ITS Warrants Testing Results

Gene Martin, VDOT

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Topics

• Recap of the ITS Warrants

• Summarize Industry Testing

• Feedback as a User of the Warrants
ENTERPRISE Pooled Fund

• Member Agencies:
  – Iowa DOT
  – Washington DOT
  – Virginia DOT
  – Michigan DOT
  – Kansas DOT
  – Minnesota DOT
  – Arizona DOT
  – FHWA
  – Transport Canada
  – Ministry of Transport, Ontario
  – Dutch DOT
Overview – History

• ENTERPRISE Pooled Fund Project

• Need:
  – Support ITS Deployment Decision Making Process
Cost-Benefit – CCTV Example

- **Costs**
  - Easy to Estimate
  - Easy to Quantify

- **Benefits**
  - Proven Benefits
  - Great User Feedback
  - Hard to Quantify
The Concept

• ITS Warrants
  – Is a Device Warranted at a Specific Location?
  – Should further consideration be Performed?
  – Eliminate Locations where a Device is not Warranted
ENT Warrants Project

• Start with 4 ITS Devices
  – DMS, CCTV, HAR, R/WIS
• Assess the Validity of the Approach
WHAT CAN I DO AT THIS WEBSITE?

The purpose of this website is to assist you in your decision-making process of determining if an ITS device is warranted. As part of this research project, warrants were developed for Dynamic Message Signs (DMS), Closed Circuit Television (CCTV), Highway Advisory Radios (HAR), and Roadway Weather Information Systems (RWIS).

Please select an ITS device below to begin the process of determining if deployment is warranted at your location.
Warrants Testing

How Can I Test the Warrants?

The ENTERPRISE Program ITS Warrants Research Project would appreciate your assistance in testing the ITS Warrants developed for DMS, CCTV, HAR, and RWIS.

To submit the ITS warranted test, please follow the steps below.

1. Download the appropriate questionnaire from below.
2. Fill out the questionnaire electronically or print and fill out.
3. Save the file and email the completed questionnaire to ITSwarrants@angersconsultants.org or fax to 503-210-1154.

Test the DMS Warrants
Test the CCTV Warrants
Test the HAR Warrants
Test the RWIS Warrants
Website is Fully Interactive

Users click ‘Yes/No’ Boxes to answer questions
Website is Fully Interactive

Users receive Notification immediately about whether the device is ‘Warranted’ or ‘Not Warranted’
Industry Testing of Warrants
Testing of the ITS Warrants

- Focus on ENTERPRISE States
- Invited Entire Industry to Test/Use Warrants

- Website:
  - http://www.acconsultants.org/itswarrants
Types of Testing

• One-on-one Individual Testing of Warrants

• On-line Website

• Presentations and Feedback from Groups
One-on-one Interactions

• Michigan DOT
  – 2 HAR sites
  – 1 DMS site
  – 1 CCTV site
  – 1 R/WIS site

• Virginia DOT
  – Various RWIS sites

• Kansas DOT
  – DMS
  – RWIS
  – CCTV
One-on-one Interactions

- **Minnesota**
  - Statewide
    - 3 CCTV sites
    - 2 DMS sites
  - Mn/DOT Metro District
    - 6 DMS sites
    - 6 CCTV sites

- **Arizona**
  - AZDOT
  - Maricopa County
  - City of Peoria
  - City of Surprise
  - City of Mesa
On-line Testing of Warrants

• Tracked each on-line submittal
  – Recorded whether the device was:
    • Warranted
    • Not Warranted
    • Partially Warranted

  – Allowed for Feedback / Suggestions
Results of On-line Testing

• 118 Uses of the Warrants on-line

• Some left names/agency contact info

• Most Anonymous tests/uses

• 34 of the tests resulted in ‘Warranted’ (30%)
### Detailed Results (on-line use of warrants)

<table>
<thead>
<tr>
<th>Device</th>
<th>Number of Tests</th>
<th>Number ‘Warranted’</th>
<th>Number ‘Not Warranted’</th>
<th>Number ‘Partially Warranted’</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMS</td>
<td>63</td>
<td>19</td>
<td>35</td>
<td>9</td>
</tr>
<tr>
<td>CCTV</td>
<td>36</td>
<td>11</td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td>HAR</td>
<td>8</td>
<td>1</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>RWIS</td>
<td>11</td>
<td>3</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>34</td>
<td>66</td>
<td>18</td>
</tr>
</tbody>
</table>
Real-world Use of Warrants

- Virginia DOT
- Over 40 R/WIS weather sensors
- Warrants help evaluate requests for more sensors
North Dakota DOT

• Native American Reservation
  – Requesting DMS, HAR, Closure Gates
  – Weather Related Concerns

• DOT and Reservation agreed
  – Let the Warrants Decide
North Dakota DOT

• Results of Warrants Analysis
  – Devices Not Warranted
  – Warrants Recommended low-tech applications
  - Static Warning Signs and Beacons are being deployed
Conclusions

• Encouraging Results

• Benefits Seen by Some States

• Would like More Test Cases