Capacity Solutions Retrospective Workshop
Park City, Utah
May 20 – 21, 2019
**Workshop Agenda – May 20, 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am</td>
<td>Welcome and Introductions</td>
</tr>
<tr>
<td>8:30 am</td>
<td>SHRP2 Overview</td>
</tr>
<tr>
<td>9:00 am</td>
<td>Product Panels</td>
</tr>
<tr>
<td>10:30 am</td>
<td><strong>BREAK</strong></td>
</tr>
<tr>
<td>11:00 am</td>
<td>Product Panel Continued</td>
</tr>
<tr>
<td>12:30 pm</td>
<td>Working Lunch</td>
</tr>
<tr>
<td>2:00 pm</td>
<td>Small Group Discussions</td>
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<tr>
<td>2:20 pm</td>
<td>Report Out</td>
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<tr>
<td>2:40 pm</td>
<td><strong>BREAK</strong></td>
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<tr>
<td>3:00 pm</td>
<td>Small Group Discussions</td>
</tr>
<tr>
<td>4:00 pm</td>
<td>Report Out</td>
</tr>
<tr>
<td>4:30 pm</td>
<td>Day One Wrap Up</td>
</tr>
<tr>
<td>5:00 pm</td>
<td>Adjourn and Dinner with Colleagues</td>
</tr>
</tbody>
</table>
SHRP2 Overview

• Matt Hardy, AASHTO
• Brian Gardner, FHWA
Focus Areas

**Safety**: fostering safer driving through analysis of driver, roadway, and vehicle factors in crashes, near crashes, and ordinary driving

**Reliability**: reducing congestion and creating more predictable travel times through better operations

**Capacity**: planning and designing a highway system that offers minimum disruption and meets the environmental and economic needs of the community

**Renewal**: rapid maintenance and repair of the deteriorating infrastructure using already-available resources, innovations, and technologies
SHRP2 Implementation: INNOVATE . IMPLEMENT. IMPROVE.

$155 million

FUNDING ASSISTANCE

63

SHRP2 SOLUTIONS

430+

PROJECTS IMPLEMENTED

DOT 52 Recipients

MPO/LOCAL 30 Recipients

UNIVERSITY 12 Recipients

FEDERAL/TRIBAL 7 Recipients

RENEWAL 230+

CAPACITY 100+

RELIABILITY 90+

SAFETY 11
SHRP2 Implementation: INNOVATE. IMPLEMENT. IMPROVE.

304,406 PARTICIPANTS ENGAGED

12,378 OUTREACH ACTIVITIES

16,629 HOURS TECHNICAL ASSISTANCE

RESULTS
Save lives, money, and time
- Bridges being built more quickly
- Smoother traffic flows and less congestion
- Reduced construction costs
- Safer roadways
- Smarter environmental reviews
SHRP2 Capacity Products Background

- PlanWorks and Planning Process Bundle
- EconWorks
- TravelWorks Advanced Travel Analysis
- Eco-Logical
- Expedited Project Delivery
- Freight Demand Modeling and Data Improvement
Three Goals for National SHRP2 Implementation:

- Provide opportunities thru funding and technical assistance to implement the research products.

- Expose, educate, and train if necessary, both decision makers and implementors on each product.

- Measure benefits on multiple levels.
• SHRP2 funding was focused on many needs that would otherwise not have been addressed due to lack of resources.

• SHRP2 Capacity IAPs created a buzz that drew stakeholders to the table and provided a forum for implementation.

• SHRP2 Capacity products measured results but also exposed areas needing further development and more data collection.
EconWorks Pooled Fund Study Solicitation Open!

https://www.pooledfund.org/Details/Solicitation/1500

► **Equipped Planners**—Better understanding of economic impacts of transportation projects.

► **Smarter Decisions**—Tools to make more comprehensive and realistic assessments of economic development impacts of transportation projects.

► **Greater Economic Vitality**—Tools to help gauge potential increases in jobs and output by providing estimates of economic benefits in areas of travel time reliability, access to labor and goods markets, and intermodal connectivity.

► **Useful Case Studies**—Compare and contrast similar projects at various stages nationwide to assess potential outcomes.
Listen, Think, React, Share!

- What Worked?
- What Still Needs Work?
- Did The Needle Move?
- What Direction Should We Head?
Product Panels

• EconWorks
• TravelWorks
• C20/Freight
C03/C11 EconWorks

SME – Glen Weisbrod, EDR Group
Testimonial – Coco Briseno, CALTRANS
EconWorks Concept

State DOTs need:

• Access to information to help planners incorporate economic analysis into project decision-making
• Case studies that prove the economic return on investment
• Tools to help show the wider benefits of proposed investments
<table>
<thead>
<tr>
<th>Product</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case Study Tools</strong></td>
<td><strong>Early Stage Policy + Planning</strong> &lt;br&gt;Enable planners to quickly see the range of economic development impacts that occur from different types of projects in different settings</td>
</tr>
<tr>
<td><strong>Wider Economic Benefit Tools</strong></td>
<td><strong>Enhanced Programming + Prioritization</strong> &lt;br&gt;Enable analysts to apply “wider benefit” measures for proposed projects (<em>accessibility, reliability, connectivity</em>)</td>
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</tbody>
</table>
History

- Started as SHRP2 Project C03: TPICS (60 highway projects), now expanded to 132 highway, transit + multimodal projects

Product

- “Ex-post analysis“ for evidence-based decision making
- Identify range of economic impacts from capacity projects

Use

- Support “early stage” planning + collaborative decisions by incorporating economic vitality + land use factors
- Validation of predictive economic impact models
Showing pre/post change in economic and land use resulting from different types of projects and settings.
Case Study Search: a Sketch Planning Tool (learn from actual cases)

Project: Hammondsport

Description:
The Hammondsport Industrial Access Road involved resurfacing of three adjoining streets on the village's industrial western flank, running a total length of about a mile.

Characteristics and Setting:
- States: NY
- City: Hammondsport
- Average Annual Daily Traffic: 2,117
- Project Type: Access Road
- Planned Cost (YOE $): 1,300,000
- Constr. Start Date: 1996
- Initial Study Date: N/A
- Region: New England/Mid-Atlantic

Pre/Post Conditions:
Select a region to display the conditions for that region:
- LOCAL
- COUNTY(IES)
- STATE

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-Project</th>
<th>Post-Project</th>
<th>Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Income Per Capita</td>
<td>35,971</td>
<td>37,131</td>
<td>1,160.20</td>
<td>3.23%</td>
</tr>
<tr>
<td>Economic Distress</td>
<td>1</td>
<td>1</td>
<td>-0.20</td>
<td>-14.81%</td>
</tr>
<tr>
<td>Number of Jobs</td>
<td>41,195</td>
<td>45,322</td>
<td>4,126.70</td>
<td>10.02%</td>
</tr>
<tr>
<td>Business Sales (in $M's)</td>
<td>7,613</td>
<td>7,860</td>
<td>247.06</td>
<td>3.25%</td>
</tr>
<tr>
<td>Tax Revenue (in $M's)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Population</td>
<td>98,907</td>
<td>98,236</td>
<td>-671.00</td>
<td>-0.68%</td>
</tr>
<tr>
<td>Property Value (median house value)</td>
<td>96,841</td>
<td>74,972</td>
<td>-21,869.70</td>
<td>-22.58%</td>
</tr>
</tbody>
</table>

Impacts:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs</td>
<td>25</td>
<td>12</td>
<td>37</td>
</tr>
<tr>
<td>Income (in $M's)</td>
<td>1,394,480</td>
<td>669,060</td>
<td>2,063,540</td>
</tr>
<tr>
<td>Output (in $M's)</td>
<td>3,814,090</td>
<td>1,829,960</td>
<td>5,644,050</td>
</tr>
</tbody>
</table>
Assess My Project: Estimating Potential Impact Ranges

**Project Type**
- Access Road
- Limited Access Road
- Bypass
- Connector
- Beltway
- Bridge
- Interchange
- Widening
- Intermodal Freight
- Intermodal Passenger

**Region**
- New England/Mid-Atlantic
- International
- Great Lakes/Plains
- Southwest
- Southeast
- Rocky Mountain/Far West

**Urban/Class Level**
- Rural
- Mixed
- Metro

**Economic Distress**
- Distressed
- Non-Distressed

**Length of Project**
Required

**Estimated Project Cost:** $234 million
**Estimated Average Annual Daily Traffic:** 39,725

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<thead>
<tr>
<th></th>
<th>Jobs</th>
<th>Wages (mil.)</th>
<th>Output (mil.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Impacts</td>
<td>2,257 - 3,762</td>
<td>$106 - $176</td>
<td>$336 - $560</td>
</tr>
<tr>
<td>Supplier and Wage Impacts</td>
<td>1,296 - 2,160</td>
<td>$61 - $102</td>
<td>$191 - $318</td>
</tr>
<tr>
<td>Total Impacts</td>
<td>3,553 - 5,922</td>
<td>$167 - $278</td>
<td>$527 - $878</td>
</tr>
</tbody>
</table>
Wider Economic Benefit Tools: Overview

History

• Started as SHRP2 Project C11 wider benefit spreadsheets, expanded to EconWorks web tools

Product

• Open-source tools that use zonal transportation data to calculate expected changes in accessibility, reliability + connectivity

• Apply productivity parameters from readily available research/data

Use

• Move beyond traditional benefit categories (i.e. safety, travel time, vehicle operating costs) to capture additional productivity effects

• Expand factors used in prioritization and benefit cost analysis
Wider Economic Benefit Tools: Outcomes

Predicting changes in transportation factors that affect economic productivity

Transportation Network Characteristics

Traditional Tools

User Benefits
- Travel Time
- Travel Cost
- Safety

EconWorks WEB Tools

Wider Benefits
- Reliability
- Accessibility
- Connectivity

Use in Benefit-Cost Analysis Prioritization

Predicting changes in transportation factors that affect economic productivity
# Wider Economic Benefit Tools: Key Factors

<table>
<thead>
<tr>
<th>Wider Benefit Tool</th>
<th>Key Driver of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>• Changing V/C Ratios (Based on lanes, capacity, and volume data inputs)</td>
</tr>
<tr>
<td></td>
<td>• Changing incident frequency and duration (Based on planner estimates from ITS projects)</td>
</tr>
<tr>
<td>Market Access <em>(for jobs + deliveries)</em></td>
<td>• Change in zone-to-zone travel times (based on a significant change in the regional transportation network)</td>
</tr>
<tr>
<td>Intermodal Connectivity <em>(to airports, marine ports, rail terminals)</em></td>
<td>• Changes in access time to terminals</td>
</tr>
<tr>
<td></td>
<td>• In special cases: changes in activity levels at terminals</td>
</tr>
</tbody>
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EconWorks Training Webinars

Live 2017 and Viewable on Website

- February 2 (Application): Introduction to EconWorks Case Studies: Indiana DOT
- April 20 (Training): EconWorks Products: What they are and how they can be used
- May 18 (Application): EconWorks Case Studies: Presentation from Utah DOT
- June 15 (Training): EconWorks Economic Impact Analysis Tools: Using Case Studies
- August 17 (Training): EconWorks WEB Tools -- Market Access
- Sept. 28 (Application): MPO Perspective: Southeastern Regional Planning & Economic Development District and Delaware Valley Regional Planning Commission
- October 19 (Training): EconWorks WEB Tools -- Reliability and Connectivity
- December 14 (Training): Using EconWorks for educating the public, decision makers and stakeholders
Module 1 - Introduction
Module 2 - Economic Development Concepts
Module 3 - Overview of EconWorks
Module 4 - EconWorks Basics
Module 5 - Case Study Data Needs And Sources
Module 6 - Web Based Search
Module 7 - Using Aerial Photographs For Economic Impact Assessment
Module 8 - Conducting Case Study Interviews
Module 9 - Using Site Visits To Clarify Project Impacts
Module 10 - Estimating Impacts And Costs For Case Study Entry
Module 11 - Developing A Case Study Narrative
Module 12 - Challenges In Conducting Case Studies
Module 13 - Case Submission & Course Conclusion
Welcome to Economic Analysis Training

Before you begin, please type your first and last name in the space provided.

Type Your First and Last Name

Begin
Implementation Assistance Program

C03 Case Study Tools: Examples of Use (on website)

- Illinois DOT C03
- Indiana DOT C03
- Rhode Island DOT C03
- Utah DOT C03

C11 Wider Benefit Tools: Examples of Use (on website)

- Indiana C11
- Caltrans C11
- Connecticut C11
- Rhode Island DOT C11
- Virginia DOT C11
Lessons Learned: Case Study Tools

1. The “Case Study Search” tool can help planners anticipate the likely range of impacts. It can also enhance public discussion using real examples to focus on issues, expectations and complementary needs. *this use of the database needs to be more widely promoted*

2. Ex post cases can validate the results of predictive analysis studies, especially if transportation changes are also considered. *this could be a valuable future use*

3. The “Assess My Project” tool cannot cover many situations due to limited cases and it also lacks data on how transport performance changes drive outcomes. Thus it cannot replace predictive impact models. *this distinction should be reinforced.*

4. The database is not yet large enough when 132 cases are spread among 13 project types, 6 regions and 4 spatial settings. *it will benefit from additional effort to build more cases.*
1. The WEB Tools can supplement existing impact and benefit analysis tools by covering factors that they leave off. But they do NOT capture traditional travel (time/cost) or economic (spending/cost) factors, so they are not replacements for existing impact tools. 
   \[\text{...this distinction is commonly appreciated}\]

2. They do NOT work for all possible types of projects or situations (e.g., intercity access factors, non-congestion reliability factors or intermodal interchanges, as well as safety or reconstruction projects). 
   \[\text{...expectations and applicable situations should be reinforced}\]

3. They CAN generate stand alone performance metrics or supplement rating, impact or benefit analysis systems. However, the broader systems provide more complete $ impact numbers. \[\text{...users can benefit from guidance + clarity on assumptions, limitations and appropriate use}\]

Education: Role of EconWorks Tools

1. Policy / Funding Stage
2. Planning/Strategy Stage
3. Programming Stage
4. Prioritization Stage
5. Project Devel./ EIS Stage
6. Operations Stage

EconWorks Case Studies

EconWorks Wider Economic Benefit Tools

Economic Impact and BCA Models (REMI, TREDIS, etc.)
Future Needs

1. The Case Study database is a tremendous resource, but it needs continued care + feeding with new cases added, to keep it relevant as projects and situations evolve.

2. Use of the Case Studies can be substantially enhanced with more effort to fill in data on pre/post changes in travel volumes and speeds.

3. The Wider Economic Benefit tools can be very useful as they enable agencies to measure broader transportation factors and consider them in project prioritization and selection processes.

4. Use of these tools can be substantially enhanced with continued effort to refine how they can be most appropriately used to enhance broader economic analysis and modeling processes (avoiding double counting while filling in gaps).
Glen Weisbrod
EDR Group / EBP
617-338-6775, x202
gweisbrod@edrgroup.com

https://planningtools.transportation.org/
EconWorks Testimonial

Coco Briseno, Caltrans
Caltrans - Use of C11 Tools

- Caltrans awarded $125k to test C11 tools in 2014
  - Reliability
  - Connectivity
  - Market Access
  - Accounting
- Intent of effort
  - Assess handful of projects listed in the 2014 California Freight Mobility Plan (CFMP)
    - Limited data on CFMP projects
  - Scope modified to assess 2006 Transportation Corridor Improvement Fund projects
Reliability Tool Findings

Pros
- Tool was easy to use
- Data readily available to run the tool
- Results can be incorporated within Cal-B/C

Cons
- Incident frequency and duration data not available
  - Assumptions were made
- Limited project analysis capabilities
  - Only assesses reliability based on highway type

Outcome
- Results can complement Cal-B/C
  - Supplements Cal-B/C results for federal grant applications
Caltrans - Use of C11 Tools

- Connectivity Tool Findings
  - Pros
    - Easy to select and assess intermodal facilities
  - Cons
    - Freight facility data is static
    - Unknown how freight volumes are assigned
    - Unitless connectivity score
  - Outcome
    - Tool cannot be used
      - Unable to determine what weighted connectivity score represents
- **Market Access Tool Findings**
  - **Pros**
    - Concept and results helpful for project evaluation purposes
  - **Cons**
    - Data collection is cumbersome
      - Regional zone activity values
      - Travel demand model skim data
      - Employment and labor force
  - **Outcome**
    - Tool is difficult to use
      - Easier to use a subscription based economic impact model
      - Data collection is too intensive
Accounting Tool Findings

Pros
- Concept helpful in aggregating each tool’s results and reporting them in monetary terms

Cons
- Connectivity’s “weighted score” could not be used
- Some cells hardcoded where formulas should appear

Outcome
- Tool cannot be used
  - Inability to enter outcomes from other tools
Caltrans - Use of C11 Tools

Conclusion

- Reliability tool complements Cal-B/C
  - Cal-B/C results are more robust when including reliability
    - Benefit-cost ratio for a project can increase by tenths of a point
- Connectivity results need to be transparent
  - Intermodal facility assumptions need to be viewable
  - Explanation of “weighted score” calculation is needed
- Market Access data requirement cumbersome
  - Other economic impact models require less data inputs
- Accounting tool incomplete
  - Some cells were hardcoded where formulas were needed
Caltrans - Use of C11 Tools

- Amendment Effort
  - Remaining funds used to create Cal-B/C reliability beta model
    - Model uses a portion of C11 methodology

- Recommendations
  - Consolidate C11 with other reliability methodologies
  - Unlock connectivity tool to be transparent and allow users to adjust facility assumptions
  - Decrease data requirements to run market access tool
  - Ensure accounting tool can use other tool outcomes and that it is running correctly
  - Continue to establish peer-to-peer review requirements
As part of a SHRP2 Grant, Caltrans piloted PlanWorks to assist in developing the Caltrans Corridor Planning Guide Book.

Through using PlanWorks the Guidebook focuses on a comprehensive planning approach through desired protocols and procedures to identify and implement multimodal transportation needs. It is a process document that leads to not just a product, but a partnership and performance-based project recommendations.

Caltrans looked beyond the PlanWorks Decision Guide to provide example of analysis methodologies, corridor-level performance measures, and project prioritization methods.
PlanWorks to Develop Guidebook

CALTRANS CORRIDOR PLANNING GUIDEBOOK

- **SCOPE EFFORT**
- **GATHER INFORMATION**
- **CONDUCT PERFORMANCE ASSESSMENT**
- **IDENTIFY POTENTIAL PROJECTS AND STRATEGIES**
- **ANALYZE IMPROVEMENTS**
- **SELECT AND PRIORITIZE SOLUTIONS**
- **PUBLISH CORRIDOR PLAN**
- **MONITOR AND EVALUATE PROGRESS**

**PlanWorks**


**COR-1**: Approve Scope  
**COR-2**: Approve Problem Statements  
**COR-3**: Approve Goals  
**COR-4**: Reach Consensus on Analysis Scope  
**COR-5**: Approve Evaluation Criteria, Methods and Measures  
**COR-6**: Approve Range of Solutions  
**COR-7**: Adopt Preferred Solutions  
**COR-8**: Approve Prioritization Approach  
**COR-9**: Adopt Priorities for Implementation
TravelWorks Advanced Travel Analysis Tools (C04, C05, C10, C16)

SME – Maren Outwater, RSG
Testimonial – Tara Weidner, ODOT
TravelWorks Advanced Travel Analysis Tools

TravelWorks

Advanced Travel Analysis Tools address today’s transportation planning and modeling challenges.

Quickly compare the broad impacts of various land use, investment and policy scenarios on travel demand using an **Rapid Policy Analysis Tool** (RPAT)

Improve the sensitivity of my travel demand model to congestion, travel time reliability and pricing

Understand how operational improvement strategies affect **highway capacity**

Build an activity-based model integrated with dynamic traffic/transit assignment (**Integrated Dynamic Travel Model**)
Practical guidance for incorporating mathematical specifications into various travel demand models

• 3 levels of guidance
  - Level 1. Behavior foundations
  - Level 2. Advanced operational modeling (activity or tour-based)
  - Level 3. Opportunities for prevailing practice (aggregate trip-based)
Guidance on behavioral sensitivity to highway congestion and pricing

- Willingness to pay
- Value of time
- Value of reliability
- Auto occupancy or group travel
- Negative toll bias
- User segmentation factors
- Avoiding simplistic approaches to forecasting
- Data limitations and GPS-based data collection methods
Guidance on quantifying capacity benefits of operations, design and technology improvements at the network level

Dynamic traffic assignment (DTA) modeling tools were identified as the best way to evaluate network performance under time-varying demand and supply conditions
Network Operations Modeling Approach

- DTA models are preferred to evaluate operational strategies
- Dynasmart-P was enhanced and used as a test engine (not available for general use)

Table ES.1. Non-Lane-Widening Strategies to Improve Capacity

<table>
<thead>
<tr>
<th>Freeway</th>
<th>Arterial</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOV lanes</td>
<td>Signal retiming</td>
<td>Narrow lanes</td>
</tr>
<tr>
<td>Ramp metering</td>
<td>Signal coordination</td>
<td>Reversible lanes</td>
</tr>
<tr>
<td>Ramp closures</td>
<td>Adaptive signals</td>
<td>Variable lanes</td>
</tr>
<tr>
<td>Congestion pricing</td>
<td>Queue management</td>
<td>Truck-only lanes</td>
</tr>
<tr>
<td>Pricing by distance</td>
<td>Raised medians</td>
<td>Truck restrictions</td>
</tr>
<tr>
<td>HOT lanes</td>
<td>Access points</td>
<td>Pretrip information</td>
</tr>
<tr>
<td>Weaving section Improvements</td>
<td>Flight and left turn channelization</td>
<td>In-vehicle information</td>
</tr>
<tr>
<td>Frontage road</td>
<td>Alternate left turn treatments</td>
<td>VMS/DMS</td>
</tr>
<tr>
<td>Interchange modifications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: HOV = high-occupancy vehicle; HOT = high-occupancy toll; VMS = variable message sign; DMS = dynamic message sign.
SHRP2 C10 Integrated Dynamic Travel Model

- Improves urban-scale modeling and network procedures to address operations or spot improvements that affect travel time choice, route choice, mode choice, reliability, or emissions
- Links travel behavior choices, such as departure time or route, with congested network conditions to better reflect real-world dynamics in the model
Operational Supply and Demand Models

- 2015 research by MWCOG indicated that 16 of 23 peer MPOs are using ABM; only 2 use DTA models
- 2 initial pilot tests (Jacksonville and Sacramento)
- 4 additional pilot tests (Atlanta, Ohio, Maryland, San Francisco)
- Results are applied research but not yet demonstrated in a relevant environment

- Training and outreach have shared the research broadly
- Models provide more sensitivity to policy variables
SHRP2 C16 Rapid Policy Assessment

- Integrated transportation investment decision-making with land development and growth management (smart growth strategies)

- Robust planning tool that provides quick answers to support scenario planning

- Saves time and cost to provide insight on transportation policies
VisionEval Tools occupy a niche between... 

- Sketch model: quick, what-if, no network 
- Activity Based model: micro-simulate HHs/Vehicles 
- Integrated model: economy, land use & feedback 

...balancing rapid computation & accurate representation 

Exploratory tool for assessing risk/uncertainty in scenario planning visioning 
Use more detailed traditional tools to implement vision 

Visioneval.org
RPAT Scenario Analysis Dashboard

Demo RPAT Scenario Viewer

Scenario Input Levels | Clear All Selections

Bicycles | Demand Management | Land Use | Parking | Transit | Vehicle Travel Cost

Model Outputs: 324 scenarios selected out of 324 scenarios | Clear All Selections

- Fatalities & Injuries: Average = 4.9 annual per 1000 pop
- Vehicle Cost Per Capita: Average = $970 annual per capita
- DVMT Per Capita: Average = 20 daily per capita

- GHG Emissions Per Capita: Average = 2.0 annual per capita
- Fuel Consumption: Average = 180 annual per capita
- DVHT Per Capita: Average = 0.38 daily per capita
TravelWorks Testimonial

RPAT and VisionEval

Tara Weidner, Oregon DOT
Transportation Planning Analysis Unit
Oregon DOT Analysis Toolkit

**Strategic Models** can help with long-term visioning/policymaking/funding/resilience analysis, but sacrifice detail.

**Tactical Models** use fixed assumptions (e.g. a single economy, fixed fuel prices) to work out how to best implement allotted funding.

**Operational Models** help with short-term implementation details (e.g. signal timing).

**Monitoring** should reflect observed (not modeled) behavior.
Conversations & Partnerships

Bring something of value to the table
-- a robust analytical framework
- Supports policy conversations
- Scenario Planning collaboration
- Facilitates decision making

State & Local Partnerships:
- DLCD (Land Use, GHG strategies)
- DEQ, DOE, PUC (Electric Vehicle goals, Clean Fuels)
- Transit Agencies (GHG strategies, test Alt fuels/electric/CNG)
- Local Agencies – Long Range Transportation Plans
**2050 Visioning Process**

**Statewide Transportation Strategy**

### Urban
- UGB expansion
- Transit service (4x pop. growth)
- TDM (65% PDX hh & 40% of employers)
- Parking pricing (+30% pay to park)
- 30% mode shift (for trips of <6 mi.)

### Tech
- 30% mode shift (for trips of <6 mi.)
- PHEV & EV (+30%)
- Renewable energy
- Fuel carbon intensity (-20%)
- Light truck ownership (-29%-36%)

### System Optimization
- Transit service (4x pop. growth)
- Max System Ops & Mgmt.
- Fuel efficiency priority (80% hh)
- Carsharing rates up: high density (1/2,500), medium density (1/5,000)
- TDM (65% PDX hh & 45% employers; more telecom.)
- Speed smoothing
- 30% mode shift (for trips of <6 mi.)

### Pricing
- 100% PAYD insurance
- Parking pricing (+30% pay to park)
- Pay for all external costs (+$0.06 per mi)
- Congestion pricing ($0.20/mi)

---

**Enhanced Combo**

- Includes all assumptions
- 40% mode shift from SOV trips of <6 mi (was 30%)
- More pay for parking and at higher cost
- Ave. vehicle age 7.8 yrs (was 10 yrs)
- Increase in PHEV and EV (43%)
- Increase in TDM
- Commercial services vehicles are all electric or natural gas

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**Enhanced + Price**

- $0.15 per mile VMT Tax in addition to other taxes (~$0.06 per mile)

---

**Enhanced + Tech**

- Cleaner power generation
- Increase PHEV & EV (53%)
- EVs have longer range (cars = 300 mi)
Projected GHG Emissions
Light Duty Vehicle CO2e Percent Change from 1990

-100% -80% -60% -40% -20% 0% 20% 40%

1970 1990 2010 2030 2050

Light Duty Vehicle GHG emissions

Percent Change from 1990

Plans & Trends

Potential range

Pricing
Transportation Options
System Operations
Fuels
Vehicles

Needed Policies and Investments to Close Gap

2018 STS-Monitoring Report
5-year review
RSPM Inputs:

<table>
<thead>
<tr>
<th>Regional Context</th>
<th>Local Actions</th>
<th>Collaborative Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>Community Design</td>
<td>Vehicles &amp; Fuels</td>
</tr>
<tr>
<td>Income Growth</td>
<td>Marketing &amp; Incentives</td>
<td>Pricing</td>
</tr>
<tr>
<td>Fuel Price</td>
<td>Future Housing (Single- &amp; Multi-Family)</td>
<td>Vehicle Fuel Economy (mpg)</td>
</tr>
<tr>
<td></td>
<td>Parking Fees</td>
<td>Pay-As-You-Drive Insurance</td>
</tr>
<tr>
<td></td>
<td>Transit Service</td>
<td>Fuel</td>
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<tr>
<td></td>
<td>Biking</td>
<td>Gas Taxes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Road User Fee</td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Corvallis Area MPO Results:

- **Target = 21%**

2005-2035 GHG Reduction Relative to Target Rule

- Level 3: 14.3%
- Level 2: 8.1%
- Level 1: 8.0%
- Level 0: 10.3%

Adopted Plans

Policy levers and strategies:

- Community Design: *Land use, Transit, Bicycles, Parking*
- Marketing & Incentives: *ITS, Eco-driving, Car sharing, TDM*
- Pricing: *VMT fee, Social costs, Electricity costs, PAYD insurance, Fleet, Light trucks*
- Vehicles & Fuels: *Fleet, Light trucks*

Change Relative to 2010

- Daily VMT per Capita
- Walk Trips per Capita
- Travel Costs per Household
- Air Quality Pollutants (1)
- Road Congestion
Corvallis Metropolitan Planning Area Scenario Viewer

Scenario Input Levels | Clear All Selections

Model Outputs: 32 scenarios selected out of 288 scenarios | Clear All Selections

GHG Target Reduction
Average = **-18%**

DVMT Per Capita
2010 Value = **22** daily miles

Bike Travel Per Capita
2010 Value = **140** annual miles

Walk Travel Per Capita
2010 Value = **130** annual trips

Air Pollution Emissions
2010 Value = **18** daily metric tons

Annual Fuel Use
2010 Value = **24** million gallons

Annual Household Vehicle Cost
2010 Value = **24** thousand $

Truck Delay
2010 Value = **110** daily vehicle hr

BUILT ENVIRONMENT VARIABLES

<table>
<thead>
<tr>
<th>Built Environment Variables</th>
<th>Land Use Place Types (from RPAT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destination Accessibility</td>
<td><strong>Regional Role (Area Type)</strong></td>
</tr>
<tr>
<td>Share of Regional Jobs within 5 miles (ratio)</td>
<td><strong>Regional Center</strong></td>
</tr>
<tr>
<td><strong>H-M-L-VL</strong></td>
<td>√</td>
</tr>
<tr>
<td>Density</td>
<td>Jobs &amp; Households per acre within 0.25 mile</td>
</tr>
<tr>
<td><strong>H-M-L-VL</strong></td>
<td>√</td>
</tr>
<tr>
<td>Design</td>
<td>Multi-modal &amp; Pedestrian-Oriented street density (links per sq mile)</td>
</tr>
<tr>
<td><strong>H-L</strong></td>
<td>√</td>
</tr>
<tr>
<td>Diversity</td>
<td>Jobs (total or retail-service) to household ratio, within 0.25 mile</td>
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<tr>
<td><strong>H-L</strong></td>
<td>√</td>
</tr>
<tr>
<td>Transit Service Level</td>
<td>PM Peak hourly transit service within 0.25 mile</td>
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<tr>
<td><strong>H-M-L-VL</strong></td>
<td>√</td>
</tr>
</tbody>
</table>
Road Ahead

VisionEval pooled fund
...next step in deployment

Maintain/Enhance tool:
- Modular, Scalable
- Enhance User Experience, Visualization tools
- National defaults
- Evolve with new technologies
- Peer Review
- Share best practices

Tara Weidner, P.E.
Oregon Department of Transportation
Tara.j.weidner@odot.state.or.us
C20 Freight Demand Modeling and Data Improvement Program

SME – Jeff Purdy, FHWA
Testimonial – Brian Ryder, Baltimore Metro Council
Foster fresh ideas and new approaches to freight demand modeling and data collection that ultimately enhance decision-making.

Source: Maricopa Association of Governments
SHRP2 C20 Process

Transportation Research Board
- Research Initiatives

C20 Implementation Plan
- Projects Execution

Pilot Projects
Regional Data Forums

Continued Implementation

Source: TRB
SHRP2 C20 National Initiatives

- Implementation Assistance Program (IAP) pilot projects in 11 States.
  - Innovations in Local Freight Data.
  - Behavior-Based Freight Modeling.
- Freight data regional forums.
- Advanced research activities:
  - Behavioral/Agent-Based Supply Chain Modeling Research.
  - Incorporating Land Use and Demographic Trends into Freight Trip Demand Analysis.
- Quick Response Freight Methods (QRFM) update.
- Freight Model Improvement Portal (FMIP) – Community of Practice.
SHRP2 C-20 Implementation Assistance Program (IAP) Pilot Projects
IAP: Behavior-Based Freight Models

- **Maricopa Association of Governments, Arizona** - Multi-modal freight model replicates economic behaviors of establishments, shippers, and carriers by modeling travel and tour formations.

- **Portland Metro, Oregon** - Hybrid freight model with tour-based behavior of individual trips to address economic policy questions, and depict truck volumes and flow of goods for local supply chains.

- **Maryland Department of Transportation and Baltimore Regional Transportation Board** - Regional tour-based truck model covering intra-local distribution with sensitivity to the long-distance truck flows represented in the statewide freight model.

- **Wisconsin Department of Transportation** - Hybridized model for statewide freight forecasting and quantifying how different scenarios affect freight transportation.
IAP: Innovations in Local Freight Data

- **Florida Department of Transportation** - Petroleum supply chain data for improved accuracy of freight forecasts.
- **Mid-America Regional Council, Missouri** - Travel time and commercial waybill data to demonstrate cost of congestion on freight movement.
- **Capital District Transportation Committee, New York** - Created unified data set at zip code and transportation analysis zone level.
- **Winston-Salem Metropolitan Planning Organization, North Carolina** - Industry and truck touring data to support advanced freight model.
- **Delaware Valley Regional Planning Commission, Pennsylvania/New Jersey** - Philly Freight Finder data sharing platform for intermodal freight.
- **South Dakota Department of Transportation** - Location, timing, and impact of agricultural commodity shipping on South Dakota’s highways.
- **Washington State Department of Transportation** - Food distribution supply chain and local truck delivery data to model behavioral responses to policy scenarios.

Source: Winston Salem Urban Area MPO
Freight Data Regional Forums

1. Identify Freight Data/Program Improvement Needs
2. Identify Areas of Collaboration and Standardization
3. Develop Action Plan for Next Steps
## Freight Data Regional Forum Locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
<th>MPO and State DOT Participants from:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington, DC</td>
<td>January 10, 2016</td>
<td>TRB Attendees</td>
</tr>
<tr>
<td>Orlando, FL</td>
<td>August 8-9, 2016</td>
<td>AL, FL, GA, MS, NC, SC, TN</td>
</tr>
<tr>
<td>Portland, OR</td>
<td>September 27-28, 2016</td>
<td>AK, ID, MT, OR, WA, WY</td>
</tr>
<tr>
<td>Washington, DC</td>
<td>November 17-18, 2016</td>
<td>DC, DE, MD, PA, VA, WV</td>
</tr>
<tr>
<td>Dallas, TX</td>
<td>January 23-24, 2017</td>
<td>AR, KS, LA, MO, OK, TX</td>
</tr>
<tr>
<td>Chicago, IL</td>
<td>February 15-16, 2017</td>
<td>IA, IL, IN, KY, MI, OH</td>
</tr>
<tr>
<td>Minneapolis, MN</td>
<td>April 5-6, 2017</td>
<td>MN, NE, ND, SD, WI</td>
</tr>
<tr>
<td>Hartford, CT</td>
<td>May 10-11, 2017</td>
<td>CT, MA, ME, NH, NJ, NY, RI, VT</td>
</tr>
<tr>
<td>Phoenix, AZ</td>
<td>June 7-8, 2017</td>
<td>AZ, CA, CO, HI, NM, NV, UT</td>
</tr>
<tr>
<td>Savannah, GA</td>
<td>October 17, 2017</td>
<td>MPO attendees from across the country (workshop held as part of the Association of MPOs [AMPO] Annual Conference)</td>
</tr>
</tbody>
</table>
Main Themes from Regional Forums

- Communication, Coordination and Capacity Building.
- Data Needs and Resources.
- Planning and Decision-Making Process.

What Brings us Together?
- What are your data needs and gaps?
- What data are you missing and might need in the future?

Let's Make Coalitions.
- What are the partnership opportunities?
- Who are your potential partners?

Let's Advance our Priority.
- What are the follow up actions to advance regional Collaboration?
Regional Forums: Communication, Coordination and Capacity Building

• Build and strengthen partnerships between the public and private sectors.
• Build and strengthen regional partnerships between transportation agencies.
• Communicate the benefits of freight data analysis for improved agency decision-making.
• Enhance training and technical capacity opportunities.
• Document and share best practices among agencies.
Regional Forums: Data Needs and Resources

• Enhance data and improve data accessibility.
• Improve freight data quality at the national, State, regional, and local levels.
• Improve efficiencies in data collection, compilation, sharing, and standardization.
• Enhance freight data tools and data collection.
Regional Forums: Planning and Decision-making Process

- Improve integration of freight into transportation and land use planning.
- Improve integration of freight data and analysis within transportation system management and operations (TSMO).
- Support the integration of multimodal freight transportation data.
- Improve collaboration on oversize/overweight permitting data.
- Improve research-to-practice connections.
Advanced Research: Land Use, Demographics and Freight Travel Demand Analysis

Land use, economic development and demographic factors for freight movement, trip generation and freight demand.

- Integrating land use and freight trip generation.
- Integrating land use with goods/services movement.
- Last mile considerations for deliveries and urban land use.
- Modeling framework for supply chain and delivery systems.
- Public and private data sources and data sharing.
- Scenario planning.
- Megaregional planning.

Source: FHWA
• Supply chain procedures and truck touring.
• Firm synthesis, including freight production and consumption.
• Commodity flows, including buyer-supplier matching and commodity flow allocation.
• Transportation/logistics, including distribution channel, vehicle choice and shipment size.
• Modal assignment.
• Network flows, including truck touring models.
• Freight datasets, data collection and data sharing.
• Understand economic impacts of freight and the relationship between changes in the economy and changes in demand for freight transportation.

• Understand relationships between freight movement and land-use and spatial development in a study area.

• Understand current freight movements in a study area.

• Evaluate complex freight-related policies and freight-related infrastructure improvements.

• Understand environmental impacts of freight and truck movements.
Next Steps

- AASHTO Special Committee on Freight.
- AASHTO COP Freight Planning Task Force.
- TRB Freight Committees.
- FHWA Quick Response Freight Methods (QRFM) update.
- FHWA Freight Analysis Framework (FAF) Data Improvement.
- Travel and Freight Model Improvement Portal (TMIP/FMIP) – Community of Practice https://tmip.org/.
- FHWA/NHI Training on Freight Data.
Jeff Purdy
Federal Highway Administration
Office of Freight Management and Operations
202-366-6993
Jeffrey.Purdy@dot.gov

https://ops.fhwa.dot.gov/freight/freight_analysis/fdmdi/index.htm
C20/Freight Testimonial

Brian Ryder, Baltimore Metro Council
C20 Freight Demand Modeling and Data Improvement – Maryland

- Product Use
- Benefits Achieved
- Project Limitations
C20 Maryland Product Use

- **Passenger Model / Freight Modeling System Integration**
  - Replace 2001 Truck Model in BMC Travel Demand Model with 2018 Freight Modeling System (on-going; will correspond with adoption of the BMC Activity-Based Model)

- **Validation/Scenario Testing**
  - Continue testing and comparing to 2001 Truck Model outputs
  - Develop a traffic count collection plan (next spring)
  - Develop scenarios to test the 2018 Freight Modeling System including:
    - Truck restrictions in East Baltimore (April 2019)
    - Port of Baltimore expansion (future)
    - FAF high, medium and low (future)
Freight Network

- Reviewing network truck volumes 2012 and 2040 (See Figure 1a & 1b)
- Exploring commodity flows for each county in region (See Figure 2a & 2b)

TAZ-Level Output

- Freight vehicle origin and destinations (See Figure 3a & 3b)
- Commercial vehicle trips per day (See Figure 4)
- Distribution centers coded to TAZs (See Figure 5)
Figure 1a & b
Network Truck Volumes: 2012 & 2040
Figure 2a
Commodities: Production and Consumption

[Image of a chart showing shipment size and movement type]

Note: "Mode" refers to the mode or the combination of modes of the full shipment route.

Movement Type and Mode

Shipment Size

Shipment Size by Movement Type

Commodity and Movement Type

Commodity and Production/Consumption

Note: Internal to-internal shipments are counted as both production and consumption for the model region.
Figure 2b
Commodities: Movement Type

62,084
Daily Shipment

10,226
Internal-to-Internal (II)

12,928
Internal-to-External (IX)

19,047
External-to-Internal (XI)

19,883
External-to-External (XX)

47,640
Domestic

3,004
Exports (EX)

11,440
Imports

Note: "Mode" refers to the mode or the combinations of modes of the full shipmentmods.

Note: Internal-to-Internal shipments are counted as both production and consumption for the model region.
Figure 3a & 3b
Freight Vehicle Origins and Destinations
Commercial Vehicle Activity & Distribution Centers

Figure 4: Freight Modeling System
Commercial Vehicle Daily Trips by TAZ 2012 &
Commercial Vehicle Daily Volume 2012

Figure 5: Freight Modeling System
Daily Freight Trips to/from Distribution Centers
C20 Maryland Benefits Achieved

- **Freight Database**
  - A new freight database for use by the FMS and other applications

- **Freight Network**
  - A new GIS-based freight network for highway, air, rail and water freight transport

- **Commercial Vehicle Activity**
  - A new goods/services delivery model component
C20 Maryland Project Limitations

• Schedules
  – Computer system issues
  – Data acquisition

• Result Reporting
  – Challenging reporting all modal data
  – Software knowledge

• Stakeholder Interest
  – Reporting and outreach
Break

10:30 – 11:00 am
Product Panels

- PlanWorks
- C19 Expedited Project Delivery
- Ecological
PlanWorks and the Planning Process Bundle

SMEs - Reena Mathews, FHWA & Janet D’Ignazio, ICF
Testimonials - John Miller, VDOT & John Orr, ARC
PlanWorks (C01) and the Planning Process Bundle (C02, C08, C09, C12, C15)
PlanWorks and Planning Process Bundle

- Flexible and adaptable resources to support collaboration in:
  - Long Range Planning
  - Programming
  - Corridor Planning
  - NEPA/Permitting

- Primary users State DOTs and MPOs
  - In partnership with resource agencies, FHWA and stakeholders

- Access to nine additional SHRP2 products

- [https://fhwaapps.fhwa.dot.gov/planworks/](https://fhwaapps.fhwa.dot.gov/planworks/)
PlanWorks and Planning Process Bundle

- PlanWorks Content Update
  - Updated website content and applications
  - Developed training videos and modules

- Implementation Assistance Program
  - 22 recipients from MPOs and State DOTs
  - Developed Case Studies for PlanWorks
  - Eight Peer Exchanges 2018-2019
## Round 5 Lead Adopter and User Incentive IAP Recipient

<table>
<thead>
<tr>
<th>Round 5 Lead Adopter and User Incentive IAP Recipient</th>
<th>Planning Process Bundle Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlanta Regional Commission (ARC)</td>
<td>Performance Measures / Visioning / Freight</td>
</tr>
<tr>
<td>Community Planning Association of Southwest Idaho (COMPASS)</td>
<td>Performance Measures / Visioning / Freight</td>
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<tr>
<td>Denver Regional Council of Governments (DRCOG)</td>
<td>Performance Measures / Visioning / P3</td>
</tr>
<tr>
<td>High Point Urban Area MPO</td>
<td>Visioning</td>
</tr>
<tr>
<td>KYOVA Interstate Planning Commission</td>
<td>Performance Measures</td>
</tr>
<tr>
<td>Massachusetts Department of Transportation (MassDOT)</td>
<td>Greenhouse Gas Emissions / Freight</td>
</tr>
<tr>
<td>Tennessee Department of Transportation (TDOT)/Jackson Area MPO</td>
<td>Performance Measures / Visioning / Freight</td>
</tr>
<tr>
<td>Texas Department of Transportation (TxDOT)</td>
<td>Performance Measures / Freight</td>
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<tr>
<td>Utah Department of Transportation (UDOT)</td>
<td>Performance Measures / Freight</td>
</tr>
<tr>
<td>Washington State Department of Transportation (WSDOT)</td>
<td>Performance Measures / Greenhouse Gas Emissions</td>
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</table>
# PlanWorks IAP Recipients – Round 6 and 7

<table>
<thead>
<tr>
<th>Round 6 and 7 Lead Adopter IAP Recipient</th>
<th>PlanWorks Project Focus</th>
</tr>
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<tbody>
<tr>
<td>Arkansas State Highway and Transportation Department (AHTD)</td>
<td>Long-Range Planning (LRP)</td>
</tr>
<tr>
<td>California Department of Transportation (Caltrans)</td>
<td>Corridor</td>
</tr>
<tr>
<td>Champaign County Regional Planning Commission (CCRPC)</td>
<td>Corridor</td>
</tr>
<tr>
<td>North Central Texas Council of Governments (NCTCOG)</td>
<td>LRP/Performance Measure (PM)/Visioning</td>
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<tr>
<td>Strafford Metropolitan Planning Organization (SMPO)</td>
<td>LRP/PM</td>
</tr>
<tr>
<td>Utah Department of Transportation (UDOT)</td>
<td>LRP/PM</td>
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<tr>
<td>Virginia Department of Transportation (VDOT)</td>
<td>Corridor</td>
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<tr>
<td>Charlottesville-Albemarle Metropolitan Planning Organization (CAMPO)</td>
<td>Corridor/Subarea Planning</td>
</tr>
<tr>
<td>Colorado Department of Transportation (CDOT)</td>
<td>LRP, Corridor/Subarea Planning</td>
</tr>
<tr>
<td>Southeastern Regional Planning and Economic Development District (SRPEDD)</td>
<td>LRP, Programming, and Corridor/Subarea Planning</td>
</tr>
<tr>
<td>West Virginia Department of Transportation (WVDOT)</td>
<td>LRP, Programming, Corridor/Subarea Planning, and Environmental Review</td>
</tr>
<tr>
<td>Tennessee Department of Transportation (TDOT)</td>
<td>Corridor/Subarea Planning</td>
</tr>
</tbody>
</table>
Benefits

• Very flexible and adaptable
• Promotes and supports consistent, systematic and objective planning process
• Promotes and supports effective partnerships
• Increases understanding how to integrate emerging topics into planning decisions
• Useful educational tool
• Useful diagnostic tool
• Provides access to a wide range of topic specific resources
Limitations of the Product

• Need to keep content fresh particularly Applications and Reference links, e.g.:
  • Connected and Autonomous Vehicles
  • Mobility on Demand
  • Resilience
  • Bus Rapid Transit

• Additional support for using the tool
• Additional improvements to the technology
• More training available through the website
PlanWorks and Planning Process Bundle – Future

- **Keep Content up to date with through continued investment**
  - Emerging topics --- CAV, resiliency, mobility on demand
  - Update technology, resources

- **Marketing and Outreach**
  - Developing outreach plan with input from users
    - Peer-to-peer is to the most effective form to get people to listen
    - Continue to engage champions and actively find new ones
  - Communication Strategies
    - Webinars, conferences, videos

- **Core Messages**
  - Flexible, streamlined, educational, unbiased, and “Your Partner”
SHRP2 Implementation Grant Project:
PlanWorks: A Tool to Support Transportation Programming in Central Virginia

May 20, 2019

John Miller, Amy O’Leary, Rick Youngblood, VDOT
What We Did: Applied Two Planworks Decision Guides

Decision Guide

- Long Range Transportation Planning
- Programming
- Corridor Planning
- Environmental Review/NEPA
- Merged with Permitting

Campbell County
Lynchburg City
Main Goals of Corridor Planning

Identify specific projects that

- Have local support
- Can be built with available $
<table>
<thead>
<tr>
<th>COR-1</th>
<th>COR-2</th>
<th>COR-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approve Scope of Corridor Planning Process</td>
<td>Approve Problem Statements and Opportunities</td>
<td>Approve Goals for the Corridor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COR-4</th>
<th>COR-5</th>
<th>COR-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach Consensus on Scope of Environmental Review and Analysis</td>
<td>Approve Evaluation Criteria, Methods and Measures</td>
<td>Approve Range of Solution Sets</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COR-7</th>
<th>COR-8</th>
<th>COR-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adopt Preferred Solution Set</td>
<td>Approve Evaluation Criteria, Methods and Measures for Prioritization of Projects</td>
<td>Adopt Priorities for Implementation</td>
</tr>
</tbody>
</table>
Module 1. What is the Scope?

Actions
- Supervisors Briefing
- Public meeting

Answers
- Tangible improvements
- All participants
Module 5. Initial Evaluation Criteria

- PDO crashes
- Through delay
- Turning delay
- Safety
- Throughput
- Economic development
Module 6. Solution Sets

Example comments:

- Finish the bypass
- No right on red will cause backups.
- Straight line Lynbrook to English Tavern.
- Reroute traffic at Yangoon Street
- Add bike lanes

Not addressed:

- Economic development
- Throughput & safety

3rd Public Meeting Comments:

- Bike Lanes
- Bypass
- Congestion
- Congestion/Speed Limit
- Crossover
Module 9. Priorities

<table>
<thead>
<tr>
<th>Goal</th>
<th>Improvements</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughput &amp; Safety</td>
<td>Median closures Access realignments</td>
<td>$5.52 M</td>
</tr>
<tr>
<td>Economic Development</td>
<td>Add turn lanes Reduce speed limits</td>
<td>$4.96 M</td>
</tr>
<tr>
<td>Alternative travel</td>
<td>Sidewalks Shared use path</td>
<td>$8.95 M</td>
</tr>
</tbody>
</table>

A $32.7 million package for Smart Scale
Benefits

Longer turn lane needed here.

Longer turn lane needed onto Russell Woods.

This intersection will become congested.

Better coordination of land use and transportation. Transportation needs to anticipate development.

Like! Business develop, but needs to mesh better with traffic needs. Need frontage road?
Benefits

- Go slow to go fast
- Performance-based planning
- Corridor preservation focus
- Stakeholder assessments
Benefits

PlanWorks Element

The process steps are clearly stated/documentated
The collective goals are clearly stated and documented

<table>
<thead>
<tr>
<th>PlanWorks Element</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>The process steps are clearly stated/documentated</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The collective goals are clearly stated and documented</td>
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</tbody>
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Route 29 Corridor Assessment Public Workshop #3
October 27, 2016

Recap of where we’ve been and timeline for moving forward

January
- Public workshop #1 - Introduced the FHWA PlanWorks process for the Route 29 corridor.

February-March
- Developed and approved goals for the corridor.

April-June
- Performed background work on previous studies and existing corridor conditions.

June
- Public workshop #2 - Feedback on candidate solutions based on existing & forecasted corridor conditions.

July-September
- Developed and analyzed a range of solution sets based on corridor goals and performance measures.

Today
- Public workshop #3 - Seeking feedback on selecting a blended solution set package for the Route 29 corridor.

November-January
- Evaluate criteria, methods and measures for the prioritization of the selected solutions.
- Adopt priorities for implementation.
Limitation: Must Own the Product

- **COR-7**
  - Adopt Preferred Solution Set

- **COR-8**
  - Approve Evaluation Criteria, Methods and Measures for Prioritization of Projects

- **COR-9**
  - Adopt Priorities for Implementation

*Revise solution set based on additional information from setting priorities*
**Limitation: Must Agree on Vocabulary**

<table>
<thead>
<tr>
<th>ENV-5</th>
<th>ENV-6</th>
<th>ENV-7</th>
<th>ENV-8</th>
<th>ENV-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approve Evaluation Criteria, Methods and Measures</td>
<td>Approve Full Range of Alternatives</td>
<td>Approve Alternatives to be Carried Forward</td>
<td>Approve Draft EIS with Conceptual Mitigation</td>
<td>Approve Resource Agency Public Notice</td>
</tr>
</tbody>
</table>

---

Do evaluation criteria and measures reflect transportation, environmental, economic, and community outcomes? *(shortened)*

<table>
<thead>
<tr>
<th>Area</th>
<th>Evaluation Criteria</th>
<th>Measure</th>
<th>How chosen</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport</td>
<td>Delay</td>
<td>Seconds</td>
<td>As part of developing purpose and need</td>
<td>Choose an alt.</td>
</tr>
<tr>
<td>Environment</td>
<td>Parkland</td>
<td>Acres affected</td>
<td>Regulatory process (Section 4f/6f)</td>
<td>Mitigate the choice</td>
</tr>
</tbody>
</table>
Report

- PlanWorks Case Study: Route 29 Corridor Assessment, Campbell County.
  http://www.virginiadot.org/projects/resources/Lynchburg/Rt_29_Campbell_Co_Corridor_Assessment/PlanWorks_Case_Study_Route_29_Corridor_Assessment,_Campbell_County.pdf

Websites

  Funding Request for Smart Scale: https://smartportal.virginiahb2.org/#/public/applications/2020/hb2/view/F15-0000004534-R01

Participants in the Route 29 Corridor Assessment
- VDOT: Rick Youngblood, David Cook, Amy O'Leary, John Miller
- FHWA: Cheng Yan
- AECOM: Bill Cashman, Chris Lawrence, Shelley Bogue
- Region 2000: Bob White
- Campbell County: Paul Harvey
- UVA IEN: Judie Talbot, Tanya Denckla-Cobb, Leah Brumfeld
SHRP2 Implementation Grant Project:

Strengthening the Role of Performance Planning, Visioning, and Freight Planning in the Atlanta Region’s Planning Process

May 20, 2019

John Orr, ARC
Utilizing PlanWorks to Streamline and Improve Planning Processes

- **C02** - Performance Measures for Highway Capacity Decision-Making
- **CO8** - Transportation Visioning for Communities
- **C15** - Integrating Freight Considerations into Highway Capacity Planning Process
- Started in 2015; Completed in 2017
- 20 County Atlanta Region Area
- Partnership between MPO, GDOT, local governments and FHWA
PlanWorks Resources Assisted in Major Regional Plan/TIP Update

- **Visioning Guide - LRP-1 and LRP-2**
  Utilized the guide to help develop processes that updated regional vision, goals and policies in 2016.

- **Freight - LRP-2**
  Incorporated freight stakeholders into the planning processes via national best practices identified.

- **Project Prioritization - PRO-4**
  Outstanding PlanWorks processes for prioritization; used to inform a $400 million project solicitation

USE OF PLANWORKS APPLICATIONS AND TOOLS SUCCESSFULLY SUPPORTED A $400 MILLION TIP PROJECT SOLICITATION
Benefits Achieved: Improved Evaluation Measures for Transit

**Reliability** // On-time performance expectation based on MARTA’s current services by mode.

**Social Equity** // Population within 1/2 mile who are non-white or under the poverty line.

**Connectivity** // Number of connections between the project and existing high-frequency transit services.

**Compatibility** // Ratio of jobs and population within 1/2 mile.

**Efficiency** // Jobs and population within 1/2 mile of station areas divided by weekday service miles.

**Job Accessibility** // Built-in Conveyal measures weighted by total population and social equity factors.

**Sensitivity** // Intersections with culturally and environmentally sensitive land uses, weighted by project length.
## Benefits Achieved: PlanWorks Guided Updates to Roadway Capacity Evaluation Methods

<table>
<thead>
<tr>
<th>Vision</th>
<th>Criteria</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Class Infrastructure</td>
<td>Mobility/Congestion</td>
<td>1) Change in Congestion Intensity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Change in Congestion Extent</td>
</tr>
<tr>
<td></td>
<td>Reliability</td>
<td>Worst Travel Time Reliability</td>
</tr>
<tr>
<td></td>
<td>Network Connectivity</td>
<td>Connections to Other Facilities</td>
</tr>
<tr>
<td></td>
<td>Multimodalism</td>
<td>Multimodal Accommodations</td>
</tr>
<tr>
<td></td>
<td>Asset Management &amp; Resiliency</td>
<td>Facility Vulnerability&lt;sup&gt;19&lt;/sup&gt;</td>
</tr>
<tr>
<td>Healthy Livable Communities</td>
<td>Safety</td>
<td>Improved Safety</td>
</tr>
<tr>
<td></td>
<td>Air Quality &amp; Climate Change</td>
<td>1) Project’s Regional Emissions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Near Road Emissions Exposure</td>
</tr>
<tr>
<td></td>
<td>Cultural &amp; Environmental</td>
<td>Impact on Culturally and Environmentally Sensitive Land Uses</td>
</tr>
<tr>
<td></td>
<td>Resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social Equity</td>
<td>Addressing Social Equity</td>
</tr>
<tr>
<td></td>
<td>Land Use Compatibility</td>
<td>-</td>
</tr>
<tr>
<td>Competitive Economy</td>
<td>Goods Movement</td>
<td>Supporting the Freight Economy</td>
</tr>
<tr>
<td></td>
<td>Employment Accessibility</td>
<td>1) Supporting Regionally Significant Locations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Employment Accessibility</td>
</tr>
</tbody>
</table>

## Benefits Achieved: Including Freight Considerations in Project Evaluation

<table>
<thead>
<tr>
<th>Measure</th>
<th>Metric</th>
<th>Nature of Metric</th>
<th>Sponsor Provided</th>
<th>Percent of Criterion Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Heavy Truck Accessibility</td>
<td>Does the project reconstruct load-limited bridges to improve freight movement?</td>
<td>Yes/No</td>
<td>Yes</td>
<td>50%</td>
</tr>
<tr>
<td>2) Regional Freight Significance</td>
<td>Does the project improve the movement of freight and is it located on ARC’s regional freight system (ASTRoMaP), GDOT’s Statewide Designated Freight Corridors or the FHWA National Highway Freight Network (NHFN)?</td>
<td>Yes/No</td>
<td>No</td>
<td>50%</td>
</tr>
</tbody>
</table>

Product Limits/Observations...

- A user must invest some time to learn how to navigate the website efficiently
- Visioning modules should be updated – in the future - to reflect some of the latest trends in scenario planning
- On-going maintenance of PlanWorks will be required to reflect the evolution of performance-based planning principles
C19 Expedited Project Delivery

SME – David Williams, FHWA
Testimonial – Steven Braun, FDOT
Product Benefits

- Better projects & outcomes
- Improved relationships
- Enable a wholistic look at process
- Save time and reduce project delays.

Product limitation is its board focus

Currently marketing strategies & Tools
Expediting Project Delivery (C-19)

Steven C. Braun, PE
District Design Engineer
Florida Department of Transportation
I. Existing FDOT Streamlining Processes
II. Value Engineering PD&E Process Review
III. SHRP-2 Project Approach and Recommendations
IV. Statewide Initiatives

*PD&E: “Project Development & Environment” = NEPA Phase
Foundation of Streamlining Initiatives

Efficient Transportation Decision Making (ETDM)
- Established in 2006
  - MAP-21: “Environmental Streamlining”
- GIS Based Program
- Agency Coordination
  - Environmental Technical Advisory Team
- Screening Events
  - Planning
  - Programming

The Benefits
- Early coordination with local, state, and federal partners
- Identify potential impacts within/adjacent to corridor
- Receive public comments early in the process
- Screen alternatives
- Focus on key issues
- Better define project scope
Background

“Value Engineering” Process Review

- Evaluate **processes** (not projects)
- Multi-disciplined team structure
- “Think Tank” with buy-in from management
- Identify recommendations for implementation
- PD&E, R/W, Pond Siting, Safety, Lane Elimination Processes

**The Benefits**
- Process Improvements
- Inter-office & industry input
- Identify system constraints and develop working solutions
- PD&E Process Review: 16 recommendations developed for further consideration
**V.E. Recommendation No.5: Allow more preliminary engineering**

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expedite PD&amp;E and Design projects</td>
<td>Conduct Pre-work activities in advance of the PD&amp;E Study</td>
</tr>
<tr>
<td></td>
<td>Advance Preliminary Design to overlap PD&amp;E</td>
</tr>
<tr>
<td></td>
<td>Continuity of PD&amp;E and Design Project Manager</td>
</tr>
</tbody>
</table>
## D4 VE Recommendations

### V.E. Recommendation No.7: Early identification and consideration of environmental risks

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimize changes during the Design phase</td>
<td>Early identification of risk (early stages of PD&amp;E).</td>
</tr>
<tr>
<td>Minimize changes during the Design phase</td>
<td>Identify and account for potential environmental impacts during the alternatives evaluation process.</td>
</tr>
<tr>
<td>Minimize changes during the Design phase</td>
<td>Standardize the environmental element of the alternative selection matrix.</td>
</tr>
<tr>
<td>Minimize changes during the Design phase</td>
<td>Quantify environmental impacts due to design changes.</td>
</tr>
</tbody>
</table>
Why apply for the SHRP2 Assistance?

• Assist with the implementation of VE recommendations
• Identify additional strategies
  • Accelerating project schedules
  • Reducing delay by early identification of issues
Project Approach

SHRP2 Award from FHWA

Determine Implementation Strategies for VE Recommendations

Focus on Constraints Identified by FHWA (C-19 Report)

Held Assessment Workshops (2)
(FHWA, FDOT and Resource Agencies)
Project Recommendations

- Early Identification of Issues & Funding Needs

- Advancement of “Pre-work” (Survey, Traffic, Environmental)
  - Advance key activities
    (Survey, Traffic, Environmental, Public Involvement)
  - Scope Report & Scope Development Meeting
  - Improved Scope and Purpose & Need
  - Utilization of Technical Support Contracts
  - Streamlined Schedule Templates
Project Recommendations (Pre-work)

More Efficient Work Processes

PD&E

PD&E

LDCA

Design

R/W

R/W

Production

Production

Pre-work

Traffic Data Collection & Projections
Environmental Data & Coordination
Survey & Aerials
Stakeholder Outreach

Project Screening & Scoping Meeting

LDCA

R/W Review
Project Recommendations

- NEPA Documents
  - Developed “Check-lists” for Document Reviews
  - Consolidation of Environmental Documents

- Project Continuity
  - Overlap PD&E and Design Schedules
  - Continuity of Project Manager
  - Options for single consultant contract for PD&E and Design

- Contributed to Statewide Initiatives
  - State-wide Acceleration Transformation (SWAT)
Statewide Initiatives

State-wide Acceleration Transformation (SWAT)

- Formed Statewide & District SWAT Teams
- SWAT Planning Meeting
  - Scopes / Schedules / Strategies / Funding
- Standard practice of conducting “pre-work”
- Standard staff hour estimates
- Interagency Agreements
  - Interchange Access Process (FHWA)
  - NEPA Assignment (FHWA)
  - Historic Resources (SHPO)
  - ETDM Updated Agreement
Statewide Initiatives

**SWAT Dashboard**

- **Statewide Schedule Milestones**
- **Executive Dashboard Tracking**
- The dashboard is updated and reviewed regularly at Executive Meetings
- The dashboard tracks time from PD&E Advertisement to Production Date
NEPA Assignment

- FHWA assigned NEPA responsibilities to FDOT via MOU (December 2016)
- FDOT replaced FHWA as the lead agency for highway projects
- Developed SWEPT (Statewide Environmental Project Tracker)

- Initial results are meeting or exceeding the anticipated 25% reduction in time

- FHWA Audits
  - 13 successful practices (2017)
  - 11 successful practices (2018)
Statewide Initiatives

Enhancements since Self-Assessment / Audit

• Commitment tracker module with companion statewide training
• Internal monitoring reports developed for management
• Scope of Services Tool
• New Project File and Records Management chapter in the PD&E Manual
• Form modifications for Planning Consistency & Essential Fish Habitat (EFH) considerations
• Expanding inventory of computer based training
FDOT Expedited Project Delivery Timeline

- **2013**
  - Jan to Mar: FDOT D4 VE Study of PD&E Process and SHRP2/C-19 Application Submittal
  - Apr to Jun: PD&E Manual Updates and CO Statwide PD&E Training

- **2014**
  - Apr to Jun: SHRP2/C-19 FHWA Kick-off Meeting and Assessment Workshops
  - Jul to Sep: SHRP2/C-19 FDOT D4 Product Development

- **2015**
  - Jul to Sep: SWAT Quick Guide
  - Oct to Dec: FDOT D4 Streamlining Schedule and Final Summary Report to FHWA

**D4 Activities**  **CO Activities**  **D4 Product Development**
Shared Recommendations

ACCELERATING PRE-CONSTRUCTION PROJECT DELIVERY
Planning - Environmental (NEPA) - Design

January 2017
Presented By:
Scott Peterson, PE
Florida Department of Transportation
Joshua Salazar, PE
HDR

ACCELERATING PRE-CONSTRUCTION PROJECT DELIVERY
Planning - Environmental (NEPA) - Design

About the Improved Process
APPLICABLE TO 90% of FDOT DISTRICT 4 PD&E Projects
PROJECTS ARE MONITORED AT EXECUTIVE LEVEL and compared against baseline of pre-SWAT project schedules
FDOT GOAL: AVERAGE MONTHS TO 30% PLANS: Reduced Project Delivery Time 49 vs 19 Projects since 2015

Process Comparison
TRADITIONAL PROCESS

IMPROVED PROCESS

New Strategies
1. Maximize number of Projects Using State Funds Only
2. Overlap the PD&E and Design Schedules
3. More Contractual Options for PD&E and Final Design
4. Designate a Single Project Manager for Both PD&E and Final Design Phases
5. Perform Pre-Work In Advance Of PD&E Study Commencement
6. Streamline the PD&E and Design Schedule Templates
7. Perform a Value Engineering Study on the Right of Way Acquisition Process
8. Hold Pre-Scoping Meeting Workshops for PD&E Projects
9. Create a PD&E QA/QC Checklist for Final Documents
10. Standardize Format for PD&E Project Progress Reports
11. Hold In-Person Regional Training Conferences for FDOT Staff and Consultants
12. Improve the Public Involvement Program (PIP) Template
13. Simplify and Combine PD&E Documents
14. Create PD&E Staffing Hour Guideline Spreadsheet and Estimation Form
15. Hold a SWAT Team Kickoff Meeting for All New PD&E Projects
Eco-Logical

SME – David Williams, FHWA
Testimonial – Eric Ham, Maine DOT
C06 Eco-Logical

- Eco-Logical is a 9-step Landscape scale approach to Transportation project development

- Implemented Eco-Logical using 6 Strategies to improve the state of the practice

- Benefits include expediting project delivery, improving partnerships, and achieving better environmental outcomes.
Limitations include additional support and the slow rate of reporting on quantifiable results.

Currently integrating Eco-Logical into programs and initiatives, engaging agency and partner leadership.
Eco-Logical Testimonial Maine DOT
Eric Ham
Field Services Division Manager
SHRP2 Implementing Eco-Logical Problems

- Completing 8% of ESA consultations on time
- Project scoping and budgets were resulting in project delivery issues
- Lack of trust and predictability in the process
### SHRP2 Implementing Eco-Logical

<table>
<thead>
<tr>
<th></th>
<th>Consistency Reviews processed under MAP</th>
<th>Individual Consultations</th>
<th>% Consistent with the MAP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2017</strong></td>
<td>23</td>
<td>9</td>
<td>72</td>
</tr>
<tr>
<td><strong>2018</strong></td>
<td>36</td>
<td>3</td>
<td>92</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>NLAA Review</th>
<th>LAA Review</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-MAP</strong></td>
<td>~ 120 days</td>
<td>~ 240 days</td>
</tr>
<tr>
<td><strong>Processing Goal</strong></td>
<td>14 days</td>
<td>30 days</td>
</tr>
<tr>
<td><strong>2017 Average Consistency Review</strong></td>
<td>3 days</td>
<td>7 days</td>
</tr>
<tr>
<td><strong>2018 Average Consistency Review</strong></td>
<td>2.77 days</td>
<td>4.3 days</td>
</tr>
</tbody>
</table>
• Develop programmatic consultation for project effects on Atlantic salmon and their critical habitat
• Develop In Lieu Fee Program for effects to Atlantic salmon and their critical habitat
• Develop support tool for MaineDOT planning - TrappD
The **Maine Atlantic Salmon Programmatic Agreement**

Programmatic Biological Assessment for Transportation Projects for the Gulf of Maine Distinct Population Segment of Atlantic Salmon and Designated Critical Habitat

U.S. Fish and Wildlife Service Jurisdiction

June 2016

Submitted by:
- Maine Department of Transportation
- Federal Highway Administration
- US Army Corps of Engineers

Blood, Sweat, and Tiers
January 23, 2017

The MAP

• Cover as many projects as possible
• Maximize predictability of process timing and avoidance and minimization measures incorporated into projects
### The MAP

<table>
<thead>
<tr>
<th>Activity</th>
<th>Before MAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document length</td>
<td>50-100 pages</td>
</tr>
<tr>
<td>Biologist preparation</td>
<td>40-80 hours</td>
</tr>
<tr>
<td>USFWS Review</td>
<td>26 weeks average</td>
</tr>
<tr>
<td>Consultations completed ‘on time’</td>
<td>8%</td>
</tr>
</tbody>
</table>
The MAP – 5 years of projects

<table>
<thead>
<tr>
<th>Activity</th>
<th>Before MAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document length</td>
<td>50-100 pages</td>
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<td>Consultations completed ‘on time’</td>
<td>8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stream Crossing Replacements:</td>
<td>--</td>
</tr>
<tr>
<td>Culverts (Spans ≤20 feet)</td>
<td>50</td>
</tr>
<tr>
<td>Bridges (Spans &gt; 20 feet)</td>
<td>45</td>
</tr>
<tr>
<td>Bridge and Culvert Removal</td>
<td>3</td>
</tr>
<tr>
<td>Scour Countermeasures</td>
<td>15</td>
</tr>
<tr>
<td>Culvert End Resets and Extensions</td>
<td>50</td>
</tr>
<tr>
<td>Bridge Maintenance</td>
<td>16</td>
</tr>
<tr>
<td>Temporary Work Access and Temporary Bridges</td>
<td>15*</td>
</tr>
<tr>
<td>Invert Line and Slipline Culvert Rehabilitation</td>
<td>15</td>
</tr>
<tr>
<td>Pre-project Geotechnical Drilling</td>
<td>15*</td>
</tr>
<tr>
<td>ESTIMATED TOTAL</td>
<td>194*</td>
</tr>
</tbody>
</table>
The MAP

• Developed the Biological Assessment
  - Re written 3 times over ~2 years
  - MaineDOT Staff, FHWA staff (division and resource center) and consultant help.
  - FHWA also assisted with a mediation session

• Developed the Biological opinion (BO)
  - USFWS understaffed- FHWA staff lead with MaineDOT staff assistance in drafting the BO for the USFWS over ~ 6 months
Exceeding Expectations

- USFWS Recovery Champions
- FHWA Administrator’s Awards
- Inclusion into the ESA recovery plan for ATS
- Statistics speak for themselves
- Adapting as needed to be flexible in project inclusion
- Model for a similar process for other agencies
• Transportation Risk Assessment for Project Planning and Delivery
• Automate use of existing resource information to develop project scopes and schedules
• Begin to develop tools that incorporate elements of climate change (sea level rise and increased storm frequency/intensity)
MaineDOT programs select candidate projects (June-August)

Asset managers determine preliminary scope of work (June-August)

List of possible candidates reviewed by ENV (August-September)

Resource agency comments on scope & desired outcomes to MaineDOT’ ENV (October)

Place projects into workplan (January)

Adjust Resource Allocations (December)

Scope information communicated to planning

Applying TrappD
The concept of integration of information into decision making at the scoping level has been successful.

TrappD will be mostly available this year.

- Some elements have been available to folks creating the workplan.

Bidding environment make it challenging to tease out effect on project delivery.
In Lieu Fee

• Concept derived while developing the MAP
• MaineDOT contracted with the Conservation Fund to develop the Atlantic Salmon Restoration and Conservation Program (ASRCP)
ASRCP- Future Tweaks

• The program became active in September of 2019.
• To date, there have been no contributions to the program.
• Fee structure make its use not economical.
Lunch – Set Up Outside Room
12:45 – 2:00 pm
Breakouts – Small Group Discussions

- Small Group Discussions
- Report Out
Small Group Discussion Directions

- Participants should break into 4 groups
- Each group will have a dedicated table facilitator
- Table facilitators:
  - Mara Campbell
  - Brooke Jordan
  - Jenn Smoker
  - Luisa Paiewonsky
  - Alex Oster
- Each group will assign a recorder and reporter
  - Each recorder will document comments on a flip chart
  - Each reporter will summarize the discussion for the group during the report out
Small Group Discussion #1

• For potential future research efforts, we want to document what worked well and what could be improved.
  • Was the SHRP2 research program successful? If yes, why? If not, why not?
  • If you were going to document the key takeaways from the SHRP2 research program what would they be?
  • If we could launch this research program over again, what would you do differently?
Report Out Directions

- Each reporter will summarize key findings from their small group discussion for the group
Break

2:40 – 3:00 pm
Small Group Discussion #2

For potential future implementation efforts we want to document what worked well and what could be improved.

- Was the implementation of the SHRP2 research program successful? If yes, why? If not, why not?
- If you were going to document the key takeaways from the SHRP2 implementation efforts what would they be?
- From and implementation perspective, is there a need for any of these products to have greater national penetration? If so, which ones? How would you support that?
- Was the SHRP2 program easy to implement within your state? Was it well integrated into DOT/MPO decision making processes? Is it part of the way you do business?
- If we could launch this program over again, what would you do differently in terms of implementation?
Report Out Directions

- Each reporter will summarize key findings from their small group discussion for the group
Wrap Up

Matt Hardy, AASHTO
Wrap Up

• Thank you for engaging discussions reflecting on the SHRP2 capacity solutions products!
Capacity Solutions Retrospective Workshop
Park City, Utah
May 20 – 21, 2019
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am</td>
<td>Review Day #1 Meeting Outcomes</td>
</tr>
<tr>
<td>8:15 am</td>
<td>Meeting Objectives &amp; Purpose</td>
</tr>
<tr>
<td>8:30 am</td>
<td>Small Group Discussions</td>
</tr>
<tr>
<td>10:15 am</td>
<td><strong>BREAK</strong></td>
</tr>
<tr>
<td>10:45 am</td>
<td>Report Out</td>
</tr>
<tr>
<td>11:15 am</td>
<td>Overarching Connections</td>
</tr>
<tr>
<td>11:45 am</td>
<td>Morning Wrap Up</td>
</tr>
<tr>
<td>12:00 pm</td>
<td><strong>LUNCH</strong></td>
</tr>
</tbody>
</table>
Day #1 Meeting Outcomes

Research Themes

Implementation Themes
Day #2 Meeting Objectives

• To identify which capacity products that should be promoted for continued use

• Outline a strategy to support identified capacity products
  • Develop strategies
  • Identify supportive or sponsor organizations
  • Identify roles and responsibilities moving forward
Small Group Discussion #1
Participants will break into 4 groups and rotate to 4 topic stations:

• Economic Modeling
• Freight Data and Models
• Travel Demand Forecasting
• Decision-Making Support Tools
Small Group Discussion #1

Please consider the following questions at each station:

- What do we want to keep using?
- What else is needed (or is what we have good enough)?
- How do we accomplish this and ensure that the products are relevant?
- What are the recommended next steps?
Break

10:15 – 10:45 am
Report Out Directions

- Each reporter condense and consolidate the main themes of the discussion and will report on each one:
  - Economic Modeling
  - Freight Data and Models
  - Travel Demand Forecasting
  - Decision-Making Support Tools
Overarching Connections

- The group will work through products to illustrate connections between tools through the larger context of the planning process
Wrap Up

Matt Hardy, AASHTO
Gloria Shephard, FHWA
Neil Pedersen, TRB
Wrap Up

- Thank you for engaging discussions reflecting on the SHRP2 capacity solutions products!
- Safe travels if you are leaving today and have a wonderful Memorial Day Weekend!