Developing the Missouri Economic and Policy Analysis System

A Proposal to the Missouri Departments of Agriculture and Economic Development

Submitted by:

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and

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at

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The following information outlines a proposal for developing the Missouri Economic and Policy Analysis System (MEPAS). MEPAS is the designed to identify impacts of policy decisions and changes to the economy of Missouri and its communities. The system will use state and local resources and tools to generate information that can be used to better understand the implication of these actions, whether initiated in Missouri or outside the state.

Given the State of Missouri funding cycle, this project, if accepted and approved, will be provided with funding as of July 1997. The first year of this project will be highlighted by four separate stages of work that will occur in two separate communities. If resources become available, this project could be expanded to a maximum of 10 communities in year two. A significant component of this plan is an analytical support system that will provide a baseline forecast of the expected direction that local communities (rural, suburban and urban) and farms in the region will take over the next five to 10 years. This analytical capability also includes the ability to analyze options and alternatives that are crucial in planning for the best use of resources and expected consequences over the longer term.

DED

MEPAS will take advantage of tools currently being used by DED to measure economic impacts at the state, regional, and local level. These tools consist of IMPLAN and REMI models for Missouri. The IMPLAN model contains data for the US, Missouri, and all counties in the

state. This model is used to generate economic impacts primarily at the local and regional levels. The REMI model is used to generate impacts at the state level. Both models have strengths and weaknesses, and used together, they offer powerful analysis resources.

With the output generated by IMPLAN and REMI, DED uses a spreadsheet to evaluate fiscal impacts. This has allowed DED to assess the fiscal benefits of various policy decisions. It also has created a method of providing accountability to legislators who desire information on program and policy effectiveness.

RUPRI

A second partner in the MEPAS project is the Rural Policy Research Institute (RUPRI). RUPRI is a national policy research consortium, directed at the University of Missouri. Like DED, RUPRI-Missouri has extensive experience using both REMI and IMPLAN. It specializes in assessing the economic, demographic, and fiscal impacts of expected changes at the community level.

To facilitate local policy analysis, RUPRI has developed a comprehensive econometric research tool called the Show Me Community Impact Model. This model is designed to project the future impacts of expected changes for Missouri cities and counties. The Show Me model incorporates detailed information on local labor markets and commuting behavior, which is necessary to accurately determine economic linkages and leakages, as well as the supply and demand for local public services. This model has the capacity to analyze community variables in rural, suburban and urban environments. It is now used by leaders in Missouri communities for impact assessment, cost/benefit analysis of industrial incentives, and for economic development

planning.

Recently, the University of Missouri allocated $250,000 in annual recurring funds to maintain, update and apply the Show Me Community Model in Missouri communities of various sizes. The MEPAS project will leverage these funds, and make this model and RUPRI's analytic capacity available to Missouri Community Betterment (MCB) and the Missouri Department of Economic Development. RUPRI's involvement complements DED's ongoing use of IMPLAN, and will enhance its research in assessing the state economic and fiscal impacts of DED programs and projects.

FAPRI

A third partner in the MEPAS project is the Food and Agriculture Policy Research Institute (FAPRI). Established in 1984 FAPRI has become a leading research institute with the capability of providing comprehensive analysis that combines the likely direction that global economics and the agriculture industries will take over the next 10 years. This analysis is evaluated in an extensive set of models that also reflect the input of a consortium of seven universities. Global economic projections provided by Wharton Econometrics are used in conjunction with an extensive set of global agricultural models developed by FAPRI. Reacting to government policies around the world, this operational system projects total production, consumption, trade and prices of the majority of agricultural commodities. These production and price forecasts are critical links to the local area. A set of conditioning matrices has been developed that translate national price forecasts into the local area. This includes both agricultural product prices such as crops and livestock, and a significant set of variables that

reflect the cost of doing business at either the farm or community level. These variables include wages, interest, fuel, equipment, income, inflation, etc. that are critical drivers associated with the assessment of future growth and development. This matrix of specialized prices feeds directly into local farm models that reflect typical production in a community plus linkage variables that drive community models developed by RUPRI and utilized in the MEPAS models for identifying impacts of policy decisions and changes to the economy of Missouri and its communities.

FAPRI strengths also include the ability to monitor environmental activities at the farm level that can be aggregated to reflect likely implications for larger geographic and economic areas.

Current funding in the area will be to leverage this MEPAS project. In conjunction with RUPRI, the University of Missouri has allocated $150,000 of funds that will be used on a recurring basis to update and maintain farm models that can be utilized by local staff at eight planned telecommunication centers in the state of Missouri. These systems will also be complimented by the matrix model that downlinks FAPRI global forecasts into the local community models maintained by RUPRI and farm models maintained by FAPRI. A substantial contribution of this project is that it has the capability of completely aligning the local community to global economics and national policies that can dictate a large percent of economic forces that impact a community and its likely direction of growth. Conversely without this complete network, local and state leaders are left in a vacuum of uncertainty about the future.

MCB

Missouri Community Betterment (MCB) helps prepare communities for economic

development. MCB provides assistance to communities so that they can establish a plan for growing and developing their economies. This is especially critical to smaller communities who do not have the resources to undertake an extensive economic development planning program. MCB's strength is in their knowledge of Missouri's communities and what it takes to make them economically self-sufficient.

Strategies

Below is an outline of how MEPAS would work and some of the benefits that could be realized.

- *Combine the impact and policy analysis models of DED, RUPRI, and FAPRI:* This would give Missouri a robust tool that will provide impact assessments at the state and local levels.
- *Incorporate information from DED's Target Industry Study:* This information would provide insight into which industries and clusters should best fit into each community.
- *Empower communities with training and access to MEPAS:* Through MCB, communities can be given the ability to access MEPAS and develop strategies for development. This can include a variety of analyses from impact studies for particular projects to general trend and policy analyses.
- *Assist Legislators:* MEPAS can also be used by legislators to assess developments and changes in their communities.

Program Deliverables

In year one, MEPAS will generate a significant four (4) stage plan of research, interation, analysis and training finalized by a scenario analysis performed by a team composed of DED staff, other DED partners, local community and agricultural experts and other state staff. This four (4) stage plan of action will demand intensive interaction between the RUPRI/FAPRI researchers and the DED staff, other DED partners, local community and farm experts and other state staff. In parallel with these efforts, there will be a substantial coordination of background research needed to successfully incorporate the community and farm level modeling systems, given the special economic and geographical considerations of the study areas.

Stage 1.

The goal of Stage 1 is to facilitate direct interaction between the RUPRI/ FAPRI research team and DED staff, other DED partners, local community and agricultural leaders and other state staff. This intensive interaction will provide several desired outcomes. This interaction will provide the data necessary for a baseline analysis with both the community and farm level modeling systems. Other expected outcomes during this period, will be the educational process that will be critical in the subsequent stages of this project. This process will prepare the setting to incorporate user friendly programming systems and delivery networks (Informatics) for use at the local level.

Existing models and modeling techniques in RUPRI and FAPRI must in effect be transported to the local level for local use. There are two major steps in this process. The first is

a considerable amount of dialog and interaction with local leaders such that advisory panels become an integral part of the process. The second step involves a substantial amount of research by the RUPRI/FAPRI team that results in the matrix transfer model that essentially downloads these systems into local geographic and economic communities. Many components are involved. For example, one representative farm in a local area that accurately reflects the total management decisions from planting to harvest plus the financial compliments requires about 40,000 lines of computer programming of input and simulation. Obviously this level of detail is necessary to adequately reflect decisions associated with a family farming operation. But this is substantially more detail than can be digested by the state specialist assisting with planning activities.

This initial baseline data gathering and analysis will be performed in a traditional manner, but will include a greater than normal interaction with the local community and farm experts. As the data is being gathered by RUPRI/FAPRI researchers from the respective panels (community and farm), the panel members, DED staff, other DED partners and local experts will be given the opportunity and information to understand the underlying processes of their respective models in greater detail than is normally the case. All participants will be made aware that this extra educational process is designed to help them in their future roles as designers of the user friendly input/output routines that they will be using on a local basis. This design activity will primarily be for the user friendly input/output routines, but will also include the necessary manuals and documentation. This will initiate the educational processes necessary for Stages 2, 3, and 4.

Stage 2.

This stage of the first year project (approximately April of 1998) will primarily be an opportunity to present the baseline analysis of both the community and farm level modeling

systems. Great care will be given to show the level of input and collaboration between the RUPRI/FAPRI researchers and local experts, DED staff, other DED partners and other state staff. The experience of the RUPRI/FAPRI research teams suggests that the local response and acceptance of these types of modeling efforts are greatly enhanced by the direct involvement and acknowledgement of the local community and farm experts. This information will provide local decision makers with a benchmark tool to help in future decisions at both the community and farm levels. The results of this analysis will be of considerable interest to the DED and MCB teams both locally and at the state level.

Stage 3.

Stage 3 is expected to be a critical period of interaction and coordination between the RUPRI/FAPRI teams, the DED staff, other DED partners, the local community and farm experts and other state staff. It is during this stage of the project that the educational processes described in Stage 1, will bear fruit. The RUPRI/FAPRI research teams with actively commence with the programming necessary to implement the front end, user friendly input ouput routines. Interaction with all partners in this project at this time will be critical. The user friendly interfaces will be designed based upon the needs of the state staff and local specialists that were involved with Stage 1. Their knowledge of the modeling systems, the degree of input detail necessary and the outputs generated by the system, will be instrumental in guiding the RUPRI/FAPRI research teams in their efforts to design and implement these interfaces. Concurrently, all members of this project to date will share in the responsibility in generating manuals and documentation that will provide the guidance necessary for other teams and individuals in other localities to implement these modeling systems for their own local use. The degree of state and local involvement in this

stage of the project will in large part dictate the outcome of Stage 4.

Stage 4.

Stage 4 of this project will be the culmination of year one. At this time, local DED staff in coordination with state DED staff, other DED partners and other state staff will design a scenario that will be measured against the baseline that was developed in Stage 1 and presented in Stage 2. The baseline provides a forward look at the local area economy given the status quo, ie if there were no substantial changes in the economies and environment of the localites being studied. Impact analysis provides the mechanism to show "what if" something different ocurrs. What would happen to the local farm economy and aggregated to the local economy as a whole if export demand of farm commodities were to increase, allowing local producers to increase acreages and enjoy the increased farm income? This can be measured. The farm analysis will be provided by the farm simulation system. Aggregation techniques will then used to show the effects of this impact upon local community. The community models will then be implemented and the resulting analysis will provide another set of outcomes different from the baseline established in Stage 2. The new set of outcomes will be measured against the original baseline and the differences (positive or negative) will be the impact of increased export demand of farm commodities. This is a powerful tool in the hands of local decision makers in deciding issues such as, expenditures that will increase future growth, investment in infrastructure, tax abatements to entice industry.

Conclusions

In partnership with MCB and DED, RUPRI and FAPRI will initiate the design and development of community and farm models that are driven by global economic and agricultural

information associated with baselines that are continually maintained by RUPRI and FAPRI. These sets of communities can be selected in such a way that the University project and the DED project are leveraged and complimentary. In fact, this coincidence set of objectives between the University and the State of Missouri will substantially enhance each location and substantially benefits from compatible research and systems.

Another area of concurrent emphasis will involve a study of the current telecommunication network system in place at DED and their field staff. Technology now allows the design, dissemination and updates of such modeling systems from a centralized location to state-wide users. Decisions must be made as to whether the modeling system will reside on a central servers controlling a Wide Area Network (WAN) or whether the models will reside on individual machines state-wide. Each option has it own inherent favorable and unfavorable implications and outcomes. Included in this area of emphasis will be the direct telecommunication links between these locations and the RUPRI/FAPRI research teams. A longer run objective is to communicate with state and local staff through a network of computers that are interlinked with video and audo complemetarily. In a large measure this decisions, will be predicated upon the strategic technology plans of DED.

It is expected that two communities will be used as an initial pilot with presentable results by April of 1998. Year two, will allow more communities will to be incorporated into a user friendly system. Hopefully this project will generate compatible longer run support to complete as many communities as resources will allow. It is likely that the ground work can be laid in the first year if resources are generated at levels involved in this project and the University of Missouri, such that by the completion of the second year as many as 10 communities will be actively

incorporated into an ongoing network system.

COMMUNITY MODELING BUDGET

	MU	DED
Personnel		
Senior Economist (.2 FTE)	$24k	
Senior Sociologist (.2 FTE)	$18k	
Community Modeler (1.0 FTE)		$40k
Computer Programmer (1.0 FTE)		$30k
Research Asst. (1.0 FTE)		$25k
Subtotal	$42k	$95k
Information Management		$15k
Hardware/software		
Communication/Publications		$5k
Travel		$10k
TOTAL	$42k	$125k

FAPRI Download Matrix and Representative Farm Budget

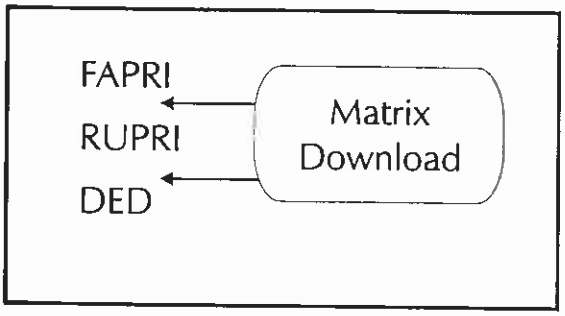
	MU	DED
Personnel		
Senior Economist (FAPRI Global System Download) (.2 FTE)	$24k	
Senior Economist (FAPRI/RUPRI Interface) (.2 FTE)	$18k	
Representative Farm Modeler (1.0 FTE)		$40k
Research Assistant (1.0 FTE)		$30k
Computer Programmer (1.0 FTE)		$25k
Subtotal	$42k	$95k
Information Management Hardware/Software		$15k
Travel		$10k
Communication/Publications		$5k
Total	$42k	$125k

Missouri Economic and Policy Analysis System
First Year

Stage 1

- Community Advisory Panels
- Farm Advisory Panels
- Local Economic Development Specialist

Stage 1



Stage 2

- 10 Year Baseline
- Farms
- Community

Stage 2

- Local Specialists
- Outcome Measures
- Training and Manuals

Stage 3

- Panel Reconvening
- Scenario Analysis

Stage 3

- User Modifications
- Training Manual Generation
- Ability to Run Scenarios
- Design of User Friendly System
- Development of User Interface Systems

Stage 4

- Scenario Design
- Scenario Run by Local and State Staff
- Impact Analysis

Stage 4

- Scenario Presentation