Managing Performance in DOTs
“Connecting the DOTs”

Rich Tetreault, VTrans Chief Engineer
Karla Sutliff, CalTrans Chief Engineer
Joyce Taylor, MaineDOT Chief Engineer
• Connecting the Dots - VTrans

• Working a Department of Transportation Strategic Management Plan - CalTrans

• Transportation Tri-State Performance Management Report - MaineDOT

• E.D.C. - VTrans
CONNECTING THE DOTS

INNOVATION
Spring 2015 SCHO Round Table

Louisiana - SCOH Member: Williams, Janice
- Estimating/Managing costs for contract CE&I services

Minnesota - SCOH Member: Mulvihill, Susan
- Project Delivery activities - how much time is spent on delivering projects? What is the cost to deliver?

Mississippi - SCOH Member: McConnell, Mark
- What is the general percentage (%) of consultant CE&I costs relative to construction costs at other states (i.e 5-10%, 10-15%, 15-20%, 20-25%)?
2012-2015 Caltrans Strategic Shift

• 2012: A pivotal year
  • Program Review
  • Executive Board formed
  • Zero Base Budget reviews begin
  • Updated SWOT

• 2013
  • Employee survey
  • California Transportation Infrastructure Priorities
  • SSTI commissioned by our agency
Caltrans Focus on Performance

• 2014 Assessments and Recommendations
  • Caltrans Program Review
  • State Smart Transportation Initiative
  • California Transportation Infrastructure Priorities (CTIP)
  • Initial Mile Marker performance publication

• 2015
  • Caltrans Strategic Plan
  • Quarterly Project Delivery Report and pre-CTC meetings
  • Expanding culture beyond delivery-focus
    • Sustainability
    • Partnership
    • Risks and Innovation
  • Measuring delivery and construction in more detail
MISSION: Provide a safe, sustainable, integrated, and efficient transportation system to enhance California’s economy and livability.

VISION: A performance-driven, transparent, and accountable organization that values its people, resources and partners, and meets new challenges through leadership, innovation, and teamwork.
Public sector outputs do not usually compete in the market.

It is difficult to measure the value of goods produced by the public sector.

Productivity should be characterized as a measure of outputs, including quantity and quality, relative to inputs.

Cost savings do not necessarily indicate increased productivity.

Society might prefer certain outputs and/or quality even if productivity declines as a result.

Often no discrete, quantifiable output.
Performance Measures for Other Transportation Agencies

- Washington tracks on-time and on-budget project delivery each quarter, but not support-to-capital.
- Florida tracks planned vs. executed contracts, new lane miles added vs. planned, and on-time and on-budget project delivery. Support-to-capital is tracked at a statewide level, not by program or project size.
- Oregon tracks environmental and design costs compared to construction capital plus construction support for various programs.
- Michigan tracks many performance measures, but not support-to-capital.
- Difficult to compare data from different states due to different policies and definitions.
## Caltrans Support-to-Capital Ratios

<table>
<thead>
<tr>
<th>Project Size</th>
<th>Goal</th>
<th>Actual (FY 2011-12 to FY 2014-15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1 - $5 million</td>
<td>&lt; 60%</td>
<td>56.1%</td>
</tr>
<tr>
<td>$5 - $10 million</td>
<td>&lt; 45%</td>
<td>39.7%</td>
</tr>
<tr>
<td>$10 - $15 million</td>
<td>&lt; 35%</td>
<td>37.2%</td>
</tr>
<tr>
<td>$15 - $25 million</td>
<td>&lt; 32%</td>
<td>29.3%</td>
</tr>
<tr>
<td>$25 - $140 million</td>
<td>&lt; 30%</td>
<td>25.3%</td>
</tr>
</tbody>
</table>
Caltrans Labor Inputs per Million Dollars of Construction Capital

Person-Years per $1M Construction Capital by Program

Program

Roadway Preservation (CAPM)
Emergency Damage Repair
Roadway Rehabilitation (3R)
Upgrade Median Barriers
Bridge Rehabilitation
Bridge Preventive Maintenance
Operational Improvements
Collision Severity Reduction
Bridge Scour Mitigation
Roadside Rehabilitation
Permanent Restoration
Bridge Seismic Restoration
Maintenance Facilities
Safety Improvements
SRRA Rehabilitation
Weigh Stations and WIM Facilities
Drainage System Restoration
ADA Access Improvement

PYS/$1M Construction Capital

0.90 1.10 1.36 2.62 2.88 2.88 3.20 3.36 3.63 3.71 3.80 4.11 4.14 4.28 4.83 5.07 7.07 8.19 10.94
Caltrans’ Project Delivery Portfolio

- 2,500+ active major projects
- 700+ projects under construction
- $10.5+ billion of active construction projects

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Planned</th>
<th>Delivered</th>
<th>% Delivered</th>
<th>Planned</th>
<th>Delivered</th>
<th>% Delivered</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-12</td>
<td>279</td>
<td>275</td>
<td>99%</td>
<td>$3.23B</td>
<td>$2.67B</td>
<td>83%</td>
</tr>
<tr>
<td>2012-13</td>
<td>170</td>
<td>167</td>
<td>98%</td>
<td>$1.43B</td>
<td>$1.20B</td>
<td>84%</td>
</tr>
<tr>
<td>2013-14</td>
<td>219</td>
<td>214</td>
<td>98%</td>
<td>$2.52B</td>
<td>$2.07B</td>
<td>82%</td>
</tr>
<tr>
<td>2014-15</td>
<td>343</td>
<td>337</td>
<td>98%</td>
<td>$2.63B</td>
<td>$2.34B</td>
<td>89%</td>
</tr>
</tbody>
</table>
Other Caltrans Project Delivery Performance Measures (planned vs. actual)

- Number of projects delivered to construction
- Capital value of projects delivered to construction
- Number of Draft Environmental Documents delivered
- Number of Final Environmental Documents and Project Approvals delivered
- Number of Right of Way Certifications delivered
- Allocated Right of Way Funds
- Number of construction contracts accepted
- STIP costs at closeout
- SHOIPP costs at closeout
# Caltrans Project Delivery Report

<table>
<thead>
<tr>
<th>Measure</th>
<th>Annual Commitment</th>
<th>Goal Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Delivered</td>
<td>Plan</td>
</tr>
<tr>
<td><strong>Delivery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projects Ready for Construction</td>
<td>337</td>
<td>343</td>
</tr>
<tr>
<td>Capital Value Ready for Allocation (millions)</td>
<td>$2465</td>
<td>$2633</td>
</tr>
<tr>
<td><strong>Project Approval, Environmental Documents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projects Approved</td>
<td>225</td>
<td>258</td>
</tr>
<tr>
<td>Draft Environmental Documents Completed</td>
<td>59</td>
<td>74</td>
</tr>
<tr>
<td><strong>Right of Way</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projects Certified</td>
<td>324</td>
<td>335</td>
</tr>
<tr>
<td>Allocation Funds Committed (millions)</td>
<td>$163</td>
<td>$163</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contracts Completed and Accepted</td>
<td>154</td>
<td>174</td>
</tr>
<tr>
<td><strong>Closeout Costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Transportation Improvement Program Costs</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>State Highway Operations and Protection Program Costs</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
The Tri State Connection

- **August 1997 - TRIO** generated on-going discussions between the three states on the ITS front.

- **March 26th, 2002** – Trio outcome was the first Tri State Ops Coalition Meeting where several maintenance and operations counterparts from Maine, New Hampshire, and Vermont gathered for an all-day meeting on a variety of topics.

- Then VTrans Director of Maintenance David Dill reported, “Very productive. All agree that sharing resources and knowledge on a regional basis is becoming more and more important, not only because of our common financial constraints, but also to make the most of emerging technology. Our intent is to expand our cooperative efforts, and we will now meet once per quarter.”
The Tri State Connection

- **2005** – Tri State Meetings branched out to the Project Delivery Arena. Chief Engineers and project delivery teams were meeting on the same day as the Operations counterparts at the quarterly meetings.
  - Designs, Materials, ROW, Utilities, Permitting, etc.
  - FHWA invited
Intended Consequences

• Improved On-time
• Better communication
• Better planning
• Less chaos
Bonus Consequences

- Improved efficiency/Less rework
- More production
- Improved teamwork
- Better understanding of work
- Less finger pointing
- Delivery rhythm/cadence
- Improved morale?
Unintended Consequences

- Drive for 100%.
  - Competition
  - Pride
- Exceptions become expectations.
- Crashing resources (at the end).
- PS&E (missing items).
- Cost?

Great if quality maintained
WHEREAS the Cooperating States recognize performance measures for assets and business processes are being utilized and further developed in each state, and

WHEREAS performance measures for assets and business processes are being incorporated in each Cooperating State's stewardship agreement with the Federal Highway Administration, and

WHEREAS standardized performance measures for assets and business processes are promoted by the American Association of State Highway and Transportation Officials; and

WHEREAS national performance standards are being considered by the United States Congress in discussions on the future Transportation Bill, and

WHEREAS standardized performance measures among the Cooperating States will assist in Communications with respective stakeholders and legislative bodies, and
David C. Dill, Secretary
Vermont Agency of Transportation

George N. Campbell, Jr., Commissioner
New Hampshire Department of Transportation

David Cole, Commissioner
Maine Department of Transportation
### Percentage Advertised On Time: 2014 Qtr 4 Results

#### Table: Year-to-Date and Rest Of Year Percentages

<table>
<thead>
<tr>
<th>State</th>
<th>On Time</th>
<th>Delayed or Removed</th>
<th>% On Time</th>
<th>On Time</th>
<th>Delayed or Removed</th>
<th>% On Time</th>
<th>On Time</th>
<th>Delayed or Removed</th>
<th>% On Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME</td>
<td>176</td>
<td>20</td>
<td>90%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>176</td>
<td>20</td>
</tr>
<tr>
<td>NH</td>
<td>40</td>
<td>30</td>
<td>57%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>VT</td>
<td>71</td>
<td>23</td>
<td>76%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>71</td>
<td>23</td>
</tr>
</tbody>
</table>

#### Pie Charts:
- **ME**
  - On Time: 176 (90%)
  - Delayed or Removed: 20 (10%)
- **NH**
  - On Time: 40 (57%)
  - Delayed or Removed: 30 (43%)
- **VT**
  - On Time: 71 (76%)
  - Delayed or Removed: 23 (24%)
Bridge Condition Index (BCI) & % Structurally Deficient

* Local Highway System over Time

Based on 2014 Calendar Year NBI Data
Existing % signs above service life

<table>
<thead>
<tr>
<th>State</th>
<th>Current % Above Service Life</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Hampshire</td>
<td>73 %</td>
<td>Night Time Visual Assessment</td>
</tr>
<tr>
<td>Vermont</td>
<td>80 % *</td>
<td>Sign age</td>
</tr>
<tr>
<td>Maine</td>
<td>98 %</td>
<td>Sign Age</td>
</tr>
</tbody>
</table>

*The VTrans sign database is undergoing a statewide reconciliation and as such the current % above Service life will not be rerun until the reconciliation is completed.
## Award Amount vs. Cost Estimate: 2014 Qtr 4 Results

- **Goal = 50% Within 10%**

### Breakdown:

<table>
<thead>
<tr>
<th>Category</th>
<th>ME</th>
<th>NH</th>
<th>VT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projects</td>
<td>42</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>%</td>
<td>27</td>
<td>23</td>
<td>26</td>
</tr>
<tr>
<td>10% or More Under Estimate</td>
<td>71</td>
<td>50</td>
<td>32</td>
</tr>
<tr>
<td>10% or More Over Estimate</td>
<td>44</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>%</td>
<td>45</td>
<td>72</td>
<td>42</td>
</tr>
<tr>
<td>Within 10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>28</td>
<td>4</td>
<td>32</td>
</tr>
</tbody>
</table>
We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard.  

Address at Rice University,
September 12 1962
Engineering Formulas
Was the AASHTO Focus for Decades

• Time to analyze our business’ performance.

• Are you doing a good job, and how do you know?

• What are the formulas for success?
CONNECTING THE DOTS

Every D.O.T. Counts

http://www.hist-geo.com