Cape Cod Canal Transportation Study, Second Public Meeting.

Bourne, Plymouth, Sandwich, Wareham.

April 16, 2015
Agenda.

• Welcome and Introductions.
• Study Process & Framework.
• Study Framework: Goals and Objectives.
• Existing Conditions.
  • Natural and Cultural Resources,
  • Protected Environmental Areas,
  • Infrastructure,
  • Demographic Information,
  • Transportation (Traffic, Transit, Bikes, Pedestrians).
• Schedule/Next Steps.
Welcome and Introductions.

- **MassDOT:**
  - Ethan Britland – Project Manager,
  - Diane Madden – MassDOT Environmental,

- **US Army Corps of Engineers.**
  - Michael Walsh, P.E.

- **Study Team:**
  - Bill Reed, P.E., Principal in Charge (FST)
  - Ed Hollingshead, AICP - Team Project Manager (FST),
  - Michael Paiewonsky, AICP – Environmental Planner (FST),
  - Heather Ostertog, P.E. – Transportation Engineer (FST),
  - Ken Buckland, AICP – Public Involvement (Cecil Group)
Study Process & Framework.

- Step 1: Goals and Objectives, Evaluation Criteria, and Public Involvement Plan.

- **Step 2: Existing Conditions.**


- Step 4: Alternatives Analysis.

- Step 5: Recommendations.
Study Framework: Goals.

• To create/improve multimodal mobility in the Cape Cod Canal area.

• To establish an alternative or replacement crossing of the Cape Cod Canal to address the diminishing quality and reliability of year-round connectivity over the Cape Cod Canal, due to the aging Sagamore and Bourne Bridges.
Study Framework: Objectives.

• Create reliable multimodal connectivity and mobility levels such that the quality of life on Cape Cod is not diminished by unreliable connectivity across the Cape Cod Canal.

• Create a reliable multimodal connection across the Cape Cod Canal to maintain/enhance public safety in the event of the need for an emergency evacuation of portions of Cape Cod and to accommodate first responders accessing Cape Cod.

• Ensure that cross canal connectivity does not become a barrier to reliable intra-community connectivity for the Towns of Bourne and Sandwich.
Existing Conditions: Study’s Foundation.

- Recommendations
- Alternatives Analysis
- Future Conditions
- Existing Conditions
Existing Conditions Sets the Stage.

- Would an improvement cause an impact to:
  - natural resources?
  - cultural resources?
Existing Conditions Sets the Stage.

- What are the travel problems?
  - Where are the summer and non-summer travel demands?
  - Where are the congested locations?
  - Where are crash locations?
  - What is the extent of the multimodal options?
Are all congested locations equally important?

• Out of 37 locations analyzed only 18 have congested operations.

• Out of those 18 locations only 9 have operational problems year-round.
Existing Conditions.

- Natural and Cultural Resources.
- Protected Environmental Areas.
- Infrastructure.
- Demographic Information.
- Transportation (traffic, transit, bikes, and pedestrians).
Study Area.
MassGIS is the source for the information for the natural and cultural resources and infrastructure.
Wetlands & Waterways.
FEMA Flood Hazard Areas.

Source: FEMA Flood Map Service Center
FIRMs dated July 2012 & July 2014
Fisheries.
Rare & Endangered Species.
Historic Resources.
Residential Areas.
Protected Environmental Areas
Open Space.
Areas of Critical Environmental Concern.
Drinking Water Protection Areas.
Hazardous Materials.
Environmental Justice Communities.
Infrastructure
Railroad Lines.
Demographic Information

The US Census, American Community Survey, and the MA Department of Revenue are the sources of the demographic information.
Focus on Barnstable County.

**Population Change by Age**

- **55+ years**
  - 2013: 16.31%
  - 2005: 18.83%

- **20-54 years**
  - 2013: 18.83%
  - 2005: 15.34%

- **0-19 years**
  - 2013: 15.34%
  - 2005: 18.83%
Unemployment.

<table>
<thead>
<tr>
<th>Rate of Unemployment (2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnstable County</td>
</tr>
<tr>
<td>5.8%</td>
</tr>
<tr>
<td>Dukes County</td>
</tr>
<tr>
<td>7.0%</td>
</tr>
<tr>
<td>Statewide</td>
</tr>
<tr>
<td>5.1%</td>
</tr>
<tr>
<td>Nantucket County</td>
</tr>
<tr>
<td>5.3%</td>
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</tbody>
</table>
Journey to Work:
Percent of labor force who travel off-cape for work

<table>
<thead>
<tr>
<th>Mode of Travel</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Vehicle (alone)</td>
<td>80.4%</td>
</tr>
<tr>
<td>Carpool</td>
<td>8.4%</td>
</tr>
<tr>
<td>Public Transportation</td>
<td>1.7%</td>
</tr>
<tr>
<td>Walk</td>
<td>2.9%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>0.7%</td>
</tr>
<tr>
<td>Work at Home</td>
<td>5.1%</td>
</tr>
<tr>
<td>Other</td>
<td>0.8%</td>
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<table>
<thead>
<tr>
<th>Daily Worker Travel</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cape to Off-Cape</td>
<td>12,779</td>
<td>13.0%</td>
</tr>
<tr>
<td>Off-Cape to Cape</td>
<td>8,605</td>
<td>9.1%</td>
</tr>
<tr>
<td>Total</td>
<td>21,384</td>
<td>12.9%</td>
</tr>
</tbody>
</table>
Transportation.

• Traffic operations.

• Crashes.

• Multi-Modal (transit, bicycles and pedestrians).
Analysis of Traffic Operations.
Where should we collect data?
Travel Corridors.
TMC Locations.

37 Locations for AM Peak Hour, PM Peak Hour, Saturday Peak Hour
When should we collect traffic data?
Cape Cod has two traffic seasons: Summer and Non-summer
Sagamore Bridge.
Bourne Bridge.
How different are summer and non-summer traffic volumes?
August AM Peak Hour, (October AM Peak Hour)
August AM Peak Hour, (October AM Peak Hour)
August AM Peak Hour, (October AM Peak Hour)
August PM Peak Hour, (October PM Peak Hour)

2,600 (1,800)

2,200 (1,800)
Summer and Non-Summer Daily Traffic Volumes.

<table>
<thead>
<tr>
<th>Route 3</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Summer</td>
<td>51613</td>
<td></td>
</tr>
<tr>
<td>Non-Summer</td>
<td>38848</td>
<td></td>
</tr>
<tr>
<td>Change (%)</td>
<td>28%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Route 25</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>67734</td>
<td></td>
</tr>
<tr>
<td>Non-Summer</td>
<td>42648</td>
<td></td>
</tr>
<tr>
<td>Change (%)</td>
<td>45%</td>
<td></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Scenic Highway</th>
<th></th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Summer</td>
<td>38664</td>
<td></td>
</tr>
<tr>
<td>Non-Summer</td>
<td>22908</td>
<td></td>
</tr>
<tr>
<td>Change (%)</td>
<td>51%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Route 6</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Summer</td>
<td>78709</td>
<td></td>
</tr>
<tr>
<td>Non-Summer</td>
<td>41114</td>
<td></td>
</tr>
<tr>
<td>Change (%)</td>
<td>63%</td>
<td></td>
</tr>
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<table>
<thead>
<tr>
<th>Route 28</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>52145</td>
<td></td>
</tr>
<tr>
<td>Non-Summer</td>
<td>30000</td>
<td></td>
</tr>
<tr>
<td>Change (%)</td>
<td>54%</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sagamore Bridge</th>
<th></th>
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<tbody>
<tr>
<td>Summer</td>
<td>73371</td>
<td></td>
</tr>
<tr>
<td>Non-Summer</td>
<td>49837</td>
<td></td>
</tr>
<tr>
<td>Change (%)</td>
<td>38%</td>
<td></td>
</tr>
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</table>
Level of Service
Level of Service.

• Expression or ranking of traffic operations Report card LOS A – LOS F.

• Always based on peak hour traffic volumes. Peak hour traffic is the highest volume of the day.

• Never based on daily traffic volumes.
Types of Analysis.

- Intersection of Local streets:
  - Conflicting turning movements at unsignalized and signalized location.

- Operations within Rotaries:
  - Conflicting turning movements.

- Travel lanes on limited access roads:
  - Density of traffic inhibits freedom to maneuver.
Existing Traffic Operations.

- Summer and non-summer weekday AM, PM and Saturday peak hour intersection analysis.

- Summer and non-summer AM, PM and Saturday peak hour freeway analysis.

- Nearly 300 Analyzed Locations.
Focus on where are the problem locations?
TMC Locations.

Legend
- Town Boundary
- Map Enlargement Areas
- Turning Movement Count Locations

37 Locations for AM Peak Hour, PM Peak Hour, Saturday Peak Hour
Intersections with LOS E or F: Summer AM.
Intersections with LOS E or F: Non-Summer AM.
Intersections with LOS E or F: Summer PM.

15 of 37 Locations with LOS E or F for Summer PM

Legend

--- Town Boundary

Locations with LOS E or F
Intersections with LOS E or F: Non-Summer PM.

13 of 37 Locations with LOS E or F for Fall PM
Intersections with LOS E or F: Summer Weekend.
Intersections with LOS E or F: Non-Summer Weekend.
Year Round Problem Intersections
Crash Analysis Locations.
HSIP High Crash Analysis Locations.
### Cape Cod Commission – Cape Wide: Top 50 Crash Locations by # of Crashes

<table>
<thead>
<tr>
<th>CCC Rank</th>
<th>Location</th>
<th>High Crash</th>
<th>LOS E or F Year Round?</th>
<th>Town</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Bourne Rotary</td>
<td>Yes</td>
<td>Yes</td>
<td>Bourne</td>
</tr>
<tr>
<td>5</td>
<td>Otis Rotary</td>
<td>Yes</td>
<td>No</td>
<td>Bourne</td>
</tr>
<tr>
<td>6</td>
<td>Route 6 at Route 130</td>
<td>Yes</td>
<td>No</td>
<td>Sandwich</td>
</tr>
<tr>
<td>7</td>
<td>Route 6 at Exit 1A/1B</td>
<td>Yes</td>
<td>No</td>
<td>Bourne</td>
</tr>
<tr>
<td>9</td>
<td>Belmont Circle</td>
<td>Yes</td>
<td>Yes</td>
<td>Bourne</td>
</tr>
<tr>
<td>12</td>
<td>Route 28 at Route 151</td>
<td>Yes</td>
<td>No</td>
<td>Falmouth</td>
</tr>
<tr>
<td>22</td>
<td>Route 6 at Quaker Meeting House Road</td>
<td>Yes</td>
<td>No</td>
<td>Sandwich</td>
</tr>
<tr>
<td>42</td>
<td>Sandwich Road at Adams Street</td>
<td>Yes</td>
<td>Yes</td>
<td>Bourne</td>
</tr>
<tr>
<td>45</td>
<td>Route 6A at Cranberry Hwy/Sandwich Road</td>
<td>Yes</td>
<td>Yes</td>
<td>Bourne</td>
</tr>
<tr>
<td>46</td>
<td>Route 130 at Cotuit Road</td>
<td>Yes</td>
<td>Yes</td>
<td>Sandwich</td>
</tr>
</tbody>
</table>
Multi-Modal Transit, Bicycle and Pedestrian
The Bourne Run.

Bourne Run Map

The Bourne Run

CCRTA Fares | Adults and Youth | People 60 and older | People with disabilities**
---|---|---|---
One-way ride | $2 | $1
Day Pass | $6 | $3
31-Day Pass (Unlimited RIDES) | $60 | $30

- Exact fare only. Drivers will not make change.
- Children age five and younger, with an adult, ride free.
** Also, persons holding Medicare cards. Transit Access Passes for disabled persons available from the RTA 508-775-8504 Ext. 200.

- CCRTA buses have bike racks. Space is limited.
- Pets: service animals are welcome, but pets are not allowed unless in a secure carrier.
- CCRTA buses are accessible to people who use wheelchairs and others with limited mobility.
**The Sandwich Line**

**Sandwich Line Fares**

<table>
<thead>
<tr>
<th>CCRTA Fares</th>
<th>Adults and Youth</th>
<th>People 60 and older</th>
<th>People with disabilities**</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-way ride</td>
<td>$2</td>
<td>$1</td>
<td></td>
</tr>
<tr>
<td><strong>PASSES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day Pass</td>
<td>$6</td>
<td>$3</td>
<td></td>
</tr>
<tr>
<td>31-Day Pass</td>
<td>$60</td>
<td>$30</td>
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**CCRTA buses have bike racks. Space is limited.**

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- Exact fare only. Drivers will not make change.
- Children age five and younger, with an adult, ride free.
- Also, persons holding Medicare cards. Transit Access Passes for disabled persons available from the RTA 508-775-8504 Ext. 200.
Bus and Train Alternatives to Reach Cape Cod
Service Providers.

- MBTA & CCRTA/Cape Cod Flyer,
- Plymouth and Brockton, and
- Peter Pan.
Cape Flyer

- Ridership in 2013: May – October (Columbus Day) – 15,000.

Daily Average Ridership Crossing Bridge.
Park and Ride Lots.

15 Park and Ride Lots on the Cape and Just North of the Canal

- 377 Parking Spaces 90% Full
- 25 Parking Spaces 36% Full
- 35 Parking Spaces 71% Full
Bicycles and Pedestrians
Bicycle Facilities.
Bicycle Facilities.
Schedule and Next Steps
## Study Schedule

### TASK 1
- Study Area
- Goals/Objectives
- Evaluation Criteria
- Public Involvement Plan
- Working Group Meeting
- Public Meeting

### TASK 2 Existing Conditions, Future No-Build

#### Existing Conditions/Data Collection
- Traffic data/analysis summer and fall
- Crashes
- Land Use/Economic
- Environmental
- Public Health

#### Future Conditions/Model/Analysis
- Issues and Opportunities
- Constraints Identification
- Working Group Meeting
- Public Meeting
**Study Schedule.**

<table>
<thead>
<tr>
<th>TASK 3 Alternatives Development</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oct</td>
<td>Nov</td>
</tr>
<tr>
<td>Working Group Meeting</td>
<td></td>
<td></td>
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<tr>
<td>Public Meeting</td>
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<tr>
<th>TASK 4 Alternatives Analysis</th>
<th>2014</th>
<th>2015</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Oct</td>
<td>Nov</td>
</tr>
<tr>
<td>Mobility/Accessibility Analysis</td>
<td></td>
<td></td>
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<tr>
<td>Safety Analysis</td>
<td></td>
<td></td>
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<tr>
<td>Environmental Effects Analysis</td>
<td></td>
<td></td>
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<tr>
<td>Land Use/Economic Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Effects/TitleVI/EJ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost Analysis</td>
<td></td>
<td></td>
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<tr>
<td>Working Group Meeting</td>
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<tr>
<td>Public Meeting</td>
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<th>TASK 5 Recommendations</th>
<th>2014</th>
<th>2015</th>
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<tr>
<td></td>
<td>Oct</td>
<td>Nov</td>
</tr>
<tr>
<td>Draft report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Group Meeting</td>
<td></td>
<td></td>
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<tr>
<td>Public Meeting</td>
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<table>
<thead>
<tr>
<th>TASK 6 Final Report</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oct</td>
<td>Nov</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>
Next Steps.

• Project and analyze 2035 No-Build Traffic Volumes.

• Complete economic analysis.

• Begin consideration of improvement alternatives.
Comments and feedback can be emailed to Ethan Britland - ethan.britland@state.ma.us

Questions?
Where are drivers going and how do they get there?
BlueTOAD Locations.
BlueTOADS.
Summer Saturday Cape-Bound Routing.

- Route 3
  - Route 25
    - Route 28
      - Route 28
        - Route 6
          - 82% (21,000)
          - 59% (22,000)
          - 9% (2,100)
          - 35% (13,000)
Summer Sunday Off-Cape Routing.

- 6
- 28
- 3: 48% (18,000)
- 25: 48% (18,000)
- 3: 8% (1,800)
- 25: 86% (19,000)