, freight and passenger flows.*

Goal #2: Integrate Statewide and Metropolitan Level Land Use Data Bases, Land Use Modeling, and Spatial Analysis Methods to Support Transportation and Statewide Planning in the State of Oregon. *In addition to providing the data bases and forecasts needed for planning and evaluation of transportation facilities and long term assessment of land use patterns, ODOT, in conjunction with metropolitan, city and county planning organizations, should provide a lead role in establishing the administrative procedures and planning processes necessary to develop, coordinate and review data bases, forecasts and models produced under this program. This effort will be designed to be integrated into the work programs of both ODOT and participating agencies, and will be designed to foster and provide a sustainable, long term commitment by all **study participants**.*

Goal #3: Establish Methods for Evaluating Key Policies in the Oregon Transportation Plan, Implementing the Statewide Transportation Planning Rules and Assessing Progress Made Toward Achieving Goals Implicit in Oregon's Statewide Benchmarks. *A significant goal for ODOT, other state agencies, and the metropolitan and local planning organizations participating in this program, is preparing a comprehensive inventory of the policies and plan elements that must be addressed by the models and data bases developed under this work program. This goal will be addressed by preparing a formal inventory of statewide policies and developing evaluation methods that relate these policies to the data and models required to analyze them. Emphasis will be placed on the relationship between policy evaluation and the modeling processes, the relationship of policies to data and forecasts, and the ability of modeling process(es) developed through this program to aid in evaluating the effectiveness of public policy as they apply to the OTP and the TPR. The Oregon Statewide Benchmark program has established a comprehensive catalogue of measures designed to show the progress being made in attaining the goals and objectives of the Statewide Planning Program and the relationship of planning goals to the overall quality of life throughout the state. Many of the benchmarks in this program affect and are affected by elements of the OTP and requirements in the TPR. Evaluation procedures, data bases, and forecasts related to key benchmark data will be identified through this program. Recommendations will be developed and periodically reviewed to assess whether the goals stated in the Oregon benchmarks program are being attained as they relate to the OTP and the TPR.*

Goal #4: Develop the Tools, Guidelines and Institutional Support Necessary for ODOT and Other Planning Agencies to Sustain the Models and Data Bases Needed for Integrated Land Use and Transportation Facility Analysis. *The investment in*

developing the data and models needed to analyze the implications of statewide policies and track information necessary to evaluate the success of these policies needs to be supported and sustained as efficiently and cost-effectively as possible. To achieve these goals, written guidelines will be developed under the Transportation and Land Use Model Integration Program describing the best practices for applying the models developed under this program. Interagency cooperative agreements and protocols for sustaining the data bases and models will also be developed through this program. And a long-term strategy for maintaining and updating the analytic processes, models, forecasts and data bases developed through this program will be prepared.

These four broad goals should be reflected in as much detail and as comprehensively as possible in preparing responses to the technical scope of work presented below. They form the basis that policymakers and senior staff of ODOT and participating state, metropolitan, city and county organizations will use to evaluate the effectiveness and continuing viability of the Transportation and Land Use Model Integration Program.

As the Transportation and Land Use Model Integration Program is implemented and applied to transportation and statewide planning policy analysis and decision making, ODOT and participating governmental agencies will be using the processes and data bases developed through the program to meet several of the primary objectives of their respective agencies. These objectives may be modified as the program progresses, or as the scope of work for the Land Use Model Integration Program is refined. However, at its inception, four major objectives of the technical work program which must be addressed by the respondents in preparing their proposals are as follows:

Objective #1: Provide A Framework for Improving Land Use Forecasting Methods and Developing True Integration and Feedback Between Travel Demand Models and Land Use Allocation Models at the Substate and Metropolitan Level. *Developing models that include meaningful feedback between traditional travel demand models and the advanced land use allocation models developed through this work program is one of the most important technical requirements of this work program. Such feedback should go well beyond the integration of composite impedance functions used in typical adaptations of existing land use models and include interrelationships that are reflective of statewide and local planning policy. Feedback and the integration of land use and travel demand models should also fully reflect planning guidelines included in rules and regulations implemented under federal guidance in ISTEA and state guidelines in the TPR. The modeling effort should be designed to be conducted in an environment that leads to significantly improved methods for forecasting future land use, and supports a process of evaluating the consequences of implementing alternative transportation plans and evaluating the implications of current and proposed changes in policy on the pattern of future land use and development. These processes should also reflect recommendations for advanced state-of-the-art and state-of-the-practice as identified by, among others, the National Association of Regional Councils and the federally sponsored Travel Model Improvement Program.*

Objective #2: Improve and enhance Growth Management, Corridor Planning and Congestion Management System studies that rely on long range economic forecasting, land use allocation models and data that can be generated by the Land Use Model Integration Program. *The work program will support TSP development and MPO/urban area modeling programs in Oregon by providing consistent statewide demographic and employment forecasts, improving external passenger and commodity flow forecasts at the metropolitan, city and county level and improving the data and analysis that supports the State of Oregon's Congestion Management System (OCMS).*

Objective #3: Improve and Enhance the Oregon Highway Monitoring System's analytical processes (OHMS). *The OHMS is a key contributor of data and information to the OCMS, the Statewide Highway Plan, and Statewide Corridor Planning. With respect to the OHMS, key elements that are expected to be addressed by the respondents to this RFP include:*

- *Improving traffic forecasting methods;*
- *Providing the necessary sensitivity of travel demand models to land uses and land use related variables;*
- *Integration of statewide travel demand with urban area modeling;*
- *Improving land use and travel demand modeling in urban areas of the state; and*
- *Improving the ability to model, display and analyze travel demand, land use and policy sensitive information.*

Objective #4: Provide technical support for the Highway Plan Update, Reengineering of Project Selection and Development, and special projects (such as the Willamette Valley Strategy) that advance comprehensive transportation planning in the State of Oregon. *Future updates of the Oregon Highway Plan will be based on policies in the OTP and on a comprehensive assessment of transportation facilities and system needs. Statewide modeling and data bases, as developed for this program, will support analysis of alternative policies and strategies for meeting the objectives of the plan. The Reengineering of the Project Selection and Development process will be supported by this program by enabling ODOT to identify transportation needs in a timely manner and evaluate prospective alternatives taking into account an individual project's effect on land use and other transportation facilities in the same corridor or transportation "market". Finally, several corridor level studies and initiatives are either underway or contemplated by ODOT for the future. Among those already underway is the Willamette Valley Strategy. Development of statewide travel demand forecasts and integrated land use models are expected to improve the quality and level of analysis available to ODOT and participating agencies as they develop and refine corridor level studies in other parts of the State.*

ROLES AND RESPONSIBILITIES OF STUDY PARTICIPANTS

The Land Use Model Integration Program is designed to include representatives of as many state, metropolitan, city and county and other interested agencies as possible. The consultant

selected for this project will have a key role in helping to organize and refine the roles of the following groups in the early phases of the program. As the project develops, the consultant will be responsible for communicating with and facilitating feedback from the study participants. It will be especially important to develop an open communication style with the study participants, establish solid working relationships with each group, and become familiar with both the institutional and staff strengths and weaknesses of study participants. These relationships and understandings will be important in the latter phases of the work program as the consultant develops recommendations that will lead to implementing the data base development, modeling and decision structures necessary to sustain Oregon's Land Use Model Integration Program.

Key study participants identified to date include the following:

Oregon Department of Transportation Staff: *The Land Use Model Integration Program will be managed by the Transportation Planning Analysis Unit (TPAU) of ODOT. The project manager and staff of the TPAU will be responsible for coordinating this program within ODOT and other participating state agencies. They will be responsible for management of the budget, scope of work and progress monitoring. ODOT staff will serve as the primary interface with federal, state, metropolitan, city and county staff participating in the project. They will also provide, with assistance from the consultant selected for this project, the briefings and updates necessary to keep state level policy makers and management informed of the progress being made in this study.*

Modeling Steering Group: *The Modeling Steering Group will include senior technical and management staff representing MPOs, city and county planning agencies from throughout the State. This group will provide technical oversight for the Land Use Model Integration Program, and will review and comment on the work of the consultant. The Modeling Steering Group has been meeting regularly to provide technical oversight for the Travel Demand Modeling Improvement Program which was undertaken by ODOT in fiscal year 1995/96. The Modeling Steering Group may also be expanded to include representatives from key state agencies with a direct interest in the models being produced by this project. These agencies include the Office of Economic Analysis, the Department of Environmental Quality, the Department of Land Conservation and Development, and the Department of Economic Development. The Modeling Steering Group meets on a monthly basis or as necessary to review progress on major modeling projects undertaken by ODOT. The Modeling Steering Group will be the primary point of contact between the consultant, ODOT and agencies and governmental bodies participating in this project.*

Peer Review Panel: *ODOT, in consultation with the Modeling Steering Group and the consultant selected to conduct the work program described in this RFP, will assemble a panel of experts from the Pacific Northwest and other regions and institutions from throughout the United States to provide broad, overall review of the technical direction of the Land Use Model Integration Program. The Peer Review Panel will advise ODOT, the Modeling Steering Group, and the consultant on the content of the program and provide a wide-ranging technical perspective on the relationship between land use model development work being conducted in the State of Oregon and research and development of similar modeling efforts internationally and in other parts of the United States. The Peer Review Panel will participate in periodic review of the products, procedures, models and documentation being developed for the Land Use Model Integration Program. The Peer Review Panel will report*

directly to the ODOT program manager and will also meet periodically with and advise the Modeling Steering Group concerning their reviews of the progress being made on the project. The consultant will meet regularly with the Peer Review Panel (at least quarterly) to review technical recommendations related to forecasting, data base development and modeling undertaken through the Land Use Model Integration work program.

Universities and Academic Institutions: *Involvement of members of the academic community is essential to developing a broad base of institutional support for sustaining this modeling effort. It is important that partnerships with universities, academic and research institutions be addressed by consultants proposing on this project. The consultant will be expected to develop a research agenda related to key elements of the work program developed in the first phase of this project. ODOT, as part of this project, may request that both technical and policy level analyses be undertaken by universities in the State of Oregon that support this project's research agenda. A portion of the funding available for this project has been set aside to support independent academic investigation for key issues identified as the work program develops. ODOT expects that the consultant selected for this project will involve members of the academic community to successfully complete key elements of this work program.*

Funding for the Land Use Model Integration Program

Funding for development efforts supporting this program will span two biennia in the State of Oregon's budget cycle, the current 1996/97 biennial budget and the next 1998/99 biennial budget. The current biennium's budget for the Land Use Model Integration Program is \$1 million. Of this total, \$200,000 is presently obligated, and the remainder is expected to be obligated by June 1996. A total of \$850,000 has been designated to fund consulting services for the three phases of the Land Use Model Integration Program described in this RFP. This level of funding is designed to cover the research and development necessary to create the models, data bases and preliminary forecasts for statewide economic, demographic and commodity flows, and to develop working prototypes of both the land use allocation models and supporting GISs described in the Land Use Model Integration work program.

Funding for implementation of working GISs at a metropolitan and substate level, and development, calibration and implementation of land use allocation models at the metropolitan, city and county level is anticipated to be part of ODOT's funding proposal to the State Legislature for the 1998/99 Biennium. The final funding figure for the 1998/99 Biennium will be developed in conjunction with implementation recommendations developed in Phase III of the current work program, and in conjunction with **study participants** as their roles and responsibilities are established.

B. Scope Of Work

The technical work program is divided into three separate phases. Phase I will consist of an intensive review of the technical work program proposed by the selected consultant, an assessment of the modeling, data base and forecasting recommendations developed in Phase

I, refinement of the schedule, and development of specific deliverables related to work program elements. Phase II will consist of three concurrent and tightly coordinated work program elements, each addressing major technical and model development objectives of the Land Use Modeling Project. Phase II also requires that the consultant prepare a detailed administrative plan to coordinate the development of the models and analytic methods developed under this scope of work that refines and builds on the management plan drafted in Phase I. Phase III of the work program concentrates on developing recommendations for the institutional arrangements needed to implement the land use modeling programs and data bases, defining the staffing and resource requirements necessary to sustain the program, and describing the actions and timetables necessary to implement the land use modeling effort on a statewide basis.

There are several tasks in each phase of the proposed work program. The Scope of Work describes what is expected to be provided by the consultant in each of these tasks. Some of the Tasks are further organized by task elements. Task elements are generally expected to be undertaken concurrently as other elements of the task are completed.

An outline of the Phases, Tasks and Task Elements for this project is presented below:

ODOT Land Use Model Integration Program - Outline of RFP

Phase I: Prepare Comprehensive Policy Review and Develop Technical Work Program

- Task 1: Review the literature, models, methods and analytic procedures applicable to all tasks in Phase II
- Task 2: Review the OTP, TPR and Oregon State Benchmarks and identify all of the policies, data requirements and key variables that will be able to be analyzed using the models and methods of analysis identified in Task 1
- Task 3: Prepare recommendations for developing the data bases (for both the Geographic Information Systems and economic/demographic data), models and forecasting methods to be used in Phase II of the Land Use Model Integration Program
- Task 4: Refine the proposed management plan for integrating and coordinating the proposed work program for Phase II
- Task 5: Present recommendations to ODOT and Peer Review Panel
- Task 6: Conduct Statewide Conference and Workshop(s) Based on Accepted Recommendations
- Task 7: Review, refine and develop a detailed technical work program and schedule for Phase II

Phase II - Forecasting, Data Base and Land Use Model Development Program

- Task 1: Project Management, Task Coordination and Information Sharing
- Task 2: Prepare Statewide and Substate Economic and Demographic Forecasts
 - Element 1: Develop Statewide Economic and Demographic Forecasts
 - Element 2: Estimate Substate Demographic Composition and Economic Activity
- Task 3: Develop Models and Forecasts for Statewide Commodity Flows, Freight and Goods Movement, and Intrastate Passenger Flow

Task 4: Develop Geographic Information Systems and Models to Conduct Land Use Allocation and Policy Analysis

Element 1: Develop Specifications and Working Prototype for Statewide, Metropolitan and Countywide GISs

Element 2: Develop a Prototype Land Use Allocation Model

Phase III - Recommendations for Implementing and Sustaining Statewide Land Use Modeling

Task 1: Assess Existing Institutional Arrangements

Task 2: Prepare Recommendations for Resource and Staffing Requirements

Task 3: Implement a Prototype Study for a Land Use Allocation Model

Task 4: Develop Recommendations for an Implementation Plan

Phase I - Prepare Comprehensive Policy Review and Develop Technical Work Program

The primary purpose of Phase I of the Scope of Work is to prepare a detailed background and review of the analytic methods and models that the consultant proposes to use in this study. The consultant will also develop a detailed work program for subsequent phases of the project that addresses the planning, policy and institutional context in which this project will be undertaken.

Respondents to this RFP should prepare a description of how they intend to conduct the following tasks in the Phase I work program. The response should include a brief description of the work products to be delivered at the end of Phase I and schedule for completing each of the tasks in Phase I². The tasks to be included in Phase I of this project are:

Task 1: Review the literature, models, methods and analytic procedures applicable to all tasks in Phase II

The consultant will review applicable literature on statewide forecasting models and related data bases, statewide and regional passenger and commodity flow models, and land use allocation models used for transportation system planning. The review will include an assessment of issues involving feedbacks between land use and travel demand models, and the development of statewide and regional economic and demographic control totals used in implementing such models. The literature review should be of a broad enough scope to include domestic as well as foreign developments in modeling and land use analysis.

Task 2: Review the OTP, TPR and Oregon State Benchmarks and identify all of the policies, data requirements and key variables that will be able to be analyzed using the models and methods of analysis identified in Task 1

² A complete list of deliverables and a comprehensive schedule for completing each Phase of this project should be included in parts C and D of the proposals prepared in response to this RFP (see subsequent sections of this RFP).

The November 1995 Workshop on Land Use Modeling conducted by ODOT included a preliminary assessment of the policies included in the OTP and TPR that should be addressed by the modeling and forecasting system to be developed under this program. The consultant will expand on this preliminary analysis, including a detailed review of the OTP and the TPR in light of the review of available models and techniques for long term land use and transportation analysis conducted in Task 1. The consultant will also review the Oregon Benchmarks program and prepare a list of the data that could be generated from the models and methods reviewed in Task 1 that should be considered for inclusion in this program. The consultant will prepare a cross-referenced list of the policies, data that should be used to analyze each policy, and models or methods of analysis that would provide the potential to satisfy the objective of this study.

Task 2 will also require the consultant to make recommendations concerning policies and information needed to analyze progress toward attaining benchmarks that are not adequately supported by currently available modeling methods. These recommendations will be reviewed with the Peer Review Panel and the Modeling Steering Group. After this review, the consultant will prepare a draft of recommendations for concurrent research to be conducted by universities and academic institutions in conjunction with the proposed work program.

Task 3: Prepare recommendations for developing the data bases (for both the Geographic Information Systems and economic/demographic data), models and forecasting methods to be used in Phase II of the Land Use Model Integration Program

Based on the reviews and analyses conducted in Tasks 1 and 2, the consultant will develop a final set of recommendations for integrating the statewide forecasting models, intrastate passenger and commodity flow models, land use data bases, and land use allocation models (as describe in Phase II of this work program). This review will include an assessment and recommendations concerning the data needed to support the GIS, forecasting and commodity/freight flow models, and the land use allocation models recommended in this phase of the study. The consultant will also identify any additional data base or model development work required in Task 2 not presently supported by existing modeling or practice that will need significant new research in order to be undertaken prior to the commencement of the Phase II work program.

Task 4: Refine the proposed management plan for integrating and coordinating the proposed work program for Phase II

The consultant will review the management plan for coordinating and developing the Phase II work program that was included in their response to this RFP, taking into consideration the roles and responsibilities of each of the **study participants** and feedback from the Modeling Steering Group, the Peer Review Panel and ODOT's Transportation Planning Analysis Unit. The revised management plan will describe how the technical and management coordination for this project will be carried out. It will

also include recommendations for a research agenda to be pursued in conjunction with data and policy issues as identified in Phase I-Task 2, and technical research issues identified as part of the review of literature and available models in Phase I-Task 1. The recommendations developed in Task 4 will include a detailed, task-by-task schedule for developing the Phase II work program that reflects the findings developed in Phase I-Task 3. The management plan will also identify the key issues that ODOT needs to consider in regard to the implementation plan to be developed in Phase III of this program.

Task 5: Present recommendations to ODOT and Peer Review Panel

The consultant will provide a description of the steps they intend to take in developing and presenting recommendations from the Phase I tasks to both ODOT and the Peer Review Panel. The proposal should include a timetable for presenting recommendations to these groups and include appropriate review periods and tentative meeting schedules with both groups. The role of the Modeling Steering Group should also be described. The consultant will make provision in their proposal to present the recommendations to policy makers and senior staff, the Community Solutions Team and other policy-level staff as requested by ODOT and the Modeling Steering Group.

Task 6: Conduct Statewide Conference and Workshop(s) Based on Accepted Recommendations

The consultant will prepare a description of how they would organize, manage and conduct a conference and/or workshop series to review the findings and proposals resulting from the previous five tasks. The consultant will recommend the timing, content and attendance at the proposed events. The consultant will also describe how they intend to inform potential attendees of the technical issues to be discussed prior to each event and how they intend to solicit and analyze feedback they receive during the events.

Task 7: Review, refine and develop a detailed technical work program and schedule for Phase II

Upon concluding the conference and workshop(s) in task 6, the consultant will work with the ODOT staff to review and refine their plan for conducting Phases II and III of the work program. The consultant will describe the steps they intend to take in working with ODOT as they conduct this review. The consultant will describe the technical and management considerations they will be assessing as they prepare a timetable for the balance of the work program.

Phase II - Forecasting, Data Base and Land Use Model Development Program

Phase II of the land use modeling work program focuses on development of the major modeling and data base components of the program. The recommendations and theoretical

underpinnings of the forecasting, commodity flow and land use allocation models reviewed in Phase I will form the basis for developing the data bases and models in Phase II. There are four tasks in Phase II. Tasks 2 through 4 are to be conducted concurrently. They include:

- Task 1: Project Management, Task Coordination and Information Sharing
- Task 2: Prepare Statewide and Substate Economic and Demographic Forecasts;
- Task 3: Develop Models and Forecasts for Statewide Commodity Flows, Freight and Goods Movement and Intrastate Passenger Flow; and
- Task 4: Develop Geographic Information Systems and Models to Conduct Land Use Allocation and Policy Analysis.

The consultant will prepare a proposal addressing the requirements of each of these tasks as described below. Careful consideration will be given to the degree to which each proposal addresses the technical requirements of each task. The proposals should also demonstrate a clear understanding of the relationship between the **goals and objectives** of this study (as specified in the **BACKGROUND** section, above) and the importance of designing both a forecasting and land use allocation modeling process that can be understood and implemented by the governmental agencies included as **study participants**.

Task 1: Project Management, Task Coordination and Information Sharing

ODOT intends to have the work on Tasks 2 through 4 in Phase II proceed concurrently so that the Land Use Model Integration Program can meet the programmatic goals and funding requirements established for this project.³ The consultant should present a management plan for the technical work program in Phase II that addresses the key coordination issues that will likely confront the consultant, ODOT and the other study participants. The management plan, at a minimum, should address the following issues:

- coordination of key activities in each task and element of Phase II,
- timing and frequency of management reviews between ODOT management and the contractor (including, frequency and content of progress reporting),
- coordination and collaboration required for developing technical documentation
- presentation of findings and technical reviews to the study participants,
- proposals for any interim briefings and/or workshops, and
- recommendations for software and hardware purchases necessary to support the Land Use Model Integration Program.

The consultant's response to this section of the RFP will be used as the base from which the plan for managing the Phase II work program will be discussed and refined in Phase I-Task 4. Therefore, the proposed management plan submitted in response to this RFP should be sufficiently developed and contain the necessary detail for form the basis for this review. The

³ See **Part D. Project Schedule** for major milestones for the first three phases of ODOT's Land Use Model Integration Program

format for the detailed model development schedule prepared for this section of the RFP should conform to the specifications described in **Section 3: Part D**, below.

Task 2: Prepare Statewide and Substate Economic and Demographic Forecasts

The ability to evaluate land use and transportation facilities, and the policies and planning objectives of both federal and state mandates, requires that a systematic and consistent set of forecasts of economic activity, demographic composition be produced at both the statewide and substate level. Forecasts of intrastate and interregional commodity, freight and passenger flows, and control totals used in the models to be developed for land use allocation will be based on these forecasts.

Statewide forecasts must be coordinated with the ongoing work of other agencies in the State of Oregon that are charged with revenue and population forecasting for other purposes. Forecasts produced at the substate level must be of sufficient detail, and developed with attention to interregional relationships within the state, so that they can be directly integrated into local travel demand and transportation planning models. Finally, the time span of the forecasts and travel demand estimates in this task must be of sufficient length to satisfy the transportation planning horizons required by state and federal planning requirements.

There are two elements to Task 2 in the Phase II work program that must be addressed in the consultant's proposal:

- Element 1: Develop Statewide Economic and Demographic Forecasts; and
- Element 2: Estimate Substate Demographic Composition and Economic Activity

Each of these Task 2 work elements has important interrelationships that should be addressed and clearly explained in the consultant's proposal. Some of the key factors to be considered in developing a detailed proposal are described below:

Element 1: Develop Statewide Economic and Demographic Forecasts

The purpose of this element is to develop both the models and a set of preliminary forecasts that describe long range statewide economic and demographic trends over a forecast horizon that addresses the needs of transportation planners at the state and metropolitan level. The minimum acceptable forecast horizon is twenty years. The statewide forecasts should address the influence of the national economy and economic activity in other states and regions of the United States that have had a significant historical influence on Oregon's economy. The role of international trade relationships should also be addressed in the proposal.

The State of Oregon's Office of Economic Analysis presently produces statewide population forecasts by age group through the year 2003 and produces these seven year forecasts

periodically as the need arises.⁴ The Office of Economic Analysis also maintains an “export-based” economic model linked to national forecasts developed by DRI. Because the state’s economic forecast is designed to estimate revenues for purposes of short term statewide planning, output from the model is reported on a quarterly basis over a six year forecast horizon. The forecasts include statewide employment by industry and personal income by income type. Wage rates are forecast in three broad categories on an annual basis as used as input to the income forecasting portion of the model.⁵

Element 2: Estimate Substate Demographic Composition and Economic Activity

The results of the statewide forecast must be disaggregated to the substate and/or regional level for use in estimating commodity, freight and goods and passenger flows in Phase II-Task 3. These substate forecasts will also be used as control totals by the land use allocation models developed in this work program, and by metropolitan, city and county and local planners for related planning purposes. Neither the economic forecasts nor the population forecasts presently produced by the state are disaggregated to a substate, regional or city and county level. Output from the substate forecasts should be of sufficient detail to be used directly in the work products and models developed in all tasks in the Phase II work program. Any forecasts developed for this element must also be disaggregated to a substate level in a manner that is consistent with statewide forecasts and that reflects the influences of economic activity in adjacent substate areas.

The substate forecasts should be designed to offer more detail than usually available from statewide forecasts. Attention to the design and specification of substate forecasting models is especially important if they are to have a role in the development of commodity flow forecasts, freight and goods movement, and intrastate travel demand estimation (see Phase II-Task 3). Detailed substate forecasts should also address the needs of metropolitan level land use allocation model(s) to be developed in Phase II-Task 4 and the needs of travel demand models that have been developed through other contracts administered by ODOT. The substate forecasting methods proposed for this project should also allow for local input to the forecasting process and address, in a more detailed basis than usually possible in a statewide model, issues related to local economic development plans and expectations of demographic growth.

Task 3: Develop Models and Forecasts for Statewide Commodity Flows, Freight and Goods Movement, and Intrastate Passenger Flow

ODOT has specific responsibilities to address the effects of economic activity and intrastate travel demand on the statewide transportation system. Economic activity, measured by

⁴ See State of Oregon Population by Selected Age Groups 1980-2003; Office of Economic Analysis, Department of Administrative Services; November 1995.

⁵ See Oregon Economic and Revenue Forecast; Office of Economic Analysis, Department of Administrative Services; September 1995 and The Oregon Economic Model Annual Review of Methodology; Office of Economic Analysis, Department of Administrative Services; April 1995.

commodity flows within and through the state and the movement of freight and goods by a variety of modes, and non-commercial intrastate travel demand, by mode, for passenger and vehicular travel are to be forecasted statewide and assigned to the existing and proposed statewide transportation network. In their proposal, the consultant will prepare a description of a model (or suite of models) designed to address each of these areas.

The statewide transportation models will be based on the forecasts of economic activity and demographic growth developed in Phase II-Task 2. The consultant will describe the approach to be used in developing these model(s), the data sources, surveys, network coding and network descriptions (if any), and the statewide zonal structure required for this effort. The section of the consultant's proposal dealing with this task will also address the interrelationship between the statewide commodity/freight/passenger model(s) and the recommendations for developing land use models and Geographic Information Systems developed in Phase II-Task 4.

Special attention should be addressed to the data requirements and data availability issues related to both commodity flow and freight and goods modeling efforts that have been conducted in other states and to data available for the State of Oregon from ODOT, the federal government, statewide trade organizations, ports, and metropolitan planning organizations. The consultant should also demonstrate an understanding of the potential relationship between the Oregon Highway Monitoring System (OHMS) and the information requirements necessary for completing this task.

Any modeling and forecasting efforts proposed for this task be compatible with the travel demand models recently developed by ODOT for metropolitan level travel demand modeling. Other compatibility and coordination efforts, such as those related to network coding and specification using existing data bases, should also be addressed.

Task 4: Develop Geographic Information Systems and Models to Conduct Land Use Allocation and Policy Analysis

In responding to this section of the RFP, the consultant will prepare a description of the manner in which they intend to develop both the Geographic Information Systems (GIS) and the land use allocation models. There are two elements to this task:

- Element 1: Develop Specifications and Working Prototype for Statewide, Metropolitan and Countywide GISs; and
- Element 2: Develop a Prototype Land Use Allocation Model.

In responding to this section of the RFP, the consultant should present a discussion of their understanding of the relationship between GISs and land use allocation models. They should also describe the manner in which they intend to develop a statewide GIS and integrate such a system with existing and developing metropolitan and countywide GISs already in operation. The consultant should also describe their approach to coordinating their work with the ODOT

Transportation Inventory and Mapping Section's Information Systems Branch (ISB) work on statewide transportation data mapping.

The final recommendations concerning the type of land use allocation modeling system to be used and the details of what will be required for data base support and model calibration will be developed in Phase I of this project. However, in their proposal responding to Element 2 of Phase II-Task 4, the consultant will describe their recommended approach to land use allocation modeling in light of the **goals and objectives** specified for this program in the **BACKGROUND** section and the diversity of experience and resources available to the **study participants**.

Element 1: Develop Specifications and Working Prototype for Statewide, Metropolitan and Countywide GISs

The objective of Element 1 of this task is to develop a working prototype of a GIS designed to support the land use allocation models that will ultimately be implemented at a statewide and metropolitan level.⁶ In responding to this portion of the RFP, the consultant will describe the factors to be considered in developing a statewide GIS system and in implementing it on a prototypical basis to test the land use allocation models developed as part of this work program. The discussion should include an assessment of the kinds of data, level of detail and availability of data relevant to the land use modeling effort, and the considerations needed in designing a data base that will support the policy and analysis requirements described in the **BACKGROUND** section of this RFP.

The consultant should clearly state the level of detail and functionality at which the prototype GIS will be developed. The consultant should also present a complete list and description of the kinds of documentation and guidelines that they intend to produce as they prepare the GIS data. Any system developed for ODOT should be able to be fully and seamlessly integrated to the Intergraph™ and ARC/Info™ interface systems currently under development through ODOT, and be able to take advantage of the analytical and data base software available on ARC/Info™ software operating on SUN Sparc™ workstations or their equivalent. The proposal should also describe the types of software to be used by the consultant in conducting this element of the work program and any proprietary and/or licensing considerations (including license or use fees) and minimum efficient operating environments and hardware requirements.

The issues of data compatibility and transferability between different data sources and between jurisdictions and metropolitan areas should also be addressed in the responses prepared by each consultant. In addition, the consultant should demonstrate that they understand and are familiar with digital geospatial metadata standards.⁷ In the section of their proposal responding to this task the consultant should address the technical aspects of

⁶ See the BACKGROUND section of this RFP for a detailed description of the available funding and expected programming of state funds for the full Land Use Model Integration Program

⁷ See, for example, Content Standards for Digital Geospatial metadata, Federal Geographic Data Committee, Washington, DC; June 1994.

managing a statewide GIS that will use multiple data sources. They should address the management and coordination issues of coordinating geospatial metadata in responding to Phase II-Task 1.

Element 2: Develop a Land Use Allocation Model

The objective of this element of Task 4 is to develop and test a prototypical land use allocation model (or set of models, as recommended in Phase I.) The development of this prototype will include all necessary data and model interfaces, computer programs, and utility software necessary to link the land use allocation model(s) with the prototype GIS and the travel demand models developed by the ISB and other work for ODOT's Transportation and Land Use Model Integration Program. The selection of the specific model(s) and the level of detail to be undertaken in its development will be determined in Phase I of this project.

The consultants will respond to this section of the RFP by presenting their understanding of the issues faced by ODOT and the **study participants** in developing and implementing land use allocation models in the context of post-ISTEA requirements for integrated land use and travel demand modeling, and given the recent experience in the Portland metropolitan area as they addressed issues involved in developing fully integrated land use and travel demand models. This discussion should also explain the factors that each consultant considers most important in developing and testing a land use allocation model, especially with reference to ODOT's **goals and objectives** as stated in the **BACKGROUND** section of this RFP.

The consultants will demonstrate their familiarity with the technical issues related to land use allocation model development by reviewing their experience in developing operational models of this type, and by reviewing the approach they would take to selecting, implementing and testing one or more land use allocation models in the context proposed by ODOT for this project. The consultant will also describe the relationship between the prototype GIS developed in Element 1 and model development to be conducted in Element 2.

As in the first element of this task, the consultant will describe the level of documentation to be produced as the land use allocation model is developed and any hardware and/or software requirements needed to support their effort. The description of supporting documentation should include materials to be prepared for the technical staff of **study participants** as well as materials to be developed for review by senior agency staff and policymakers.

The consultant should provide a specific example of how they intend to evaluate the performance of the land use allocation model(s) chosen for development in this element of the work program. This example should address at least one of the technical planning and/or policy analyses likely to be required of a fully developed and implemented model in light of the **goals and objectives** presented in the **BACKGROUND** section of the RFP. The example presented by the consultant should provide insight into how the consultant would evaluate such models and how they would develop their recommendations for using the prototypical models for policy analysis and decision making support.

Finally, the consultant should present a description of how they view the “feedback” process between land use allocation models and travel demand models and the role of GIS in this process. This description should include an assessment of the present state of the practice, and recommendations for the kinds of advances in model design that should reasonably be expected as part of ODOT’s work program. All proposals should demonstrate the consultant’s familiarity with the use of EMME/2™ as the platform on which ODOT has developed and refined its Transportation and Land Use Model Integration Program.

Phase III - Recommendations for Implementing and Sustaining Statewide Land Use Modeling

The objective of Phase III is to evaluate a prototypical application of the forecasts and models developed in Phase II, and using the experience of applying the models and methods of analysis in the prototype study, develop recommendations that will lead to implementing and sustaining the forecasting, land use modeling, and analytic procedures developed in Phase II of the project. In responding to the Phase III scope of work, the consultant will address institutional arrangements required to coordinate statewide/substate forecasting and the staffing and resources required of metropolitan, city and county planning organizations to maintain the data and models needed for use in the allocation of activity and land uses in multicounty and substate regions. The consultant will also prepare recommendations concerning possible approaches for implementing the land use allocation modeling processes within metropolitan and multicounty planning areas in the state.

Task 1: Assess Existing Institutional Arrangements

Institutional arrangements affecting long range forecasts should be evaluated with respect to the need for review by appropriate state agencies, and the way in which multicounty and countywide planning agencies in substate regions should be part of the review process. Institutional and organizational roles at the substate level related to land use allocation modeling should include MPOs, COGs and countywide planning organizations. Issues concerning inter jurisdictional location decisions and assumptions concerning the level and intensity of land use decisions should be addressed as they affect implementation of the land use allocation models and processes developed in Phase II of the work program. In all cases, the roles and responsibilities of agencies at all levels of government should be reviewed in light of the requirements of the modeling and decision making required by the processes and models proposed in Phase II. The goal is to be able to provide a set of “model interagency agreements” for use by ODOT, other state agencies, MPOs, COGs and counties as they structure the institutional arrangements they will need to maintain and enhance the models and data bases needed for land use modeling in the future.

The consultant should describe how they intend to address these issues, and at a minimum, address the following issues:

- a. Describe how the consultant would analyze and incorporate existing interagency arrangements to support both the forecasting and land use allocation processes presently used by the State of Oregon;
- b. Present a plan for working with the Peer Review Panel to develop and evaluate recommendations for alternative institutional relationships that support each level of modeling proposed in Phase II; and
- c. Explain the approach the consultant would take in presenting their recommendations for institutional arrangements to the affected agencies, and in explaining how these recommendations address the needs of the forecasting, model support and policy review requirements of Land Use Model Integration Program.

Task 2: Prepare Recommendations for Resource and Staffing Requirements

The consultant must convey their understanding of the requirements and responsibilities of the MPOs, COGs and county planning agencies that will be asked to support the land use modeling components of this program. The sustainability of the land use modeling effort will depend, in large part, on the degree to which the data requirements, modeling techniques and outputs, and analytic methods support (and are supported by) the existing work programs of participating agencies. The consultant will be responsible for working with participating MPOs, COGs and county planning agencies to determine the resources required to sustain the land use allocation models and data bases developed in Phase II. The consultant will also be responsible for assessing the present capability of participating agencies to effectively use the planning methods and tools developed in Phase II. The consultant should convey, in their proposal, their understanding of the issues involved in metropolitan, city and county level planning, and at a minimum, address the following issues:

- a. The methods and approaches they intend to use to review and prepare comprehensive assessments of data base development, maintenance and implementation requirements for forecasting and land use allocation models;
- b. The approach they would use to evaluate the current levels of availability of data required for operating models at both statewide and metropolitan/multicounty levels; and
- c. The ways in which they intend to assess the staffing and resource requirements necessary at appropriate level for each governmental agency involved in the Land Use Model Integration Program (e.g., state, metropolitan, multicounty or county).

Task 3: Implement a Prototype Study for a Land Use Allocation Model

The consultant will be responsible for working with appropriate state and MPO staff to complete an evaluation of a prototype of the proposed land use allocation model. The objective of this task is to calibrate, implement and test a fully functional land use allocation model for a metropolitan region in western Oregon. The prototype study will use the land use allocation model(s) developed in Phase II-Task 4 in conjunction with the prototype GIS developed in Phase II-Task 3. The prototype study will use control totals developed from substate forecasts, statewide commodity and passenger flow forecasts, supplementary data (as required) derived from one of the participating metropolitan areas to implement the model.

The prototype study should be conducted in such a way that the procedures can be fully evaluated as they pertain to the **goals and objectives** of this program as defined in the **Background** section of this RFP. It is especially important to demonstrate the application of the prototype model to issues of policy analysis identified in the Phase I work program.

The prototype study should be conducted so that the **study participants** described in the **Background** section of the RFP have ample opportunity to review, comment and discuss the implementation of the models, and the processes and procedures involved in data preparation, calibration and testing, in a timely and thorough manner. The consultant should include in the proposal a statement of their approach to making the evaluation accessible to each of the **study participants**. In addition to preparing a statement of the ways in which they propose to undertake the prototype study, the consultant should describe the materials they anticipate developing, and the number, frequency and topics for workshops they may offer in conjunction with the prototype study.

Communications with senior staff and policy makers is critical to the success of this project. The consultant should prepare a discussion of the processes they recommend for keeping senior level and policymakers informed concerning this project. The consultant should also describe the kinds of written materials they intend to prepare for both technical staff and policymakers. These materials should be designed so the consultant, the Peer Review Panel and the members of the Modeling Steering Group can assess the feasibility of implementing the prototype land use allocation modeling processes proposed by the consultant.

The consultant should explain the process, timing and interaction of activities that they would conduct for the land use model prototype study. They should also describe the manuals of “best practice” and procedures, and appropriate user’s guides for state, metropolitan, city and county planners based on experience in conducting the prototype study.

Task 4: Develop Recommendations for an Implementation Plan

In conjunction with the three previous tasks, the consultant should prepare a set of recommendations and guidelines for full implementation of the forecasting, data base development and modeling processes developed in this work program. Recommendations should be developed in conjunction with the Modeling Steering Group and the Peer Review Panel, and reviewed in the context the **goals and objectives** of this study. The timetable, costs and phasing required to implement the modeling program should be developed in a manner that both state level and MPO/COG work programs can be developed in enough time to begin accommodating work program modifications and funding requirements for fiscal year 1998.

At a minimum, the consultant will prepare a report that:

- a. Presents recommendations concerning the institutional agreements, staff support and agency resources required to implement the modeling processes developed in Phase II and evaluated in Phase III; and
- b. Includes a timetable and implementation phasing plan based on experiences in Phase III.

In their proposal, the consultant will describe how they intend to incorporate into their implementation report the lessons learned from the prototype study, their analysis of the institutional arrangements required to implement the Land Use Model Integration Program, and the staffing and resource requirements of these processes.

C. Deliverables

A separate list of deliverables will be developed by the consultant, including reports, draft and final working papers, computer code, user documentation, and materials developed to support workshops and presentations. The list of deliverables will be prepared and presented in Part 4 of each consultant’s response⁸. The listing will be one of the key factors upon which the responsiveness of the consultant is evaluated. Each deliverable described below should be considered as required for a minimum level of effort with regard to work program anticipated by ODOT and, as such, may be expanded upon by the respondents. When preparing the list of deliverables, the consultant should also include the expected completion date and, if applicable, the expected review period to be allotted to ODOT and the **study participants**.

The minimum list of deliverables includes:

Deliverable Number	Description	Produced in Phase/Task Number
1	Review of the Literature, Models and Methods for Land Use Allocation Modeling	Phase I-Task 1
2	Review of Policies, Plans and Benchmarks (Including Cross-Referenced Listing of Models and Supporting Data	Phase I-Task 2
3	Draft Recommendations for University and Academic Research Supporting the Land Use Model Integration Program	Phase I-Task 2
4	Recommendations for Forecasts, Model and Data Bases Supporting the Land Use Model Integration Program	Phase I-Task 3
5	Revised and Refined Management Plan for Project Coordination (Based on Management Plan Presented in	Phase I-Task 4

⁸ See Section 4: Proposal Instructions, Part 4.3 for a detailed description of the required content of all proposals.

Deliverable Number	Description	Produced in Phase/Task Number
	Response to RFP — Phase II-Task 4)	
6	Materials Supporting the Model Development Conference/Workshop(s)	Phase I-Task 5
7	Conference/Workshop Proceedings and Final Recommendations	Phase I-Task 7
8	Final Management Plan for the Phase II Work Program	Phase II-Task 1
9	Statewide Economic and Demographic Forecasting Model(s) and Accompanying Users Guides and Technical References	Phase II-Task 2
10	Substate Demographic Composition and Economic Activity Model(s) and Accompanying Users Guides and Technical References	Phase II-Task 2
11	Commodity Flow, Freight and Goods, and Intrastate Passenger Flow Model(s) and Accompanying Users Guides and Technical References	Phase II-Task 3
12	Specifications and Working Prototype for Statewide, Metropolitan and Countywide GIS and Accompanying Users Guides and Technical References	Phase II-Task 4
13	Prototype Land Use Allocation Model(s) and Accompanying Users Guides and Technical References	Phase II-Task 4
14	Assessment of Institutional Arrangements and Model Interagency Agreements to Support the Land Use Model Integration Program	Phase III-Task 1
15	Recommendations for Resource and Staffing Requirements to Support the Land Use Model Integration Program	Phase III-Task 2
16	Land Use Model Prototype Study and Accompanying Users Guides and Technical References	Phase III-Task 3
17	Recommendations for Statewide Land Use Modeling Implementation Plan	Phase III-Task 4

D. Project Schedule

At a minimum, the project schedule prepared by each consultant should include the start date and end date for each of the Tasks and Task Elements described in **Part B - Scope of Work**. The project schedule should also show the major milestones and delivery dates for the work products described in **Part C - Deliverables**. It should also include time frames for key reviews of draft reports and proposals as well as proposed meeting dates for the Peer Review Panel and the Modeling Steering Group.

The schedule developed by the consultant should be as detailed as possible and should be developed to meet the following completion deadlines:

Phase/Task	Description	Completion Deadline
Phase I	Prepare Comprehensive Policy Review and Develop technical Work Program	
Task 1	Review the Literature, Models, Methods and Analytic Procedures Applicable to All Tasks in Phase II	5/96
Task 2	Review the OTP, TPR and Oregon State Benchmarks and Identify Policies, Data Requirements and Key Variables Needed Methods and Models Identified in Task 1	5/96
Task 3	Prepare Recommendations for Developing the Data Bases, Models and Forecasting Methods to be Used in Phase II	6/96
Task 4	Refine the Proposed Management Plan for Phase II Work Program	6/96
Task 5	Present Recommendations to ODOT and Peer Review Panel	6/96
Task 6	Conduct Statewide Conference and Workshop(s) Based on Accepted Recommendations	9/96
Task 7	Review, Refine and Develop a Detailed Technical Work Program and Schedule for Phase II	9/96
Phase II	Forecasting, Data Base and Land Use Model Development Program	
Task 1	Project Management, Task Coordination and Information Sharing	9/96
Task 2	Prepare Statewide and Substate Economic and Demographic Forecasts	12/96
Task 3	Develop Models and Forecasts for Statewide Commodity Flows, Freight and Goods Movement and Intrastate Passenger Flow	6/97
Task 4	Develop Geographic Information Systems and Models to Conduct Land Use Allocation and Policy Analysis	12/96
Phase III	Recommendations for Implementing and Sustaining Statewide Land Use Modeling	
Task 1	Assess Existing Institutional Arrangements	3/97
Task 2	Prepare Recommendations for Resource and Staffing Requirements	6/97
Task 3	Implement a Prototype Study for a Land Use Allocation Model	4/97
Task 4	Develop Recommendations for an Implementation Plan	6/97

A narrative accompanying the Project Schedule prepared by the consultant should emphasize any important scheduling considerations that are critical to the completion of the project, as proposed by the consultant. The narrative should clearly state when data, decisions, or supporting materials which are important to the completion of the project should be provided by either ODOT or the other **study participants**. The Project Schedule should also present the time period for receiving any relevant work on ODOT's Travel Demand Model Improvement Program (if necessary for this project.) Details of the schedule, especially the thought given to the coordination required for the concurrent elements of Phase II will be one of the criteria upon which responses are evaluated.

E. Project Staffing

The consultant will prepare a comprehensive staffing plan that includes the following:

1. A complete list of key project staff and a description of their relevant qualifications and experience;
2. A staff commitment matrix that lists key staff assigned to each Task and Task Element described in **Part B - Scope of Work** and indicates the number of hours that they are expected to work on each task to which they are committed; and
3. A summary of the total commitment of each key staff member (in hours) and a description of their role in the project (i.e., principal investigator, task coordinator, data analyst, etc.) This summary will be broken down by phase and include a total for the entire project.

The staffing plan will reflect staff commitments that are consistent with the level of effort reflected in the cost estimate for this project. The completeness, accuracy, level of detail and responsiveness of the proposal to the requirements of the project staffing portion of the RFP will be a key factor in the evaluation of the consultant's response.

F. Cost Estimate

A cost estimate not to exceed \$850,000.00 will be prepared for the project. This cost estimate reflects ODOT's expectation of the level of effort, preparation of deliverables, and completion of tasks and task elements according to the schedule presented in Part D. The consultant's cost estimate should completely address the contracting requirements of ODOT. These requirements include provision of a breakdown of total project costs by individual for direct labor and by direct non-labor categories, including billing rates by individual staff, overhead and itemized direct non-labor unit costs.

The cost estimate will also include estimates of direct labor and non-labor costs by task for each phase of the project. The task level cost estimate will identify the individuals assigned to each task, the level of their commitment and the cost of their direct labor at the committed level for the task. Direct non-labor expenses such as travel expenses, publication and

copying costs, materials, mileage, per diem, and other allowable charges will be itemized by task and summarized for each of the three phases of the project.

Section 4: PROPOSAL INSTRUCTIONS

4.1 Form of the Response

The consultant shall submit a definite proposal for the end results set forth in the RFP, Section 3, and in the format and with the content specified in Section 4 of this RFP.

4.2 General Instructions

{ See the standard ODOT “SOP/Q” Format for section 4.2 }

4.3 Content of the Proposal

Each proposal must contain the following ten parts in order, or it will be considered non-responsive:

Part 1 Introductory Letter/Cover Sheet { See Standard RFP language for Section 4.3.a }	1 page	Pass/Fail
Part 2 Firm’s Capabilities and Qualifications { See Standard RFP language for Section 4.3.b }	8 pages	Maximum Score: 10
Part 3 Technical Proposal	48 pages	Maximum Score: 40

A technical proposal covering each of the three phases of the Land Use Model Integration Program as described in **Section 3: Scope of Work, Part B** must be submitted by all consulting firms responding to this proposal. The organization and headings of the consultant’s technical proposal must agree with those of the RFP. The technical proposal for each phase of the Scope of Work described in **Section 3: Scope of Work, Part B** shall be no more than sixteen (16) pages in length. (i.e., The total length of the technical proposal will, therefore, be equal to or less than forty-eight (48) pages.) The proposal submitted must provide sufficient information for reviewers to assess the technical responses in the following areas:

- **Understanding of Project:** Has the consultant conveyed, through the materials submitted for each task to be completed, a clear and concise understanding of the technical requirements of the project?

- **Project Approach:** Are the actions, activities and materials to be developed for each task clearly defined? Does the proposal convey a logical and consistent approach to performing the work that the consultant proposes to accomplish?
- **Management and Planning:** Does the consultant convey both a firm grasp of the technical requirements of the work and a sense of how they will coordinate and manage the resources and required to meet the requirements of the project? Does the consultant address the management and coordination requirements needed to keep the study participants abreast of progress and the ongoing technical developments of the project? Does the consultant provide for review, oversight and technical input from the ODOT staff and other **study participants**?

Part 4 Project Deliverables

6 pages

Maximum Score: 10

A detailed list of deliverables, and a separate schedule for their delivery must be provided as described in **Section 3: Scope of Work, Part C**. When evaluating this section of the proposal reviewers will address such questions as: Does the consultant propose a work program under which they can reasonably produce, at a minimum, the list of deliverables specified in **Part C** of the RFP, and that meets the deadlines for the delivery dates specified in **Part D** of the RFP? Are the deliverables for each task and the models and materials to be developed supporting each task well defined? Is there provision for adequate review and quality assurance in the preparation of draft and final materials to be delivered through this contract? Are the standards, technical documentation, software and model specifications, and other technical materials described addressed in the consultant's proposal?

Part 5 Project Schedule and Resource Allocation

10 pages

Maximum Score: 15

A project schedule with beginning and ending dates for each task and task element, including a schedule for proposed meetings with the Modeling Steering Group, Peer Review Panel and all conferences/workshops must be prepared as specified in **Section 3: Scope of Work, Part D**. In evaluating the consultant's schedule and resource allocation for this project, the following factors will be considered: Does the overall level of staffing, time commitments of key personnel, and availability of other supporting resources meet the requirements and level of effort required to successfully complete each task? Is the project schedule proposed by the consultant consistent with the production of deliverables for this project? Does the consultant provide adequate lead time for reviews by study participants? Do staff assignments clearly relate key individuals to the tasks for which they have primary responsibility? Does the timing, sequencing, duration and coordination of the steps necessary to complete each task in the proposed work program meet the management requirements of ODOT and establish a reasonable basis for further development of a management work plan for this project?

Part 6 Project Staffing and Teaming Arrangements 15 pages Maximum Score: 15

Project staffing, including assignment of proposed project staff by task and task element, estimates of the staff hours committed to each task, costs of all non-labor items, and direct labor costs by task must be presented as described in **Section 3: Scope of Work, Part E**. This section of the proposal shall also contain the qualifications of key project staff and a description of the consultant's experience with respect to each of the tasks specified in the Scope of Work. In evaluating the staffing and teaming arrangements presented by the consultant, the following factors will be considered: If there is more than one consulting firm proposing on the project, how committed and well integrated are the firms, and what measures have they taken to assure a high degree of coordination and non-duplication of work in this project? Do the qualifications and experience of the consultant's project manager, principal investigator(s), key project staff and subconsultants directly address the requirements of the proposed work program? How well do the consulting team's qualifications and experience relate to the requested services with respect to:

- Involvement of the principal investigators, by task;
- Current employer, assignments and location of key staff;
- Qualifications and relevant experience of key personnel, including subconsultants, by task;
- Experience of the project team in working together on similar projects; and
- The project manager's experience on similar projects.

Part 7 Cost Estimate, Salary and Fee Schedule 5 pages Maximum Score: 5

The cost estimate submitted for this project must be in the form specified in **Section 3: Scope of Work, Part F** and the summary reporting requirements included in Exhibit A, Part 3 that accompany this RFP. **Firms not submitting this information in the correct format will be considered non-responsive.** The total cost proposed for this project, including labor, other direct costs, overhead and profit must not exceed the limit set for this contract.

Part 8 Supporting Information 5 pages Maximum Score: 5
{ See Standard RFP language for Section 4.3.i }

Part 9 Affirmative Action Program 1 page Pass/Fail
{ See Standard RFP language for Section 4.3.g }

Part 10 DBE Policy and Participation Goal 1 page Pass/Fail
{ See Standard RFP language for Section 4.3.j }

The total number of pages for the entire proposal submitted in response to this RFP must not exceed 100 pages. The number of pages in each of the

ten sections of the consultant’s proposal must not exceed the limits stated above. One page is considered to be one side of a single 8½” x 11” page, and the minimum font size is 12 point for the text (consultants may use their discretion for other materials, e.g., graphics.) Firms not meeting all page requirements and/or using a type smaller than 12 point shall be considered nonresponsive.

Section 5: Proposal Format and Length

The consultant’s proposal shall be submitted with six (6) copies of the materials described in Part 4.3, above. These six (6) copies of the consultant’s proposal must be accompanied by a Cover Sheet that meets all the requirements specified in and in is the format specified in Appendix A.

The Proposal must be organized in accordance with the list of Proposal Contents and accompanying instructions specified in Part 4.3, above. Proposals that are in any other format will be considered non-responsive to this RFP, and will not be considered for work on this project.

Section 6: Proposal Evaluation

6.1 {See SOP/Q Standard Format}

6.2. Evaluation Criteria

Each proposal will be evaluated on the basis of the following criteria. Each response to the Land Use Model Integration Program RFP will be judged on the consultant’s written response to the RFP. No other information, whether in writing or via other communication will be used in the evaluation. The evaluation criteria, maximum number of pages that can be used to present information for each criterion and the maximum score available for each criterion are as follows:

Criterion Number	Criteria	Maximum Number of Pages	Maximum Available Score
1	Introductory Letter/Cover Sheet	1	Pass/Fail
2	Firm’s Capabilities and Qualifications	8	10
3	Technical Proposal <ul style="list-style-type: none"> • Understanding of Project • Project Approach 	48	40

Criterion Number	Criteria	Maximum Number of Pages	Maximum Available Score
	• Management Plan		
4	Project Deliverables	6	10
5	Project Schedule and Resource Allocation	10	15
6	Project Staffing and Teaming Arrangements	15	15
7	Cost Estimate, Salary and Fee Schedule	5	5
8	Supporting Information	5	5
9	Affirmative Action Program	1	Pass/Fail
10	DBE Policy and Participation Goal	1	Pass/Fail
Total:		100	100