Project Name: WeatherShare - Phase 3 (WeatherShare 3)

OCIO Project #:

Department: Transportation

Revision Date: 9/20/10

Concept Statement

Description

Brief description of the proposed project:

WeatherShare is a website that streamlines and integrates a variety of currently available weather data. WeatherShare pulls data from over 3,200 stations, including 107 Caltrans Road Weather Information Systems (RWIS). (http://www.weathershare.org) The website provides a one-stop user-friendly source for emergency responders to get current weather data and weather forecast. Phase 3's main objectives will include completing the feasibility study and investigating how best to integrate the available weather data into regional 511 traveler information systems in California. Phase 1 completed a proof-of-concept laboratory prototype system that covered 20 counties in and adjacent to District 2. Phase 1 was viewed as a valuable tool to get weather information and to facilitate incident response. WeatherShare Phase 2 expanded the website to all of the 12 Districts and the 58 counties in California. The WeatherShare Phase 2 service contract with Western Transportation Institute (WTI) continues to host and maintain the WeatherShare website.

Need Statement

High Level Functional Requirements:

• The system is a web-based application. DOT personnel and emergency responders can access the system through the Internet to view the weather information.
• The system streamlines and integrates surface weather information from MesoWest, a repository of Western U.S. weather information housed at the University of Utah, Meteorological Assimilation Data Ingest System (MADIS) from the National Weather Service (NWS) and Caltrans' RWIS.
• Three-level Quality Control (QC) procedures have been implemented to flag questionable sensor readings.
• The system provides a single source for the following weather information:

1. For recent conditions, data includes Air Temperature, Humidity, Average Wind Speed, Average Wind Direction, Max Wind Gust Speed, Max Wind Gust Direction, Dew Point Temperature, Atmospheric Pressure, Fuel Moisture, Fuel Temperature, Precipitation Rate, Precipitation in 24 hours, Solar Radiation, Cumulative Precipitation, Visibility and Pavement Temperature. Download every 15 to 30 minutes.
2. Air Temperature, Humidity, Average Wind Speed, Average Wind Direction, Max Wind Gust Speed, Max Wind Gust Direction, Sky Cover. Forecasted in three hour intervals; every download is twenty-four hours of data or eight forecasts.
3. 12-hour probability of precipitation. Forecasted in twelve hour intervals; every download is twenty-four hours of data or two forecasts.
4. 6-hour amount of precipitation. Forecasted in six hour intervals; every download is twenty-four hours of data or four forecasts.
5. Snow. Forecasted in six hour intervals; every download is twenty-four hours of data or four forecasts.
6. Weather. Forecasted in three hour intervals; every download is twenty-four hours of data or eight forecasts.
7. Fog Warning. Forecasted in three hour intervals; every download is twenty-four hours of data or eight forecasts.

• The system uses the Google Maps API, HTML, DHTML, JavaScript, AJAX, PHP, XML, and Web 2.0 in presenting the user interface. This solution implements more robust mapping with Map, Satellite, Terrain, or Hybrid views of the mapped area. The Google Maps API facilitates the easy use of controls for Panning and Zooming into a desired section of the map. Users are already generally familiar with the Google Maps interface.

Project Name: WeatherShare - Phase 3 (WeatherShare 3)

OCIO Project #:
Department: Transportation
Revision Date: 9/20/10

Concept Statement

What is Driving This Need?

In California, Caltrans has been working in partnership with emergency response agencies through the Redding Incident Management Enhancement (RIME) program to improve public safety throughout the Northern California region. WeatherShare was initiated to serve and assist transportation, public safety, emergency response and related professionals in this large rural region that covers nearly 30 percent of California's area and 25 percent of the State's State Highway Lane Miles but contains less than 4 percent of the state's population. The size of the region, combined with wide ranging geography and a diversity of weather conditions, poses safety challenges for drivers, highway maintenance and operations staff, and emergency responders.

All of these agencies need accurate and up-to-date weather and road condition information to do their jobs, especially those tasks related to keeping the roads safe for travel and providing assistance after an incident. Since many of these agency professionals provide critical – often life saving – services, it is essential that they can access this information as quickly as possible. With good forecasts and road information, personnel can:

- Monitor surface weather conditions and forecasts at local, regional and statewide level;
- Identify impending weather events that can impact travel;
- Identify the best route and arrive quickly and safely to the scene of an accident;
- Post safety messages to traveler information systems and signs regarding conditions such as high winds or icy roads;
- Select where and when to apply de-icing materials on roads, prioritize snow plowing, or impose chain controls; and
- Plan and monitor evacuation routes and activities following a natural disaster or homeland security event.

Risk to the Organization if This Work is Not Done:

The consequences of not doing this project include failing to address the following issues:

- Data Quality - The availability of data from multiple sources also presents a data quality issue. Users need an effective means of comparing and evaluating conflicting data, and to validate readings from weather sensors.
- Resource Constraints - Many of the public agencies in California that are outside of the major urban centers do not have the personnel or fiscal resources to create their own customized weather information systems.
- Completing the feasibility study for the WeatherShare project and deploying the 511 system are both vital and mission critical to the Department. The System is an excellent tool to integrate, streamline and disseminate accurate, timely weather information among emergency responders, highway operators and the traveling public. The prototype system has been successfully piloted by various prospective users and feedback has been overwhelmingly positive. The Department will not only lose over $500,000 of contract funds and partnership funds from WTI already invested in this project if WeatherShare is not implemented, but it will waste the prospective users' effort and time for the last four years.

Project Name: WeatherShare - Phase 3 (WeatherShare 3)

OCIO Project #:

Department: Transportation

Revision Date: 9/20/10

Concept Statement

Benefit Statement

Intangible Benefits

Process Improvements (describe the nature of the process improvement):

1. The system will interface and enhance the 511 system.
2. The system will be web-based so that Caltrans and emergency responders can access through the Internet to view a single source for weather reports.
3. To Be Determined by the Feasibility Study.

Other Intangible Benefits:

To Be Determined in the Feasibility Study.

Tangible Benefits

Revenue Generation (describe how revenue will be generated):

To Be Determined in the Feasibility Study.

Cost Savings (describe how cost will be reduced):

To Be Determined in the Feasibility Study.

Project Name: WeatherShare - Phase 3 (WeatherShare 3)

OCIO Project #:

Department: Transportation

Revision Date: 9/20/10

Concept Statement

Cost Avoidance (describe the cost and how avoided):
To Be Determined in the Feasibility Study.

Risk Avoidance (describe the risk and how avoided):
To Be Determined in the Feasibility Study.

Improved Services:
To Be Determined in the Feasibility Study.

Consistency

"No" Responses →		Rationale	Action Required
Enterprise Architecture	Yes		
Business Plan	Yes		
Strategic Plan	Yes		

Impact to Other Entities

Nature of Impact to Other Entities

Entity:
Describe the nature of the impact:

Project Name: WeatherShare - Phase 3 (WeatherShare 3)

OCIO Project #:

Department: Transportation

Revision Date: 9/20/10

Concept Statement

Entity:
Describe the nature of the impact:

Entity:
Describe the nature of the impact:

Entity:
Describe the nature of the impact:

Project Name: WeatherShare - Phase 3 (WeatherShare 3)

OCIO Project #:
Department: Transportation
Revision Date: 9/20/10

Concept Statement

Solution Alternatives

Alternative 1:
To Be Determined in the Feasibility Study.

Technical Considerations for Alternative 1:		
ROM Cost:	to	**Note: high end of range must not exceed 200% of low end of range**

Alternative 2:

Technical Considerations for Alternative 2:		
ROM Cost:	to	**Note: high end of range must not exceed 200% of low end of range**

Alternative 3:

Project Name: WeatherShare - Phase 3 (WeatherShare 3)

OCIO Project #:

Department: Transportation

Revision Date: 9/20/10

Concept Statement

Technical Considerations for Alternative 3:		
ROM Cost:	to	**Note: high end of range must not exceed 200% of low end of range**

Recommendation

Comparison:

Alternative 1	ROM Cost			Risk
To Be Determined in the Feasibility Study.	$0	-	$0	
Alternative 2	**ROM Cost**			**Risk**
	$0	-	$0	
Alternative 3	**ROM Cost**			**Risk**
	$0	-	$0	

Conclusions:

1	
2	
3	
4	

Project Name: WeatherShare - Phase 3 (WeatherShare 3)

OCIO Project #:

Department: Transportation

Revision Date: 9/20/10

Concept Statement

Recommendation:

Project Approach *(if known)*

System Complexity:				System Business Hours: *(e.g., 24x7, 9am-5pm) :*	To Be Determined in the Feasibility Study.	
Architecture	☐ Mainframe	☐ Client Server	☐ Web Based		Num. of New Databases:	
Technology	☐ New	☐ New to Staff	☐ In-House Experience		Interfaces:	
Implementation	☐ Central Site	☐ Phased Roll-out			Num. of Sites:	
M & O Support	☐ Contractor	☐ Data Center	☐ Project	☐ In House		
Procurement Approach:					Number of Procurements:	
Open Procurement?		Delegated Procurement?				
Scope of Contract	☐ Development	☐ Implementation	☐ M & O	☐ Other:		
Anticipated Length of Contract:	Years /	extensions for	years			