

GENERAL INFORMATION

Any questions relative to the Research Problem Statement must be submitted by e-mail to: mdot-research@michigan.gov. Questions must be received by **April 22, 2011 at 5:00 p.m. EST**. All questions and answers will be placed on the MDOT RFP Web site as soon as possible after receipt of the questions and at least three (3) days prior to the due date listed above. The names of organizations submitting questions will not be disclosed.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal.

MDOT AND ORBP FORMS REQUIRED AS PART OF PROPOSAL SUBMISSION:

- 5100D – Request for Proposal Cover Sheet
- 5100G – Certification of Key Personnel
- 5100I – Conflict of Interest Statement
- ORBP Research Proposal Budget Form Worksheet
- ORBP Schedule of Research Activities Form
- ORBP Deliverables Table
- ORBP Implementation Project Recommendation Form

**OFFICE OF RESEARCH & BEST PRACTICES
MDOT RESEARCH PROGRAM
2010 PROBLEM STATEMENT**



PROBLEM TITLE

Greenhouse Gas Inventory for the Michigan Department of Transportation

ORBP NO. OR10-033	STRATEGIC PRIORITY NO.	CRITICAL ISSUE CODE	MDOT PROJECT CATEGORY
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PROBLEM TO ADDRESS

BRIEFLY DESCRIBE THE PROBLEM TO BE ADDRESSED AND WHY IT IS AN ISSUE FOR MDOT

The federal government is discussing the need to monitor and reduce the amount of greenhouse gas (GHG) emitted by federal agencies with the potential to expand it economy-wide and create carbon price. With this in mind, it is likely that state agencies will be required to monitor emissions as well. This project is intended to develop emission baseline accounting systems and values for the facilities, fleet, and maintenance operations related to direct and contract operations, including bridges, signs, signals, winter, and freeway lighting of the Michigan Department of Transportation (MDOT) and to develop recommendations on how to reduce emissions.

RESEARCH OBJECTIVES AND TASKS

LIST THE RESEARCH OBJECTIVE(S) TO BE ACCOMPLISHED

1. Create a baseline amount of greenhouse gas (GHG) emissions produced by the normal operating activities of MDOT in the areas of fleet, facilities, and maintenance operations (specifically the maintenance of bridges, signs, signals, freeway lighting, and winter maintenance).
2. Identify alternatives for reducing GHG emissions relating to fleet, facilities, and maintenance operations.
3. Identify procedures for estimating GHG emissions relating to fleet, facilities, and maintenance operations in the form of a spreadsheet which can be available to the various MDOT bureaus.
4. Literature search including best practices information of other state DOTs or large transportation organization's efforts to reduce and monitor GHGs.

LIST THE MAJOR TASKS TO ACCOMPLISH THE RESEARCH OBJECTIVES:

ESTIMATED PERSON HOURS

- | | |
|--|-----|
| 1. Literature Review: Review the published literature and investigate best practices from other transportation organizations to determine techniques for estimating greenhouse gas emissions and techniques for reducing greenhouse gas emissions for facilities, fleet, and maintenance operations. (Deliverables include: Preliminary summary of Literature review and best practices findings) | 100 |
| 2. Data Collection: Using the data provided by MDOT and estimation techniques from other states and the literature review, determine what information is needed. Collect information from MDOT to determine the average amount of GHG emissions created by the department's vehicle fleet, facilities, and maintenance operations. (Deliverables include: Draft analysis of the data from the department provided to the researcher. Also, declaration of any missing information that may need to be collected) | 200 |
| 3. Analysis: Determine alternatives for reducing GHG emissions. | 200 |
| 4. Recommendations: Reporting or estimating procedures for GHG emissions based on data that is readily available and recorded by MDOT, and reporting the costs, benefits, and recommended reductions for the most cost effective ways to reduce energy use and emission. | 200 |
| 5. Report: Compile a final report and emissions tool as described in following sections of this RFP. (Deliverables include: Draft report and draft spreadsheet tool and final report and spreadsheet tool including all of the previously identified draft or preliminary deliverables) | 100 |

ESTIMATED COST AND TIMELINE

ESTIMATE THE COST OF THIS RESEARCH STUDY (Please provide a cost range [min. and max.] associated with the person hours by task above)
Tier 1

PROVIDE A PROPOSED TIMELINE FOR THE PROJECT (At minimum, the expected duration of the project)
August 30, 2011-December 20, 2012

REQUIRED COMPLETION DATE (At minimum, the date by which results are needed to be applicable)
December 20, 2012

BUDGET INFORMATION

(For each FY, list suggested minimum and maximum budgets as targets. Indirect Cost Rate is for ORBP use only.)

TOTAL BUDGET (BY FY)	FY1	FY2	FY3	FY4	INDIRECT COST RATE
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DELIVERABLES

WHAT DELIVERABLES SHOULD BE RECEIVED AT THE END OF THIS PROJECT? (e.g., usable technical product, design method, techniques, training, workshops, report, manual of practice, policy, procedure, specification, standard, software, hardware, equipment, training tools, etc.)
The deliverables for this project include a preliminary summary of the literature review and best practices report from peer organizations, a preliminary analysis of the data provided by the department, draft findings report and spreadsheet tool, and a final report including the final versions of the previously listed deliverables. The final report should include an itemized report of average annual emissions for MDOT, recommendations on how to estimate

greenhouse gas emissions in the future, and recommendations on which areas show the most potential for greenhouse gas emission reductions. The spreadsheet tool should include conversions for gallons of fuel purchased and vehicle type, electricity used, and other components that determine the annual emissions of the department.

MDOT INVOLVEMENT (What will MDOT provide for this project and when)

MDOT will provide the necessary data to determine emissions for fleets, facilities, and maintenance operations based on what data is available. For example, the department can provide the researcher with the amount of fuel purchased for fleet vehicles and the amount of electricity and heating fuel used at MDOT owned facilities, etc.

URGENCY, PAYOFF POTENTIAL AND IMPLEMENTATION

HOW URGENT IS THIS RESEARCH? IS IT IMPORTANT THAT IT BE DONE SOON? IF SO, WHY?

This research is very urgent to ensure the department is ready to comply with potential federal GHG reporting requirements. Also, having this information available will provide the department an opportunity to reduce its emissions and potential save money.

DESCRIBE HOW THE PROPOSED RESULTS OF THIS PROJECT CAN BE IMPLEMENTED AT MDOT

If the department knows how much GHG emissions it produces it can begin taking steps to reduce the amount of pollution it creates.

DESCRIBE HOW MDOT WILL BENEFIT FROM THE IMPLEMENTATION OF THIS PROJECT AND WHO THE BENEFICIARIES WILL BE. INCLUDE A DISCUSSION OF HOW MDOT DIVISIONS, OTHER THAN THAT OF THE PROBLEM SUBMITTER, WILL BENEFIT AND HOW.

The project could identify where the department can take steps to reduce its emissions and potentially save money. This will also be used as a first step in the event we are required to monitor and reduce our GHG emissions. It will benefit Division of Operations, OAS-Fleet, OAS-Facilities, Department Services Division, Planning, and regions by identifying easily implementable emission reductions that reduce costs.

POTENTIAL OBSTACLES

WHAT RISKS OR OBSTACLES MAY MAKE CARRYING OUT THIS PROJECT DIFFICULT? WHAT STRATEGIES WILL YOU USE TO OVERCOME THEM?

It will be difficult to define the scope of this project. There is a lot of discussion regarding life cycle emissions that will need to be well defined before the project can move forward. We will want to ensure that the amount of emissions identified are all produced during activities the department has control over. It may be difficult to obtain exact data on how much greenhouse gas is emitted. However, the researcher should find ways to estimate emissions based on available data.

POSSIBLE INVESTIGATOR(S)

DESIRED QUALIFICATIONS IN AN INVESTIGATOR

A qualified investigator needs to have experience conducting similar projects for other states or organizations and have the ability to set an aggressive schedule and adhere to the deadlines. This project needs to be completed rapidly and cannot be delayed. The data that are provided by MDOT or collected in the field (if necessary) for Task #2 are to be used in Task #4 to develop techniques (statistical models) for estimating greenhouse gas emissions. To accomplish these tasks, it involves creating experimental designs and the corresponding sampling plans to collect and sort the data for performing statistical analyses to produce the products stated in Task #4. Thus, the research team should have a member who has professional knowledge in statistical theories and experiences.

BID SHEET

All entries on this page must be handwritten in ink or computer generated.

Milestone/Deliverable 1

**Literature review and report of best practices
from peer organizations**

**(Deliverables include: Preliminary summary of
literature review and best practices findings)**

\$ _____

Milestone/Deliverable 2

Collection of data and preliminary assessment of data provided

**(Deliverables include: Draft analysis of the data from the
department provided to the researcher. Also declaration of
any missing information that may need to be collected)**

\$ _____

Milestone/Deliverable 3

Draft report and spreadsheet tool

**(Deliverables include: Draft report and draft spreadsheet
tool)**

\$ _____

Milestone/Deliverable 4

Final Deliverables

**(Deliverables include: Final report and spreadsheet tool
including all of the previously identified draft or preliminary
deliverables)**

\$ _____

TOTAL BID PRICE: \$ _____

Consultant Name:	
Consultant Signature:	
Consultant Address:	
Date:	

The Michigan Department of Transportation reserves the right to reject any or all bids.

Consultant Payment - Milestones:

Compensation for this project shall be on a milestone basis. Compensation shall be divided into payments for the completion of a portion of the services (deliverables) as follows:

Milestone/Deliverable 1

Literature review and report of best practices from peer organizations

(Deliverables include: Preliminary summary of Literature review and best practices findings)

20%

Milestone/Deliverable 2

Collection of data and preliminary assessment of data provided

(Deliverables include: Draft analysis of the data from the department provided to the researcher. Also, declaration of any missing information that may need to be collected)

40%

Milestone/Deliverable 3

Draft report and spreadsheet tool

(Deliverables include: Draft report and draft spreadsheet tool)

20%

Milestone/Deliverable 4

Final Deliverables

(Deliverables include: Final report and spreadsheet tool including all of the previously identified draft or preliminary deliverables)

20%

Total Service

100%

The MDOT Project Manager may authorize payment if a milestone is delayed due to circumstances beyond the Consultant's control.

All billings for services must be directed to the department and follow the current guidelines. Payment may be delayed or decreased if the instructions are not followed.

Payment to Consultant for Services rendered shall not exceed the maximum amount unless an increase is approved in accordance with the contract with the Consultant.