ENTERPRISE

ENTERPRISE Program
FY 2011 Work Plan

Project Ideas Approved November 2010

Prepared for the

ENTERPRISE Pooled Fund Study

Prepared by

Athey Creek Consultants

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Program Overview

The ENTERPRISE Program represents a forum for collaborative Intelligent Transportation Systems (ITS) research, development, and deployment ventures reflecting the interests of governmental entities and industrial groups. This forum also facilitates the sharing of technological and institutional experiences gained from individual ITS projects conceived and initiated by each participating entity. The intent is to use a pooled fund program as a mechanism to support jointly-sponsored ITS projects of shared interest. These projects form this annual ENTERPRISE work plan. The scope of the ENTERPRISE Program promotes North American ITS development, reflecting the active involvement of U.S. and Canadian member agencies. ENTERPRISE also seeks to take advantage of technologies being developed outside North America. ENTERPRISE's European member is the Dutch Ministry of Transport, Rijkswaterstaat.

ENTERPRISE has approved a number of work plans since its inception in 1991 and completed nearly 50 projects. Each project has followed the vision of ENTERPRISE which defines the program's global view of highway travel. ENTERPISE aims to be consistent with the vision of higher bodies, such as ITS America and ITS Canada, concerning the development and use of ITS technologies and the benefits that this will bring. ENTERPRISE envisions a highway system in which advanced technologies continue to support the safe, efficient, convenient, and socially and environmentally sound movement of people and goods. Complete details on previous work plans and individuals projects are available through the program website at: http://enterprise.prog.org/.

Financial Status

ENTERPRISE North American members contribute $30,000 or more annually to the pooled fund and are reimbursed for program travel. Non North America members contribute $25,000 or more per year to the program and are not reimbursed by ENTERPRISE for program travel expenses. In FY 2011 (October 1, 2010 through September 30, 2011), 14 member agencies are anticipated to contribute financially to the projects included in this work plan.

Projects

During 2010 member agencies submitted project ideas for this FY 2011 Work Plan. The initial project ideas were reviewed by the ENTERPRISE Executive Board and a selected number of projects were approved for development of full project proposals to describe the project ideas in additional detail. The project proposals were then reviewed and voted on by the board and finally approved at the November 2010 Executive Board meetings as projects for the FY 2011 Work Plan. Complete details on the project selection process can be found in the ENTERPRISE Management Plan which is posted on program website: http://enterprise.prog.org/.

The following table summarizes the voting results and estimated project costs to complete the seven approved projects.

Table 1: FY 2011 Work Plan Funding Plan

Expense	Estimated Costs	
2011 Projects		
Project 1: Supporting the Transition of ENTERPRISE's ITS Warrants to a Permanent Home	$ 15,000	
Project 2: Understanding Utilization of 3rd Party Travel Data and Information	$ 40,000	
Project 3: Connected Vehicles Data Element ConOps	$ 25,000	
Project 4: Interpretable Travel Information – Use and Impacts	$ 35,000	
Project 5: Optimization of Renewable Energy for ITS	$90,000	
Project 6: Assessment of the OnStar Data Feed	$20,000	
Project 7: Feasibility of Using ITS for Data Capture and Feedback in Asset Management	$110,000	
Project 8: Warrants for ITS Devices: Ongoing	$20,000	
Program Administration Support	$68,000	
Member Travel Support (three in person meetings)	$45,250	
Revenue		**Estimated Revenue**
Member Annual Contributions		$440,000
Project Specific Contributions from Members		
Project 7 – Ontario		$30,000
Project 8 – Ontario		$20,000
Total (Revenue vs. Expenses)	**$468,250**	**$490,000**

The states will be directly involved with finalizing contractor cost estimates, scopes of work and schedules for each of the projects to ensure concurrence with the final mix of projects contracted for this work plan.

Additional project details for the approved projects are included on the following pages.

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2011 Project #1: Supporting the Transition of ENTERPRISE's ITS Warrants Program to a Permanent Home

Project Background, Summary, and Objectives:

The ENTERPRISE Program's work with the development of the ITS Warrants Program has been well received across the country and in Canada. The Warrants have seen consistent and growing use and have proven to be a useful tool in helping agencies determine the value and need for deploying ITS equipment. Since the inception of the ENTERPRISE Warrants Project, the desire has been to eventually find a permanent 'home' for the program which will provide long term support. This project will support the transition of the program to another agency or organization that will provide the needed long term support.

The ITS Canada organization has expressed an interest in possibly taking the ITS Warrants as a project and becoming a permanent home for the warrants. The intent of this project is to provide contractor services to support transition of the warrants from the ENTERPRISE Program to the selected agency/organization as a permanent home.

The project would facilitate discussions between ENTERPRISE and the interested agency/organization representatives to define a specific process to transition the warrants ownership. The project would also address questions related to how public agencies will participate in future warrants development (particularly American States if the warrants are housed by ITS Canada).

Finally, the project would provide services to deliver all warrant documentation and perform technology transfer to help the interested agency/organization become up to speed on the history and resources of the ITS Warrants.

The project would respect the fact that ITS Canada is still considering this commitment, and has not committed yet. Therefore, some of the discussions and support in this project will be helping educate ITS Canada and other agencies/organizations as appropriate to the point where they can make a decision.

Scope of Work with Task Descriptions:

The Scope of Work includes two tasks:

Task 1: Contractor Support to Facilitate the Warrants Transition

In Task 1, the selected contractor will arrange, facilitate, and participate in conference calls and/or meetings with ITS Canada (and other interested agencies if needed) and ENTERPRISE members to support a final decision and in the transition of the program. The support will also likely include preparation of support materials to be used by the interested agency/organization to share internally and to plan for activities.

Task 2: Member Travel

Task 2 includes some funding to support one or more ENTERPRISE members to meet with ITS Canada or other interested agencies/organizations (if needed) to discuss the ITS Warrants and finalize plans for transition. For example, an ENTERPRISE representative and the selected contractor may travel to Canada to meet with ITS Canada representatives and discuss the topics in person, if this is agreed to be the best use of funds.

Project Schedule at the Task Level:

The project is scheduled for 1 year. While the hours and budget are limited, there is the potential that the process of transitioning the warrants may take time for internal decision-making.

Project Deliverables:

Deliverable 1: Arrange and support project meetings
Deliverable 2: Prepare ITS Warrant support materials
Deliverable 3: Prepare ITS Warrant Transition Process Summary
Deliverable 4: Provide ITS Warrant documentation

Project Cost Detailed at the Task Level ($15k):

Task	**Estimated Cost**
Task 1: Contractor Support to Facilitate the Warrants Transition	$12,000
Task 2: Member Travel	$3,000
Total	**$15,000**

Relationship to Similar Activities and Projects If Known:

This project is a logical extension to the ENTERPRISE Warrants Project, that always intended to find a home to carry on the ITS Warrants project.

Project Participants (Agencies):

Washington State DOT, Project Lead
Minnesota DOT, Member of Technical Team
Transport Canada, Member of Technical Team

Project Contact:

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2011 Project #2:
Understanding Utilization of 3rd Party Travel Data and Information

Project Background, Summary, and Objectives:

Inrix is private company that offered free traffic data for a limited time. This offer (together with additional private sector traffic availability) has prompted many states to explore the use of 3rd party traffic data. Aside from Inrix, there are a number of private sector travel information data feeds currently available.

This project would document any 3rd party data that ENTERPRISE member states' are receiving, including details such as:

- What is the nature of the agreement between the state Department of Transportation (DOT) and the private sector?
- What does the agreement allow the state DOT to do with the data?
- What is the duration of agreements?
- What format is the data received in?
- Has the State conducted any assessment of the accuracy of the data?

The project will also seek to bring together lessons learned and any evaluations (formal or informal) that ENTERPRISE members have conducted or other states/provinces. The conclusion of this project will provide a reference about the options for private sector data feeds, the contracts that member agencies have executed to receive the data, and finally the benefits that have been recognized by using private company data.

Scope of Work with Task Descriptions:

The scope of work includes the following tasks:

Task 1: Project Management

The selected contractor will work closely with the ENTERPRISE project champion throughout the course of the project to ensure that all expectations are met. A project team will also be established to guide the project.

The selected contractor will work with the project champion to schedule project meetings/ conference calls. Efforts from the contractor include providing notification of meetings, developing and distributing agendas and other meeting materials, and summarizing discussions at meetings.

Task 2: Identify public agencies that utilize private sector data feeds

In Task 2, the selected contractor will develop a list of private sector traffic data feeds and corresponding public agencies that use their data. To produce the list, the contractor will draw upon the ENTERPRISE members as well as their knowledge of states, countries, and provinces currently using private sector data. The emphasis will be on ENTERPRISE member agencies; however, if other (non-ENTERPRISE members) agree to participate, the project will conduct outreach to additional agencies as well.

Task 3: Conduct Interviews/Surveys

In Task 3, the selected contractor will identify the key individuals from each public agency responsible for setting up the contracts and using private sector traffic data. The contractor will then develop a list of questions to guide interviews or surveys with each public agency.

The selected contractor will also contact several private traffic data companies to gain an understanding of the private sector perspective in providing data. The outreach will also include identification of how private contractors use or don't use public agency traffic data.

Task 4: Draft and Final Report

Based on the information collected in Task 2 and Task 3, the selected contractor will develop a report summarizing the findings. The report will include but is not limited to identifying the options for private sector data feeds, contracting process for purchasing data feeds, cost of private sector data feeds, benefits and limitations of private sector data feeds, and lessons learned.

Project Schedule at the Task Level:

It is estimated that this project would take approximately 9 months to complete.

Task	**Estimated Schedule**
Task 1: Project Management	Month 1 - 9
Task 2: Identify public agencies that utilize private sector data feeds	Month 1
Task 3: Conduct Interviews/Surveys	Month 2 - 5
Task 4: Draft and Final Report	Month 5 - 9

Project Deliverables:

Deliverable 1: List of public agencies using private sector data feeds
Deliverable 2: Survey/Questionnaire Guide
Deliverable 3: Documentation of Survey/Interviews
Deliverable 4: Draft and Final Report

Project Cost Detailed at the Task Level ($40k):

Task	**Estimated Cost**
Task 1: Project Management	$5,000
Task 2: Identify public agencies that utilize private sector data feeds	$5,000
Task 3: Conduct Interviews/Surveys	$20,000
Task 4: Draft and Final Report	$10,000
Total	**$40,000**

Relationship to Similar Activities and Projects If Known:

Each ENTERPRISE member agency operates a traveler information system. Therefore, the use of 3rd Party data could potentially benefit all member agencies.

The Idaho Transportation Department has conducted a pilot project with INRIX. Project results will be reviewed for this project.

Project Participants (Agencies):

Washington State, Technical Lead
Dutch Ministry of Transport, Technical Lead
ENTERPRISE members

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2011 Project #3:
Connected Vehicles Data Elements Concept of Operations

Project Background, Summary, and Objectives:

This effort will examine the opportunities for state DOT's to improve highway operations and safety through the use of Connected Vehicles sourced data. This will include the following:

- Compile a list of data elements
- Survey 3-5 state DOTs and determine which of these data elements could be useful for incident detection, incident management, traffic management, winter maintenance, special events management, EMS dispatch, and 511 entry. Also the survey will query the state DOT representatives on preferred locations for Connected Vehicles roadside equipment.
- Prepare a high level Concept of Operations that describes the data elements available from Connected Vehicles, the acquisition of the data from network servers, and the options for integrating the relevant vehicle sourced data into existing ITS software applications.

Scope of Work with Task Descriptions:

The scope of work includes the following tasks:

Task 1: Project Management

The contractor will work closely with the ENTERPRISE project champion throughout the course of the project to ensure that all expectations are met. A project team will also be established to guide the project.

The contractor will work with the project champion to schedule project meetings/ conference calls. Efforts from the contractor include providing notification of meetings, developing and distributing agendas and other meeting materials, and summarizing discussions at meetings.

Task 2: Identify Data Elements

In Task 2, the contractor will research and compile a list of data elements that are likely to be available from Connected Vehicles equipped vehicles and uploaded into the Connected Vehicles network servers. Input on the list will also be provided by the project team as well as the contractor's knowledge of

nationally known data elements. The contractor will develop a technical memo describing the data element list and the data elements that may be of interest in supporting highway operations.

Task 3: Conduct State DOT Survey/Interviews

In Task 3, the contractor will select and identify 3-5 state DOT's to contact to gather input on which of the data elements identified in Task 2 could be useful for incident detection, incident management, traffic management, winter maintenance, special events management, EMS dispatch, and 511 event entry. The selected contractor will also query the ENTERPRISE member state DOTs on the preferred locations for installing roadside equipment for minimizing data delivery time. The contractor will develop a list of questions to guide interviews or surveys.

Task 4: Draft and Final Deployment/Integration Document

In Task 4, the contractor will develop a Deployment/Integration Document. The contractor will assess the viability of private or semi-private equipment include operations costs, options for integration into existing systems, and identify the various ways that the various elements and capabilities of the system can be realized in the context of what the DOTs have currently. A draft report will be submitted for review by the project team, based on input and comments a final report will be completed by the contractor.

Task 5: Draft and Final Concept of Operations

In Task 5, the contractor will develop a high level Concept of Operations that at a minimum describes the data elements available from Connected Vehicles, the acquisition of the data from network servers, and the options for integrating the relevant vehicle sourced data into existing ITS software applications. The Concept of Operations should also include a discussion of the expected benefits of integrating vehicle sourced data into state DOT operations assuming a typical state DOT has the following software applications: 511 traveler information and ITS central control for DMS, HAR, CCTV and detectors. A draft report will be submitted for review by the project team, based on input and comments a final report will be completed by the contractor.

Project Schedule at the Task Level:

It is estimated that this project would take approximately 9 months to complete.

Task	**Estimated Schedule**
Task 1: Project Management	Month 1 - 9
Task 2: Identify Data Elements	Month 1
Task 3: Conduct State DOT Survey/Interviews	Month 2 - 5
Task 4: Draft and Final Deployment/Integration Document	Month 5 - 9
Task 5: Draft and Final Concept of Operations	Month 5 - 9

Project Deliverables:

Deliverable 1: Data Elements Technical Memo
Deliverable 2: Survey/Questionnaire Guide
Deliverable 3: Survey/Interviews Summary Technical Memo
Deliverable 4: Draft and Final Deployment/Integration Document
Deliverable 5: Draft and Final Concept of Operations

Project Cost Detailed at the Task Level ($25k):

Task	**Estimated Cost**
Task 1: Project Management	$2,500
Task 2: Identify Data Elements	$2,500
Task 3: Conduct State DOT Survey/Interviews	$6,000
Task 4: Draft and Final Deployment/Integration Document	$7,000
Task 5: Draft and Final Concept of Operations	$7,000
Total	**$25,000**

Relationship to Similar Activities and Projects If Known:

Canada will be conducting a series of Connected Vehicles workshops in 2011. The results of the workshops will be reviewed for this project.

Project Participants (Agencies):

Idaho Transportation Department, Technical Lead
Arizona DOT, Technical Lead
ENTERPISE members

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2011 Project #4:
Interpretable Travel Information – Use and Impacts

Project Background, Summary, and Objectives:

At the highest level, travel information can be categorized in to two distinct types of dissemination:

- Verified travel reports (e.g. traffic, incident, weather). Reports that are formulated and verified by public or private transportation agencies and then disseminated using pre-trip or en-route dissemination mechanisms; and
- Un-verified displays of interpretable information. These include such things as displays of video or still camera images, displays of weather monitoring station data, or other resources that provide travelers with information they may interpret 'on their own' and make decisions about travel.

The objective of the project is to understand the use and impacts of the 'interpretable information' displayed to travelers. Most agencies believe there is benefit to presenting travelers with 'a view' to the routes they will drive, however little is understood about exactly how the travelers interpret the data, and if their actions based on their interpretations has any impact (positive or negative) on the network.

The results of the project could be used by agencies who are questioning whether to display 'interpretable information' to travelers, whether to increase their current display of 'interpretable information' (e.g. add more cameras), or whether to decrease their current display (e.g. remove cameras currently visible).

Scope of Work with Task Descriptions:

The scope of work includes the following tasks:

Task 1: Project Management

The selected contractor will work closely with the ENTERPRISE project champion throughout the course of the project to ensure that all expectations are met. A project team will also be established to guide the project.

The selected contractor will work with the project champion to schedule project meetings/ conference calls. Efforts from the contractor include providing notification of meetings, developing and distributing agendas and other meeting materials, and summarizing discussions at meetings.

Task 2: Research verified and un-verified travel reports between states, countries, and provinces

In Task 2, the selected contractor will research verified and un-verified travel reports provided to the public for a selected number of states, countries, and provinces. The findings will be summarized by the selected contractor.

Task 3: Research related studies

In order to not duplicate efforts, the selected contractor will conduct an internet search of studies or research related to interpretable traveler information. The selected contractor will summarize the findings.

Task 4: Assess Travelers' Reaction to Interpretable Information

Based on the information gathered in Task 2 and 3 the selected contractor will conduct a number of activities to assess travelers' reactions and use of Interpretable Information. Candidate approaches (to be finalized when the project is underway) include:

- Case Studies – The Selected Contractor may work with ENTERPRISE member agencies to identify situations where a new Interpretable Information source is on the verge of being installed (for example if a member state is adding a new camera that will appear on the ATIS website in their state). The Contractor could work with the member agency to assess the impact that this additional camera has on either the traffic patterns or on feedback received. The Contractor could potentially also conduct a small simple web based survey to capture the added benefit of this new information source.
- Usage Pattern Tracking – The Contractor may work with ENTERPRISE member agencies to determine if it is possible to track detailed access to Interpretable information sources. For example, is it possible to track the number of times a camera (or RWIS) information is viewed over very short durations such as during a snow storm, during 30 minutes of rush hour, during a special event? This detailed tracking (if possible) could give insight to when travelers are accessing these Interpretable sources.
- Web Surveys, focus groups or interviews – The Contractor may also consider some surveys, interviews (email or phone) or even focus groups. The project team will need to assess the benefits to costs, but may consider these options.

These are just some examples of the types of assessments that might be performed when conducting this project. The final decisions will be reached among team members, and will be based on what options are feasible.

Task 5: Draft and Final Report

In Task 5, the selected contractor will create one report summarizing the results of Task 2-4. The report will clearly identify and summarize how the public interprets un-verified displays of traveler information. A draft report will be submitted for review by the project team, based on input and comments a final report will be completed by the contractor.

Project Schedule at the Task Level:

It is estimated that this project would take approximately 9 months to complete.

Task	**Estimated Schedule**
Task 1: Project Management	Month 1 - 9
Task 2: Research verified and un-verified travel reports between states, countries, and provinces	Month 1
Task 3: Research related studies	Month 2 - 4
Task 4: Assess Travelers' Reaction to Interpretable Information	Month 3 - 6
Task 5: Draft and Final Report	Month 6 - 9

Project Deliverables:

Deliverable 1: Task 1 Research Summary
Deliverable 2: Task 2 Research Summary
Deliverable 3: Documentation of Travelers' Assessment
Deliverable 4: Draft and Final Report

Project Cost Detailed at the Task Level ($35k):

Task	**Estimated Cost**
Task 1: Project Management	$5,000
Task 2: Research verified and un-verified travel reports between states, countries, and provinces	$5,000
Task 3: Research related studies	$5,000
Task 4: Assess Travelers' Reaction to Interpretable Information	$15,000
Task 5: Draft and Final Report	$5,000
Total	**$35,000**

Relationship to Similar Activities and Projects If Known:

Project Participants (Agencies):

Dutch Ministry of Transport, Technical Lead
ENTERPISE members

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2011 Project #5:
Optimization of Renewable Energy for ITS

Project Background, Summary, and Objectives:

Grid Power is electricity supplied by your local utility through its network of power transmission lines and generation sources including Coal, Nuclear, Hydro, Natural Gas, Diesel. Users are charged for the power they use. When you are on the grid, you have access to unlimited amounts of energy. The more you use, of course, the more you pay.

Off-Grid customers have power requirements in locations far removed from power lines. These locations may be so remote there are simply no power lines anywhere nearby, in which case options are few. Even if power lines are relatively close, the cost to get power into the property can be comparable to that of an alternative energy system. Alternatives can be more compelling.

In 2006 Canada's Ontario province ordered local utility companies to pay homeowners or businesses for any electricity they generate from small solar, wind, water or other renewable energy projects. Paul Gipe, a wind power expert, from California called the result revolutionary: "the most progressive renewable energy program in 20 years in North America." Since 2006 this program has been expanded in North America.

Ongoing developments and enhancements will provide new and improved hardware. The Nanosolar Utility Panel is the industry's most cost-efficient solution for utility-scale deployment of solar power.

Through its systems-optimized design, the Nanosolar Utility Panel delivers significant balance-of-system cost savings relative to conventional thin panels:

	Nanosolar	Conventional Thin	Nanosolar Advantage
Power	160-220W	75-80W	Up to 3x More Power per Layup Step
Mounting Span	2m	1.2m	40% Less Mounting Material
Current	6A	1A	6x Longer Panel Arrays
System Voltage	1500V	1000V	1.5x Longer Panel Arrays

	Nanosolar	Conventional Thin	Nanosolar Advantage
Panel Array Length*	64m	12m	73% Shorter Cabling, Labor
Connector	Edge	Standard	85% Faster Connection

**Maximum field length of panel stringing supported for each inverter cabling home run.*

The focus of this ENTERPRISE project is to develop a web based system to optimize the combined use of solar and wind power energy based on the power consumption requirements of ITS devices/equipment such as CCTV, vehicle detectors, variable message sign. The optimal outcome is to reduce un-utilized power components and eliminate the use of grid electrical power to make the installation energy independent.

An off-grid renewable energy system most commonly consists of the following components:

- battery bank, which is the energy repository of your system
- renewable energy generation such as solar, wind or microhydro
- control system to prevent overcharge from renewable sources
- inverter, which converts stored DC energy into AC household, works as a battery charger, and functions as the overall brains of the system - ie starts a generator when required
- fossil fuel generator, Diesel, Propane or Gasoline to provide a top-up of energy
- monitoring system to keep track of system performance

The system that will work for your needs can be determined with answers to the following:

- what are your specific electrical requirements?
- what is your budget?
- full-time or part-time use?
- location and weather conditions.

A load analysis is a necessity for an off-grid system and is also an excellent idea for a grid system. For most grid-tied systems, your old electricity bills are an excellent record of how much energy your new RE system will need to produce. But only a thorough load analysis can enable you to target efficiency opportunities and ultimately minimize system costs. Even if you plan to have a professional installer handle the entire project, your help with this critical task will ensure the highest possible value for your money.

Scope of Work with Task Descriptions:

The scope of work includes the following tasks:

Task 1: Project Management

The selected contractor will work closely with the ENTERPRISE project champion throughout the course of the project to ensure that all expectations are met. A project team will also be established to guide the project.

The selected contractor will work with the project champion to schedule project meetings/ conference calls. Efforts from the contractor include providing notification of meetings, developing and distributing agendas and other meeting materials, and summarizing discussions at meetings.

Task 2: Develop Algorithms

In Task 2, the selected contractor will research and develop algorithms for computing available power based on consumption and RE sources for selected devices (e.g. DMS, CCTV, and vehicle detectors). The algorithms will be developed with input from the project champion and project team.

Task 3: Research Source for Solar Gain and Average Wind Forces by Geographic Area

In Task 3, the selected contractor will research the information and sources available for solar gain and wind forces by geographic area. This research will be used as input to the algorithms developed in Task 2.

Task 4: Develop Prototype Pilot Website Combining Algorithms and Data Sources

Once the algorithms are approved by the project champion the selected contractor will develop a website combining algorithms and data sources based on Task 2 and Task 3. The website created will be user friendly and ask specific questions (e.g. power consumption of the device, anticipated amount of use) to produce a recommendation. The recommendation may suggest for example:

- 2 solar panels 12" x 20"
- 1 wind turbine
- 3 batteries
- The suggested configuration should provide sufficient power 60% of the time (no power from the grid is needed at this time);
- The suggested configuration should provide excess power 20% of the time (approximately 200kwh will be available for sale to the grid);
- The suggested configurations should provide a power shortfall 10% of the time (power will need to be purchased from the grid).

Task 5: Demonstrate Website and Seek Feedback from the Community

At the completion of Task 4 the website prototype will be sent to selected recipients for input and comment. The selected contractor will also identify areas to present the website as well as contact specific individuals to step through the website for input. The website will then be revised based on comments and the consensus of the project team.

Task 6: Final Report and Website

At the completion of Task 5, the selected contractor will summarize the process, sources, and algorithms used to calculate each recommendation in a summary report. The website will also be finalized to reflect the input from the project team and community as well as the details included in the final report.

Project Schedule at the Task Level:

It is estimated that this project would take approximately 15 months to complete.

Task	**Estimated Schedule**
Task 1: Project Management	Month 1 - 12
Task 2: Develop Algorithms	Month 1 - 3
Task 3: Research Source for Solar Gain and Average Wind Forces by Geographic Area	Month 2 - 4
Task 4: Develop Prototype Pilot Website Combining Algorithms and Data Sources	Month 4 - 6
Task 5: Demonstrate Website and Seek Feedback from the Community	Month 6 – 12
Task 6: Final Report and Website	Month 12 - 15

Project Deliverables:

Deliverable 1: Algorithms
Deliverable 2: Summary of Sources used for Solar and Wind
Deliverable 3: Draft and Final Website
Deliverable 4: Draft and Final Report

Project Cost Detailed at the Task Level ($90k):

Task	**Estimated Cost**
Task 1: Project Management	$10,000
Task 2: Develop Algorithms	$15,000
Task 3: Research Source for Solar Gain and Average Wind Forces by Geographic Area	$15,000
Task 4: Develop Prototype Pilot Website Combining Algorithms and Data Sources	$20,000
Task 5: Demonstrate Website and Seek Feedback from the Community	$15,000
Task 6: Final Report and Website	$15,000
Total	**$90,000**

Relationship to Similar Activities and Projects If Known:

Project Participants (Agencies):

Ministry of Transportation Ontario, Project Lead
Iowa DOT
Kansas DOT

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2011 Project #6:
Assessment of the OnStar Data Feed

Project Background, Summary, and Objectives:

The ENTERPRISE Program established a working relationship with GM OnStar during the Multi-Jurisdictional Mayday (MJM) project. In recent years, OnStar has established an open push of data describing crashes in which the air-bag has deployed. As calls are received to the OnStar call center (together with the data describing the vehicle position and other related parameters) if the OnStar call dispatcher initiates a 3-way call with a local Public Safety Answering Point (PSAP), at the same time the 3-way call is established, the data describing the vehicle collision is sent to a national router for delivery to any DOT or response agency. Today, any state agency can receive this real-time OnStar data feed. Oregon DOT is one example of a state Department of Transportation that receives this real-time feed of data.

In 2010, it is understood that OnStar has finished development of a 'Crash severity algorithm'. It is believed that this algorithm provides an automated and preliminary estimate of the severity of the crash.

Given the history of ENTERPRISE and the 'Mayday – emergency notification' concept, and the fact that crash severity algorithm is now believed to be operational, this project would research the current data feed available from OnStar, document this feed, and work with ENTERPRISE member agencies to understand if the member agencies wish to receive this data feed (either for emergency response or for travel information) and what value the data may have for operations, travel information, and planning.

Scope of Work with Task Descriptions:

This project proposes 2 tasks:

Task 1: Documentation of the OnStar Feed

In Task 1, the selected contractor will contact the technical team at OnStar and request updated documentation and information on the OnStar feed. In addition, telephone discussions will be conducted to help gather information about the data elements of the OnStar feed and to verify if the crash severity algorithm is operational and to document how it operates. It is understood that the

OnStar feed is sent to agencies using a Web Services XML exchange according to an XML schema developed by OnStar and the ComCare Coalition. The most recent schema, and details of the web services exchange will be researched and documented.

An emphasis to Task 1 will be to document what would be involved in the process to connect to the OnStar feed, and to identify key tasks an high level cost estimates for establishing the connection.

Task 1 will conclude with a written deliverable summarizing the information gathered. In addition, a webinar (either conference call or web-based webinar if needed) will be conducted with all interested member agencies to step through the information gathered. OnStar technical representatives will be invited and requested to participate to share additional details or answer questions.

Task 2: Researching the Benefits, Costs, and Potential Issues

In Task 2, the selected contractor will conduct telephone interviews with representatives from agencies that receive the OnStar feed (e.g. Oregon DOT, some of the CARS Member states, other states). The interviews will inquire about the value of receiving the data, any concerns over liability or other issues, and the costs and challenges of maintaining the web services exchange.

Similar to Task 1, Task 2 will include a webinar or conference call to share lessons learned. Also, each agency that is receiving the OnStar feed will be asked if they would be willing to participate in the webinar to share their experiences and answer questions. While there is no guarantee to their participation, the contractor will attempt it and supplement by presenting their research findings.

Task 2 will also include effort for the selected contractor to work with any of the ENTERPRISE member states that are interested in exploring the potential to receive the OnStar feed. This would include such things as:

- Participating in calls with representatives from the ENTERPRISE member states to discuss the technical aspects of receiving the feed;
- Sharing the background of the experiences with states that receive the feed; and
- Exploring the potential for establishing the connection.

The deliverables to Task 2 will be a written report summarizing the Benefits, Costs, and Potential Issues, together with a webinar to present the results. The other deliverable will be consulting services accompanied by written input to those states that decide to have the consultant help them assess the potential.

Project Schedule at the Task Level:

This project would have a schedule of 3 months. The hours and time would not mandate 3 months, however the three months is identified to allow enough advance notice and planning for the webinars as possible.

Project Deliverables:

Deliverable #1: Written Summary of the OnStar feed
Deliverable #2: Webinar Summarizing OnStar feed
Deliverable #3: Written Summary of Benefits, Costs, and Potential Issues
Deliverable #4: Webinar Summarizing Benefits and Costs
Deliverable #5: Support to ENTERPRISE Member states

Project Cost Detailed at the Task Level ($20k):

Task	**Estimated Cost**
Task 1: Documentation of the OnStar Feed	$10,000
Task 2: Researching the Benefits, Costs, and Potential Issues	$10,000
Total	**$20,000**

Relationship to Similar Activities and Projects If Known:

Project Participants (Agencies):

Michigan DOT, Project Lead
Arizona DOT, Member of Technical Team
Idaho Transportation Department
Iowa DOT

Project Contact:

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ENTERPRISE

2011 Work Plan

2011 Project #7: Feasibility of Using ITS for Data Capture and Feedback in Asset Management

Project Background, Summary, and Objectives:

Departments of Transportation (DOTs) are responsible for managing vast amounts of assets to operate a safe and efficient road network. For example:

- DOTs use traffic counters (portable and fixed) to understand travel demand and behavior,
- DOTs perform manual observations of things such as road surfaces, signs, and guard rails to understand when maintenance, repairs, or replacements are needed; and
- DOTs perform detailed inspections of bridges and other structures.

The intent of this project is to study the feasibility and benefit of remote data capture from various physical assets in a highway network. Sensors or cameras may be able to capture data and communicate this data to the appropriate staff members. The benefits would be more timely collection of data and information, as well as a reduction in the need for personnel to manually travel to remote areas to perform observations or gather locally collected data.

The use of solar power and satellite or wireless internet transmission, already demonstrated by ENTERPRISE in year 2008-2009, will facilitate monitoring of remote sites at shorter intervals and more conveniently than at present. More timely intervention via a feedback loop will be explored.

Scope of Work with Task Descriptions:

The scope of work includes the following tasks:

Task 1: Project Management

The selected contractor will work closely with the ENTERPRISE project champion throughout the course of the project to ensure that all expectations are met. A project team will also be established to guide the project.

The selected contractor will work with the project champion to schedule project meetings/ conference calls. Efforts from the contractor include providing notification of meetings, developing and distributing agendas and other meeting materials, and summarizing discussions at meetings.

Task 2: Data Capture and Feedback Concept of Operations

In Task 2, the selected contractor will develop a Concept of Operations describing the needs that the use of ITS for data capture and feedback may address. This will include a definition of the end users (end user agencies) and the intended uses. The Contractor will describe high level concepts for the roles that various technologies would play and identify the planned operational scenarios.

The conclusion of Task 2 will be a Draft (and eventually final) ConOps document that clearly articulates the intent of the use of the technologies.

Task 3: Business and Technical Plan

In Task 3, the selected contractor will build upon the ConOps to define one (or multiple) potential business models that describe how the technologies could be operated and the costs recovered. The business models will examine whether this use of technologies would save money in other operational areas, or create efficiencies that could help justify deployment.

The second portion of this task will be the creation of the plan for what technologies could be used to accomplish the activities defined in the ConOps. It is likely that cellular and solar technologies researched by the ENTERPRISE program in earlier years could be used in this project. The contractor will also examine other available or emerging technologies.

The conclusion of Task 3 will be a plan describing both a business model and technical plan that could accomplish the objectives defined in the ConOps.

Task 4: Draft and Final Report

Based on the information collected in earlier tasks, the selected contractor will develop a report summarizing the findings. As part of developing the report, the contractor will conduct research and perform outreach to the ENTERPRISE members to assess the likely benefits if the ConOps is accomplished by executing the technical and business plan created in Task 3.

Project Schedule at the Task Level:

It is estimated that this project would take approximately 12 months to complete.

Task	**Estimated Schedule**
Task 1: Project Management	Month 1 - 12
Task 2: Concept of Operations	Month 1 - 3
Task 3: Business and Technical Plan	Month 3 - 9
Task 4: Final Report	Month 9 - 12

Project Deliverables:

Deliverable 1: Concept of Operations
Deliverable 2: Business and Technical Plan
Deliverable 3: Draft and Final Report

Project Cost Detailed at the Task Level ($80k ENTERPRISE, $30k In-Kind from MTO):

Task	ENT Cost	MTO Contribution	Total Cost
Task 1: Project Management	$15,000		$15,000
Task 2: Concept of Operations	$30,000		$30,000
Task 3: Business and Technical Plan	$10,000	$30,000	$40,000
Task 4: Final Report	$25,000		$25,000
Total	**$80,000**		**$110,000**

Relationship to Similar Activities and Projects If Known:

This project builds on the success of earlier ENTERPRISE demonstration projects that have demonstrated the feasibility of remote power generation (wind and solar) and wireless communications. Therefore, this project is assessing whether previously developed technologies (by the ENTERPRISE group) can be applied to new uses and benefits.

Kansas DOT has data available from a portable camera and the Michigan DOT has data available from a traffic trailer for this projects consideration.

Project Participants (Agencies):

Ministry of Transportation Ontario, Project Lead
ENTERPISE members

Project Contact:

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416.235.4834

ENTERPRISE

2011 Work Plan

2011 Project #8:
Warrants for ITS Devices - Ongoing

Project Background, Summary, and Objectives:

The ENTERPRISE Pooled Fund Study in 2009 developed initial warrants for four Intelligent Transportation System (ITS) devices to assist agencies in the decision process of deploying technology devices as well as to validate the location of deployed devices. The second phase of the project was completed in 2010 and focused on developing warrants for an additional five devices.

An operational outcome of the first phase of the project was a project website. Visitors to the project website may execute the warrants by 'pointing and clicking' to answer the warrant questions. Website users will immediately receive the results of the warrant questions (either informed that the deployment in question is 'warranted', is 'not warranted', or is 'partially warranted'). Users may request to view the criteria and decision factors that led to the warrant conclusions.

The objective of this project is to satisfy the members agreed approach to continue the Warrants development when appropriate by developing a warrant for Autonomous Monitoring Stations. ENTERPRISE has completed two phases of an Autonomous Monitoring Station project. The ENTERPRISE program envisions that as projects move forward that creation of warrants are considered in order to continue to enhance the ENTERPRISE program efforts.

Scope of Work with Task Descriptions:

Task 1 – Develop an ITS Warrant for ITS device/system selected by the member agencies

Task 2 – Update Warrants Website and Warrants report to include the additional warrant for ITS device

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Project Schedule at the Task Level:

Task 1 – 3 months
Task 2 – 1 month

Project Deliverables:

Updated ITS Warrants Final Report to include additional device

Updated ITS Warrants Website

Project Cost Detailed at the Task Level:

Task 1 - $15,000
Task 2 - $5,000

Relationship to Similar Activities and Projects If Known:

ENTERPRISE completed development of 9 ITS Device warrants in 2009 and 2010.

Project Participants (Agencies):

ENTERPISE members

Project Contact:

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