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RESEARCH PROGRAMS

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Assessing the Extent and Determinates of Induced Growth

http://www.mdt.mt.gov/research/projects/planning/growth.shtml

Introduction

Transportation projects alone cannot change surrounding land use. However, in the presence of other supportive conditions (such as land prices, market demand, local land use regulations, and environmental constraints), transportation improvements can affect the accessibility of places, which in turn can have an impact on land use and the environment. For example, a new interchange may encourage complementary development (such as gas stations, hotels, and big box stores) if land is available and market and regulatory conditions support it. Consideration of the potential indirect effects of transportation projects on land use is required for compliance with the National Environmental Policy Act (NEPA) and Montana Environmental Policy Act (MEPA), as implemented through regulations and interpreted by the courts.

Due to the uncertainty involved in forecasting the effects of transportation projects on land use, transportation agencies nationally have struggled in identifying the appropriate level of analysis for this issue, in some cases resulting in litigation and project delays. In addition, many of the existing methodologies and guidance for assessing indirect effects were not developed taking into consideration the rural environment in which many projects in Montana are located. To address these issues, the objective of this research was to identify a Montana-specific, consistent, legally defensible, and efficient process for assessing the indirect land use and environmental effects of transportation projects for the Montana Department of Transportation (MDT).

What We Did

To inform the development of indirect effects guidance, a review of existing MDT practice in addressing indirect land use effects in the environmental review process was conducted. This effort consisted of a review of MDT environmental documents, interviews of MDT staff, and a survey of resource agency staff. The induced growth/land use-related portions of nineteen MDT environmental documents were reviewed, including Categorical Exclusions (CEs), Environmental Assessments (EAs), and Environmental Impact Statements (EISs). Projects were selected to represent a range of geographic locations within the state, variations in project size/complexity, and also included projects identified by interview participants as being relevant to understanding existing approaches. A summary matrix was prepared identifying the project name, environmental document date, location, project description, and an assessment of the indirect effects analysis in the document.

Informal telephone interviews were conducted with ten MDT staff (in areas of project development, environmental, and legal) responsible for

preparing and/or reviewing indirect effects assessments in July 2012. These interviews were used to gather information on trends in the way indirect land use effects are addressed in MDT environmental documents. Also, the interviews were intended to uncover issues encountered in assessing indirect land use effects, including knowledge of the appropriate methodologies, comments/coordination with resource agencies, and the availability of the necessary data and resources to complete this aspect of MEPA and NEPA environmental documentation.

Finally, a web-based survey of resource agencies that review MDT environmental documents was conducted to obtain resource agency perceptions of transportation-related indirect changes in land use in Montana and the way these issues have been addressed in MDT documents in the past.

What We Found

Overall, the review of existing environmental documents indicated that indirect land use effects assessment in Montana is an ad hoc process. Several documents (particularly the more complex EISs) provided well-thought out explanations of the relationship between the project and potential future land development. However, none of the documents reviewed cited indirect effects guidance or research documents or followed a clearly defined assessment process. Some documents reached a conclusion of "no effect" without providing an explanation of the basis for the conclusion. The reoccurring themes in the documents reviewed were statements that indirect land use effects are too speculative or uncertain to meaningfully assess. Quantitative tools for indirect effects analysis are rarely used in Montana. However, an expert panel approach was used in the 2003 I-15 corridor EIS in Helena.

The interviews identified a range of experience and beliefs related to indirect land use effects within MDT. However, nearly all MDT interview participants indicated the need and desire for a standardized process to analyze induced growth to be used in-house on categorical exclusions and to provide to consultants for their use in preparing EISs and EAs. Some of the resource agencies responding to the survey had provided comments to MDT on indirect effects issues in the past (e.g. U.S. Army Corps of Engineers in the context of future development impacts on aquatic resources), but none had included mitigation for indirect effects as permit condition for a transportation project.

What the Researchers Recommend

The review of case law, surveys, interviews, and reviews of existing MDT environmental documents were all taken into consideration in the development of an Indirect Effects Desk Reference. The Desk Reference provides an overview of key definitions and regulatory requirements and provides practitioners with a step-by-step screening process to determine if further analysis is warranted. The screening process relies on information of the characteristics and location of the project readily available early in the project development process. Where detailed analysis is necessary, a detailed analysis framework process is provided in the Desk Reference that includes recommendations on the analysis methodologies most applicable to the data available in different portions of Montana.

Indirect Effects Screening Process

A screening process was developed to determine when further detailed indirect effects analysis is needed for MDT projects being reviewed under NEPA and/or MEPA. A key objective was to ensure the screening methodology is user-friendly and can be completed with minimal data collection effort early in the project development process. It is expected the vast majority of MDT transportation projects will not require detailed analysis based on this methodology. An overview of the screening process is provided below.

- ***Step 1:*** Is the Project Exempt from Screening? Based on their basic characteristics, certain types of projects do not have the potential to result in indirect land use effects, regardless of the context of where the project is located and therefore no further review of these projects is necessary. Examples of exempt projects include highway maintenance and rehabilitation on the same alignment with no increase in capacity.

- ***Step 2:*** Does the Project have an Economic Development Purpose? A key conclusion from past legal challenges of transportation projects is the importance of a rigorous evaluation of the induced growth environmental consequences if such growth is used as a rationale for the project. Detailed analysis is required if economic development is part of the

purpose and need statement for the project.

- ***Step 3:*** Does the Project Substantially Improve Accessibility? Accessibility is the ease with which people can reach goods, services, and activities, and is the mechanism by which transportation improvements can influence land use change. Accessibility is typically measured by indicators such as travel time to key destinations or the ability to access a specific parcel of land. All other factors held constant, the greater the accessibility change, the greater the potential for indirect land use effects.

- ***Step 4:*** Is Developable Land Available in the Areas Served by the Project? Even if a project increases accessibility, it will not result in land use change if the area of influence around the project does not contain developable land. For example, a project surrounded by federal land will typically not have the potential to change land use.

- ***Step 5:*** Does the Project Region Exhibit Evidence of Growth Pressure? Even with ample land available and excellent accessibility, no development (induced or otherwise) will occur if the region where the project is located is not experiencing population and/or employment growth.

Indirect Effects Detailed Analysis Framework

For projects requiring detailed analysis, a framework was developed that includes the following steps:

1. Determine study goals and methodology;
2. Define study area boundaries and time horizon;
3. Assess existing and future no build land use patterns;
4. Assess future build condition land use conditions and indirect land use effects;
5. Assess the potential for indirect impacts on sensitive resources;
6. Develop potential mitigation measures; and
7. Document the process and results.

There is no single standard method for analyzing indirect effects, unlike other environmental topics where there is a highly structured methodology. A variety of approaches were evaluated, taking into account applicability to Montana, cost and expertise requirements, and general advantages/disadvantages associated with each methodology. The recommended methodology for detailed indirect effects analysis in Montana is a combination of "collaborative judgment" (to determine No Build vs. Build incremental change in land use) and "allocation models" (to determine the allocation of growth predicted through collaborative judgment to specific sub areas). Collaborative judgment incorporates input from other people knowledgeable of the study area (local experts) to inform conclusions about future land use conditions, whether through informal interviews or more formally through a Delphi panel. Allocation models can allow the analyst to distribute a defined amount of indirect land use change at a disaggregate level (such as allocating growth in county to individual municipalities or allocating growth in a city to census tracts or traffic analysis zones. Allocation models are typically implemented through GIS and can take into account the various factors that either hinder or encourage development.

Recommendations for Implementation

As time passes, elements of the indirect effects evaluation framework presented in the Indirect Effects Desk Reference may require updating to incorporate consideration of new methods and data sources, evolving conditions in the state's resources, the type and pattern of land development, and the characteristics of proposed transportation improvements. In addition, it may be of particular importance to modify the framework following its initial implementation based on feedback from practitioners and to adjust for any unforeseen implementation issues. The four key implementation recommendations are as follows:

- Incorporate the Indirect Effects Desk Reference in the *MDT Environmental Manual*.

- Establish a technical review committee to evaluate feedback, review need for updates, and make decisions on changes.

- Monitor implementation, including mechanisms for soliciting and tracking feedback from practitioners.

- Update data sources/references as new data and tools become available.

For More Details . . .

The research is documented in Report FHWA/MT-13-004/8216 *Assessing the Extent and Determinates of Induced Growth.*

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MDT Implementation Status July 2013

Environmental Services Bureau staff, district personnel, and MDT retained consultants attended a training session in June developed and delivered by The Louis Berger Group, Inc. The indirect effects desk reference and screening process developed in this project were covered in the training session. MDT will use the desk reference and screening process to determine analysis actions on transportation projects, as well as, incorporate them into *MDT's Environmental Manual.* Updates, evaluations and changes to the assessing induced growth analysis process and desk reference will be coordinated and completed with the same procedures used to update *MDT's Environmental Manual.*

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