

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 3: Future Conditions, Alternatives Development, and Issues Evaluation.
- Step 4: Alternatives Analysis.
- Step 5: Recommendations.

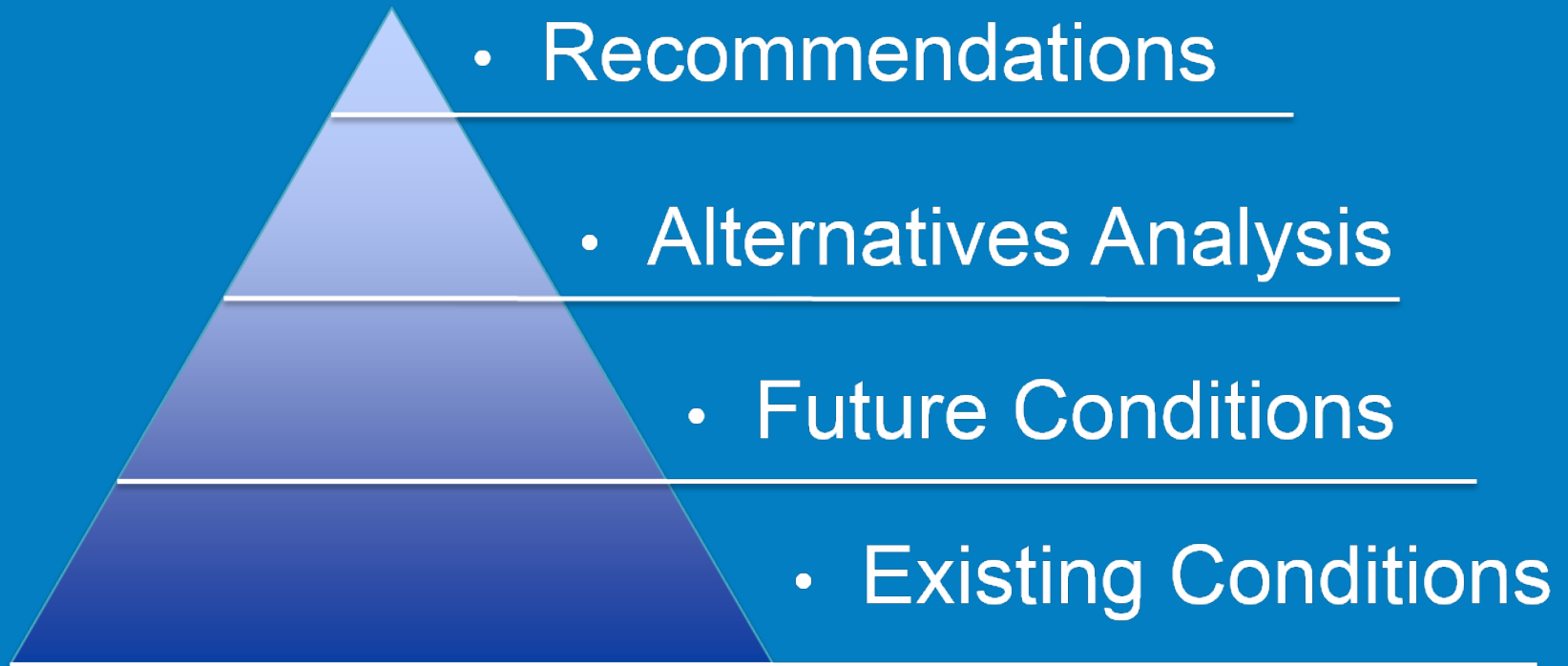
Study Framework: Goals.

- 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.

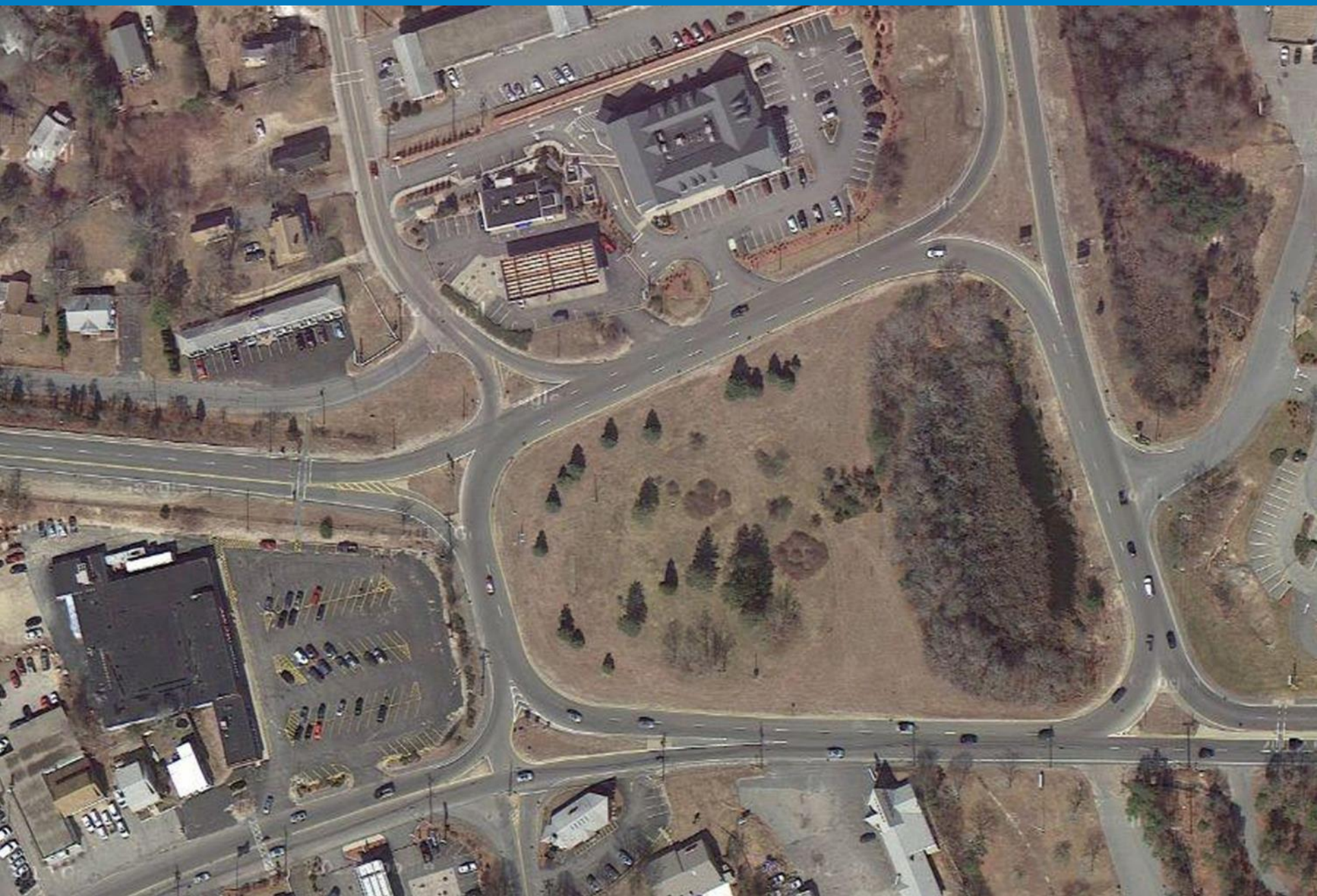
Existing Conditions: Study's Foundation.



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?

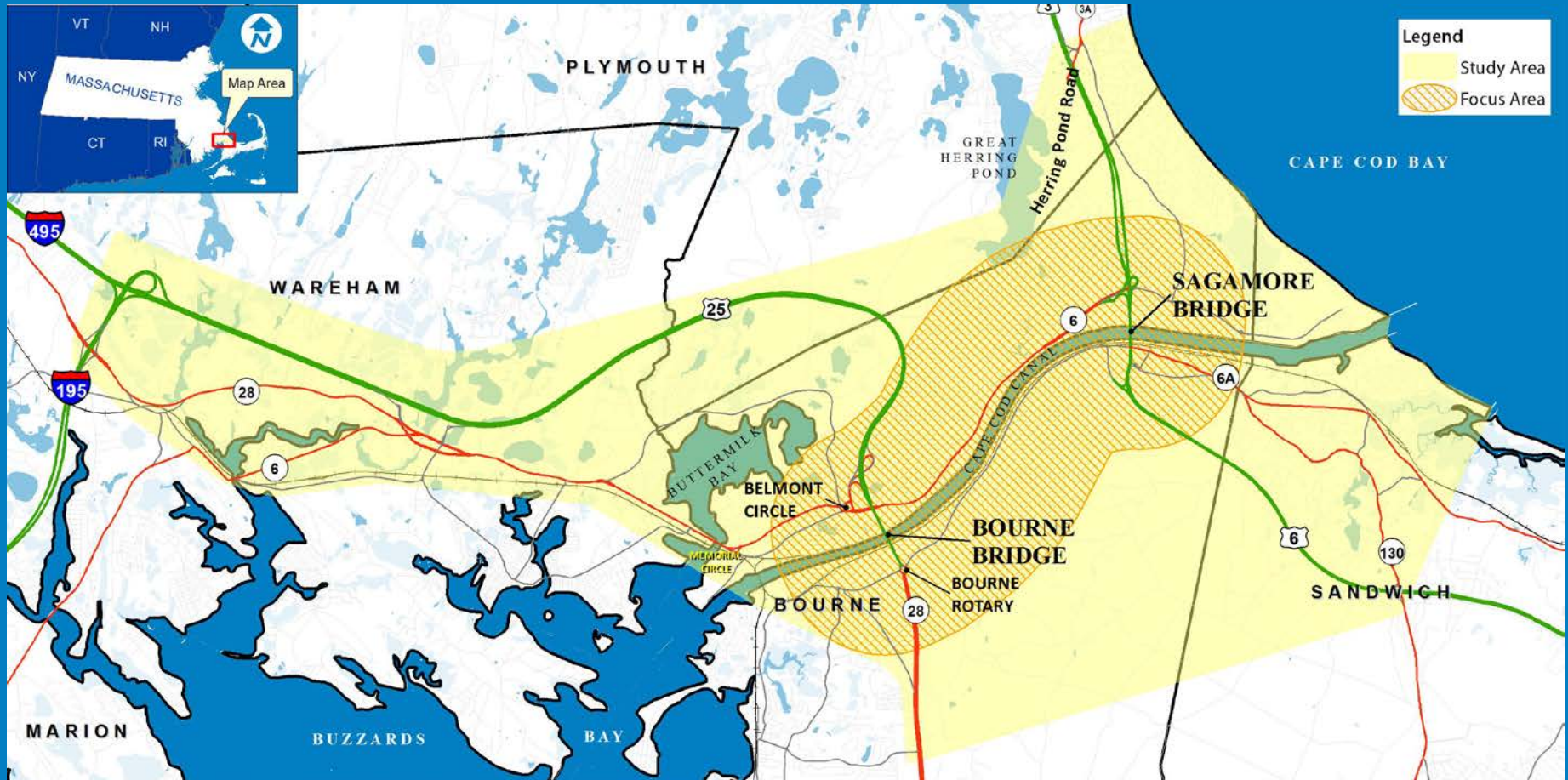
Are all congested locations equally important?

- 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.



Natural and Cultural Resources

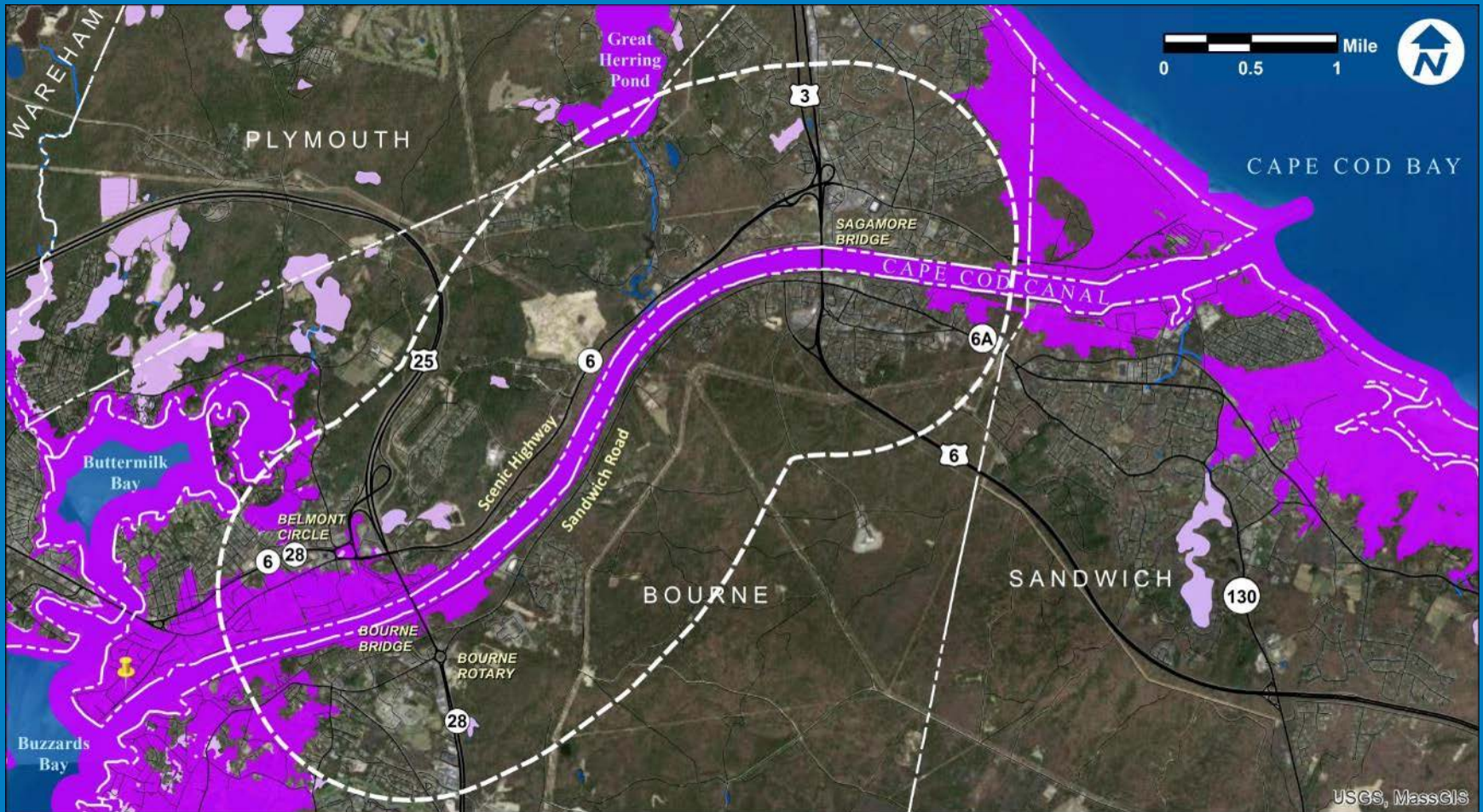
MassGIS is the source for the information for the natural and cultural resources and infrastructure.

Wetlands & Waterways.



- Perennial Stream
- Open Water
- MassDEP Wetlands
- ⏏ Focus Area

FEMA Flood Hazard Areas.



- Special Flood Hazard Area (100-yr)
- 0.2% Annual Chance Flood Hazard (500-yr)
- Focus Area

Source: FEMA Flood Map Service Center
FIRMs dated July 2012 & July 2014

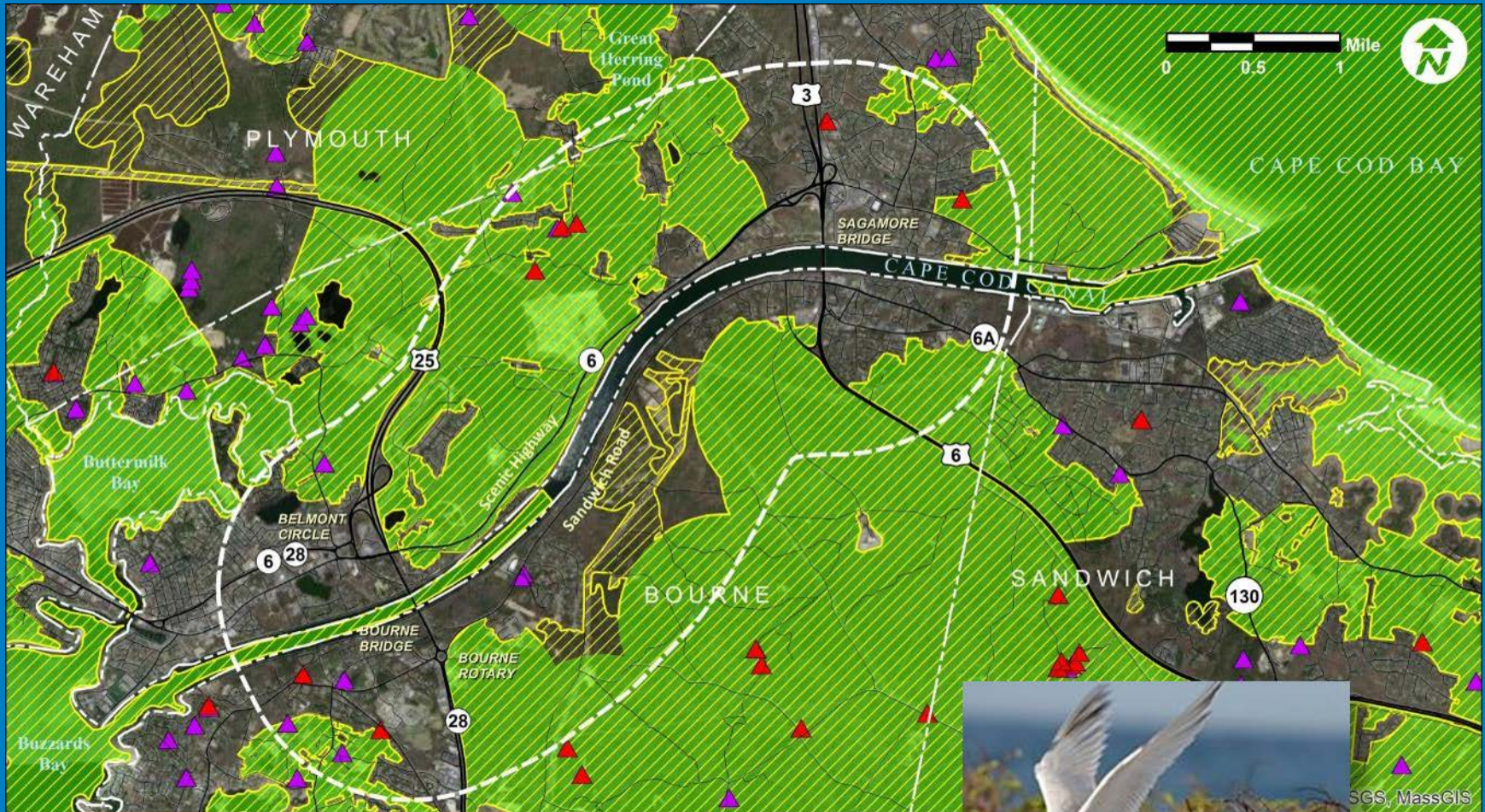
Fisheries.



USGS, MassGIS

- Anadromous Fish Presence
- Approved Shellfish Growing Area
- Conditionally Approved Shellfish Growing Area
- Prohibited Shellfish Growing Area
- Focus Area

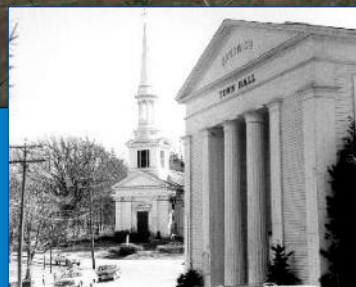
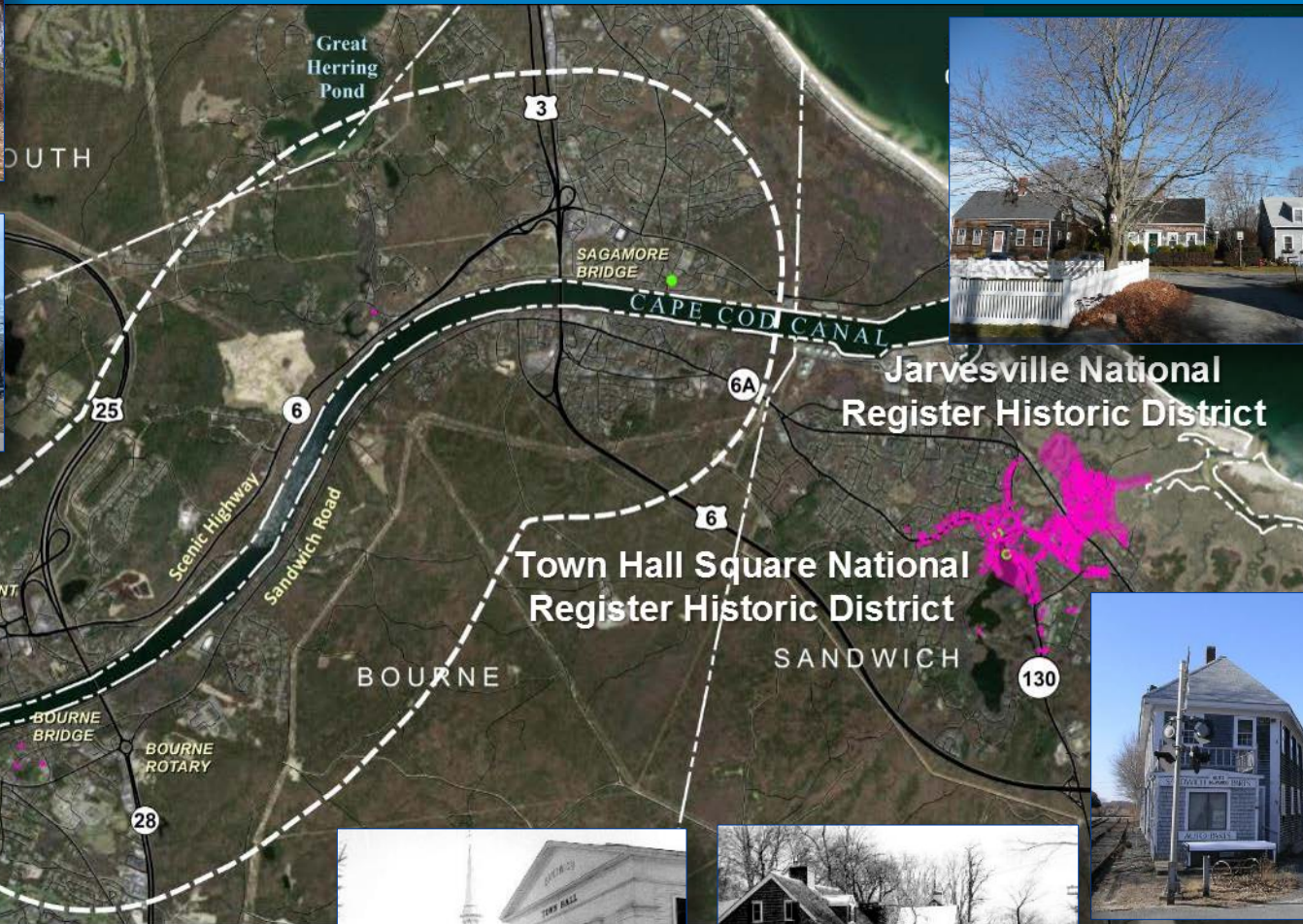
Rare & Endangered Species.



- ▲ NHESP Certified Vernal Pools
- ▲ NHESP Potential Vernal Pools: NOT equivalent to Certified Vernal Pools
- ▨ NHESP Priority Habitats of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- Focus Area



Historic Resources.



Historic Sites

- National Designation
- Preservation Restriction

Historic Areas

- National Designation
- Focus Area

Historic Resources.



Historic Sites

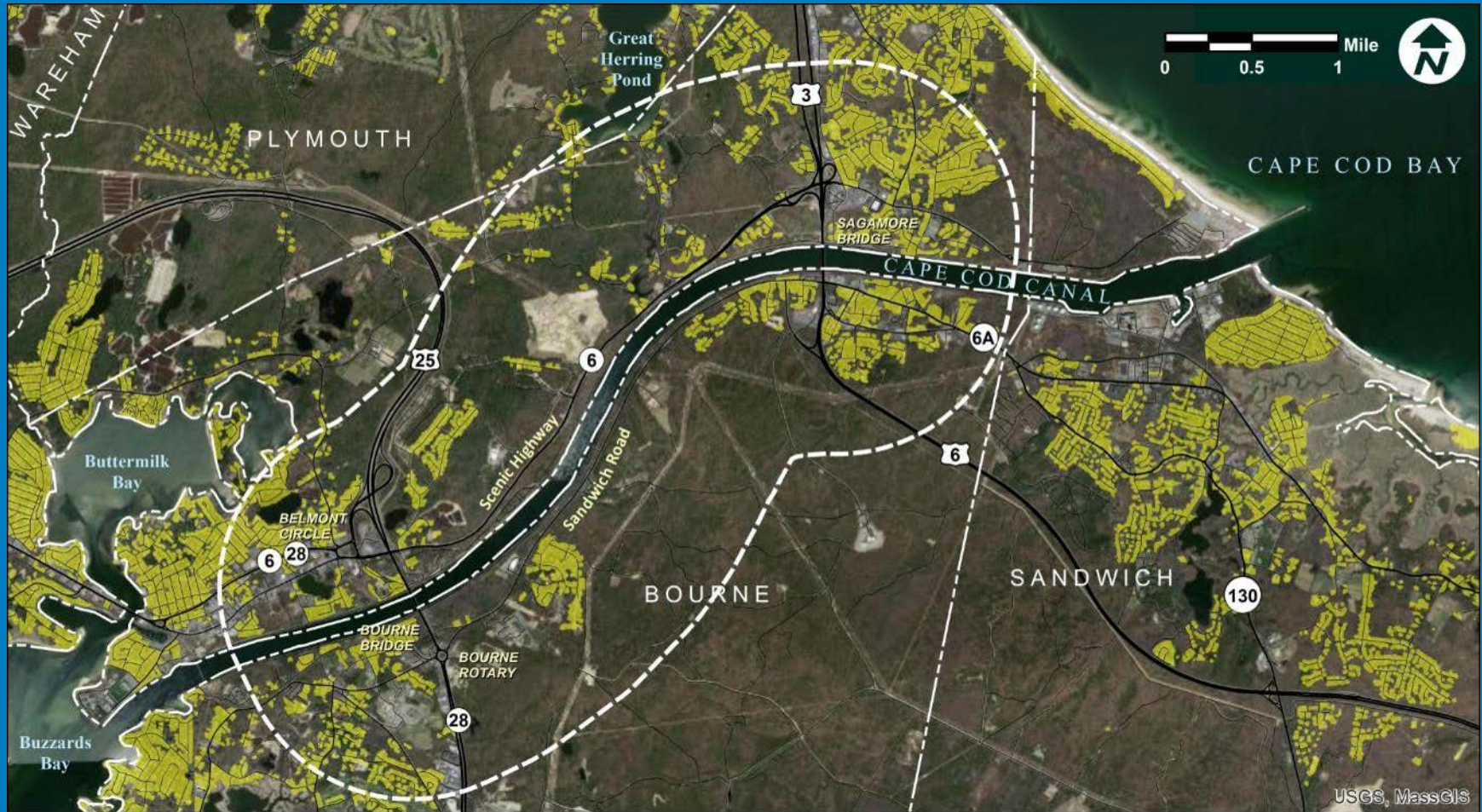
- National Designation
- Local Designation
- Preservation Restriction
- MHC Inventory Point (No Designation)

Historic Areas

- National Designation
- Local Designation
- MHC Inventoried Area (No Designation)
- Focus Area



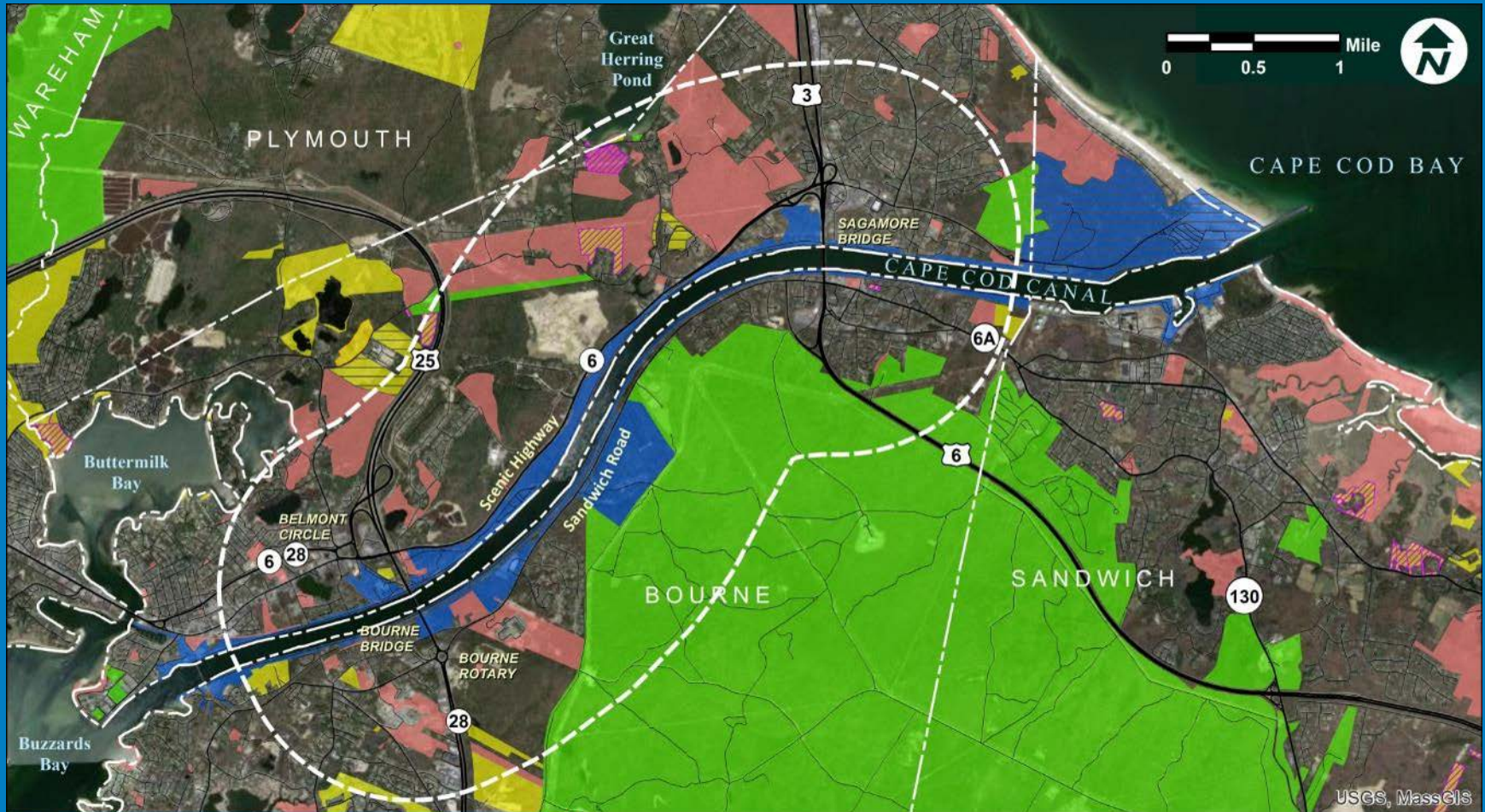
Residential Areas.



- Residential Areas (2005 Land Use Data)
- Focus Area

Protected Environmental Areas

Open Space.

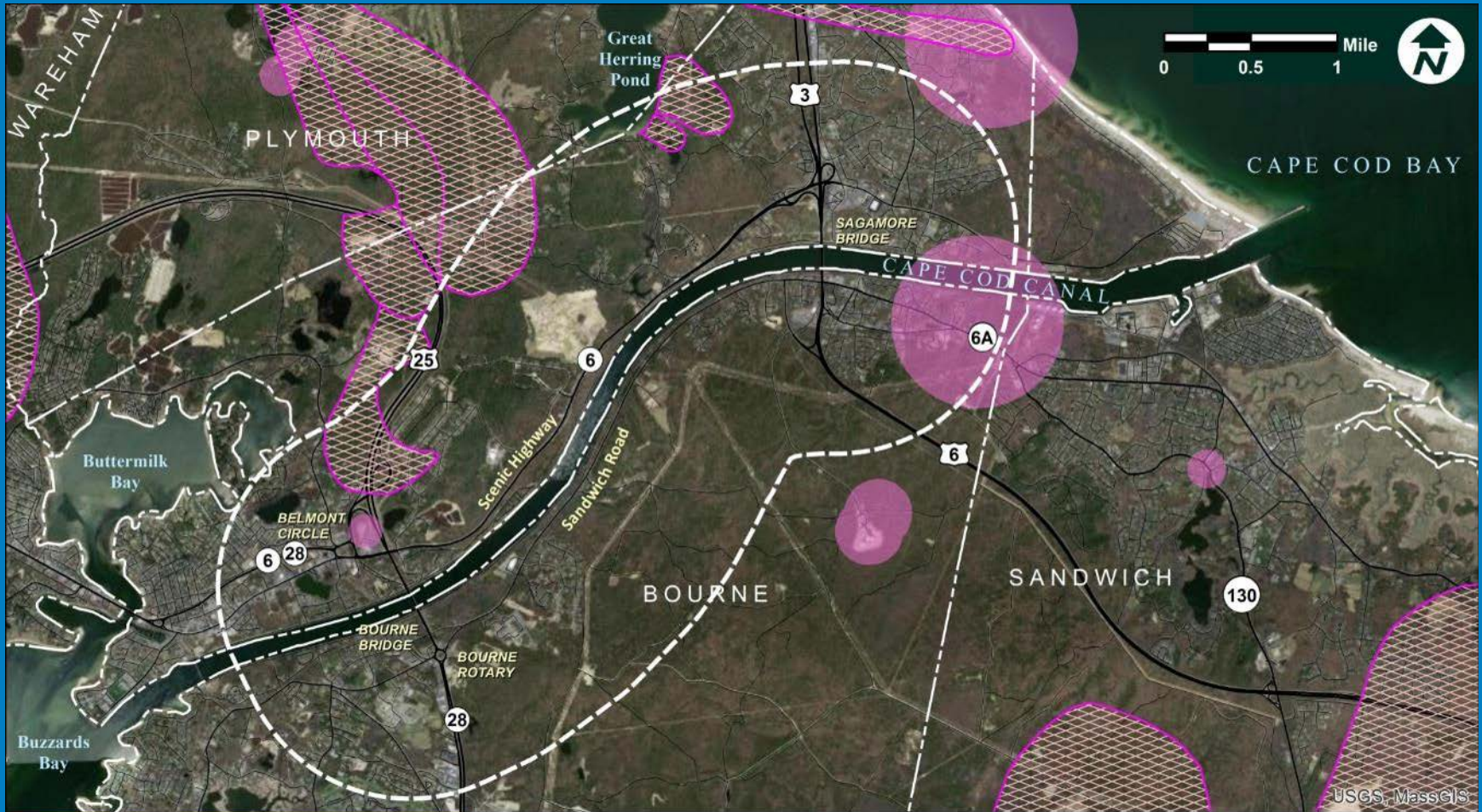


- Federal
- State (DCR/DFG)
- Municipal
- Private/Non-Profit
- Conservation Restriction
- Agricultural Preservation Restriction
- Other Legal Interest
- Focus Area

Areas of Critical Environmental Concern.

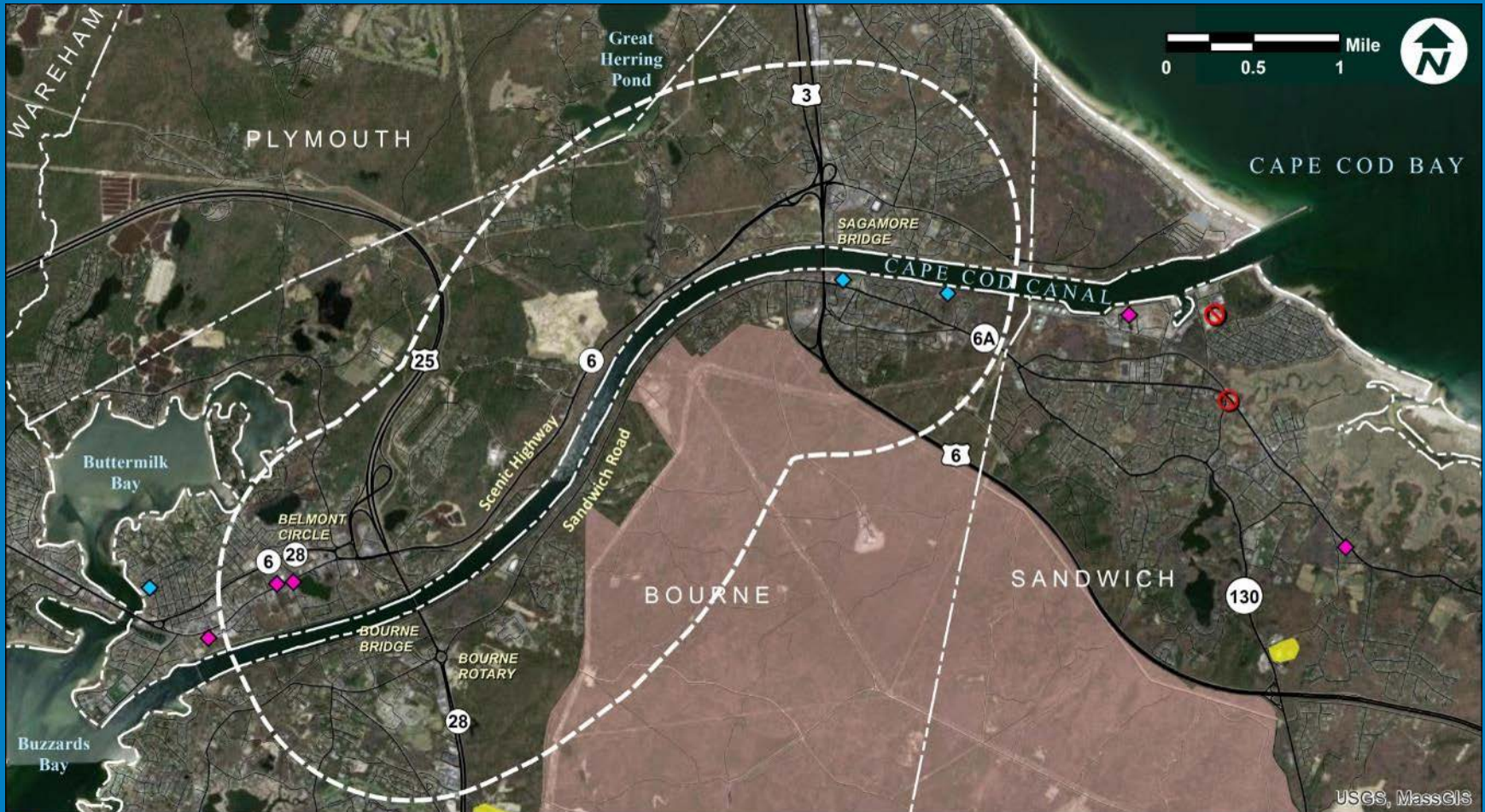








Drinking Water Protection Areas.



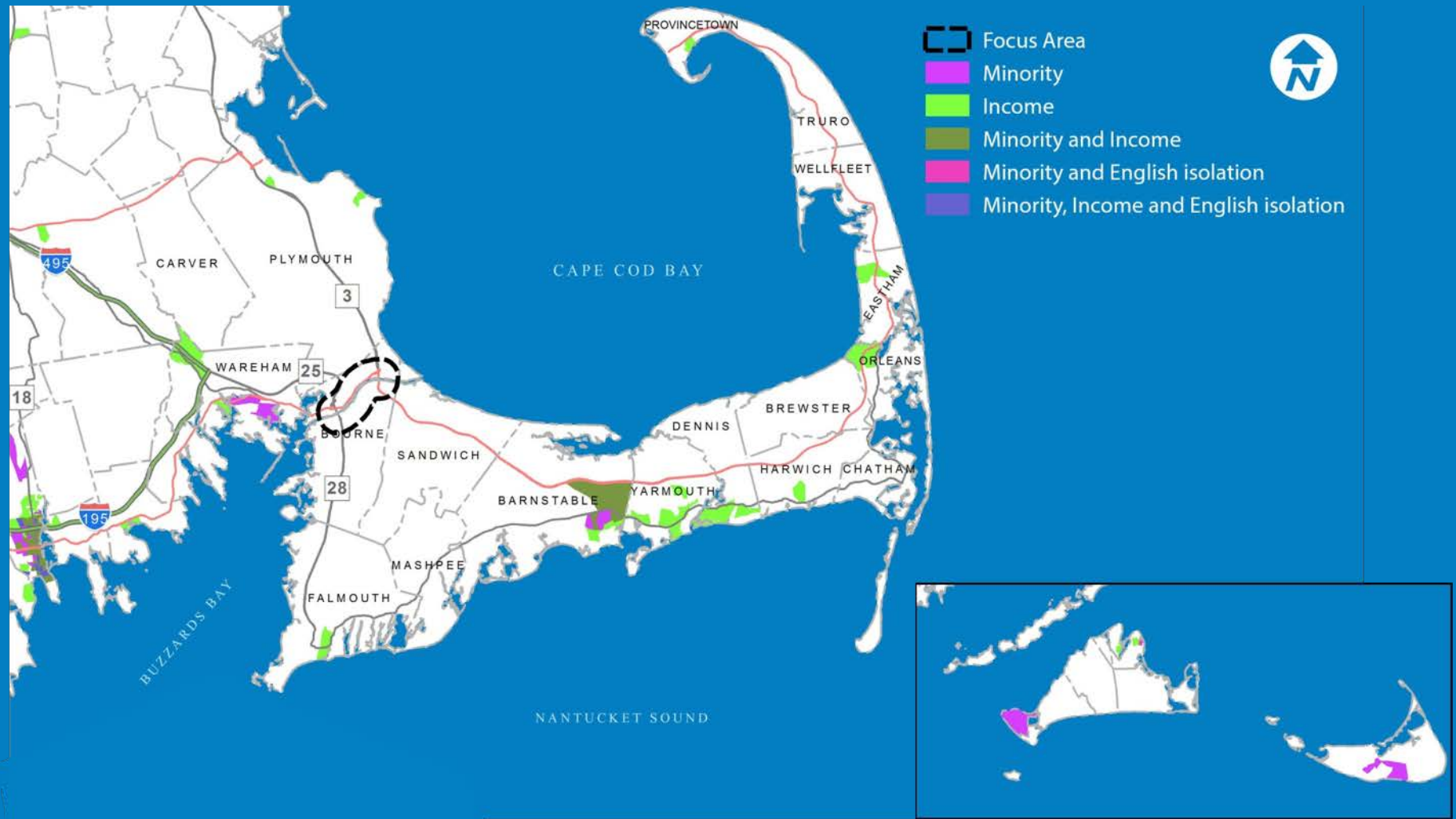
-  DEP Approved Zone IIs
-  Interim Wellhead Protection Areas (IWPAs)
-  Focus Area

Hazardous Materials.



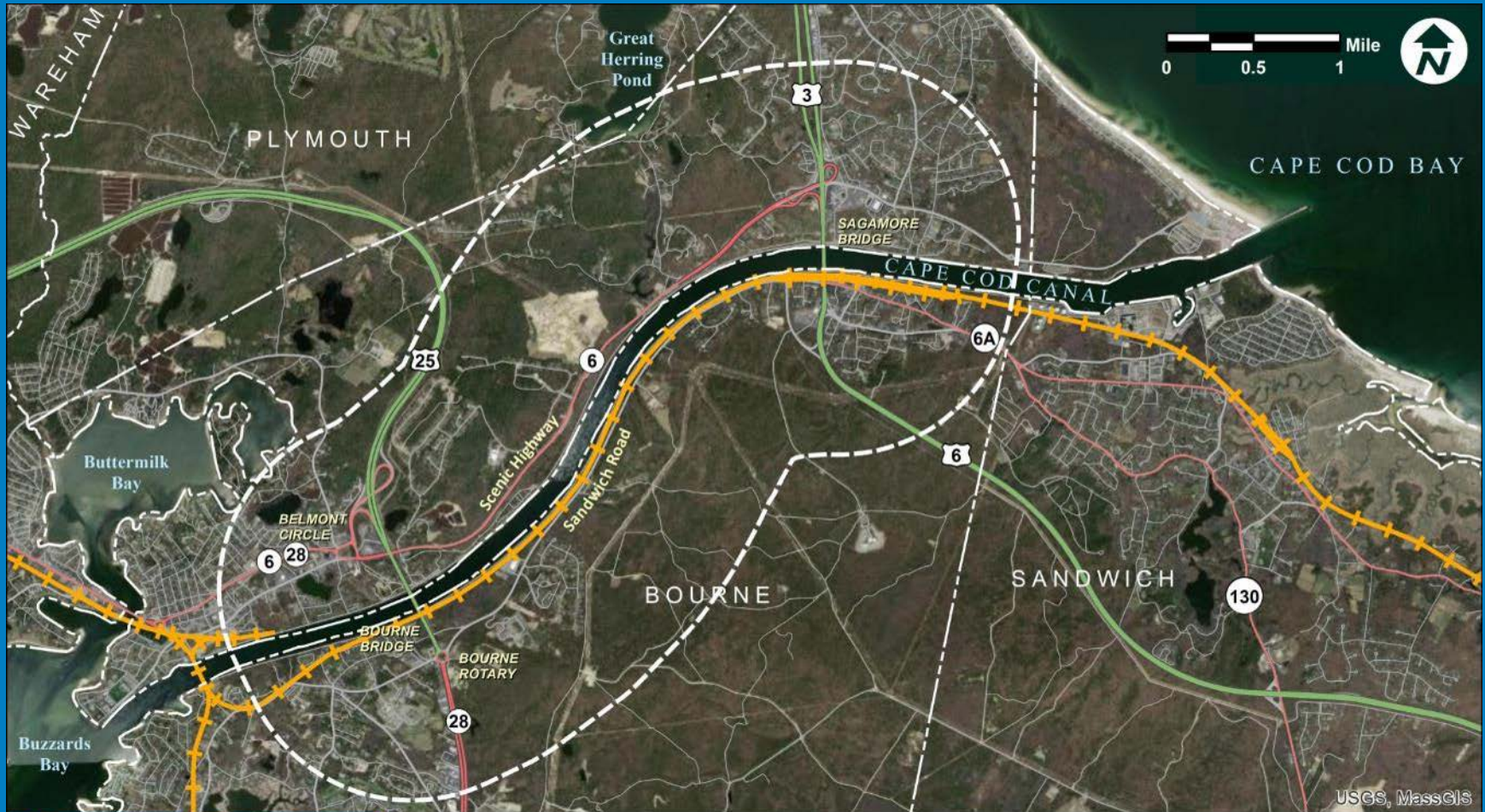
-  AUL Sites
-  BWP Land Disposal Sites (Landfill)
-  MA Military Reservation (JBCC) Superfund Site
- MassDEP Active Chapter 21E Sites**
-  TIER II
-  TIER1D
-  Focus Area

Environmental Justice Communities.



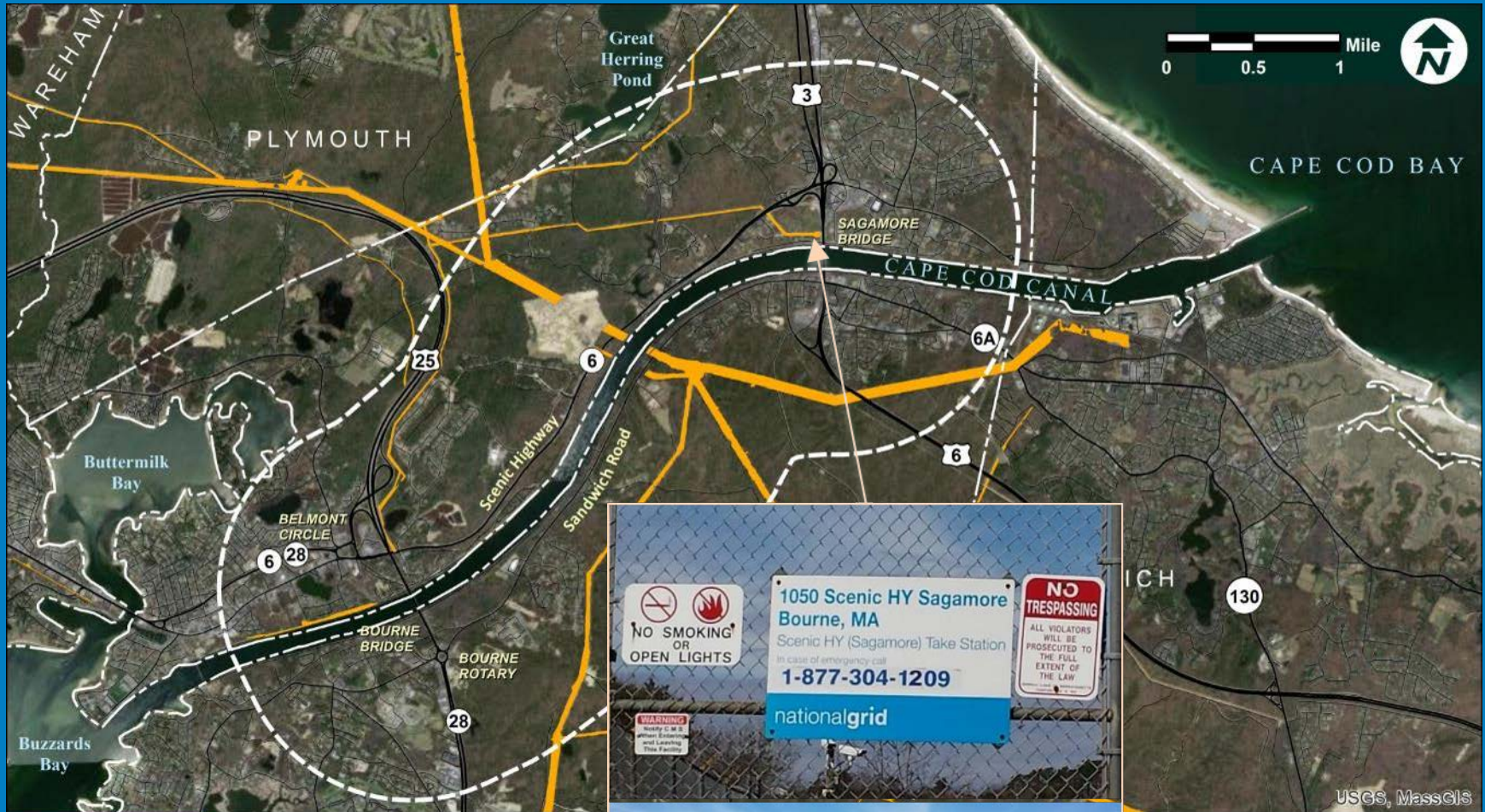
Infrastructure

Railroad Lines.



- ✚ Railroad Line (DOT-owned)
- Limited Access Highway
- Multi-lane Hwy, not limited access
- Other Numbered Highway
- Major Road, Collector
- Minor Road, Arterial
- Ramp
- Focus Area

Utilities.



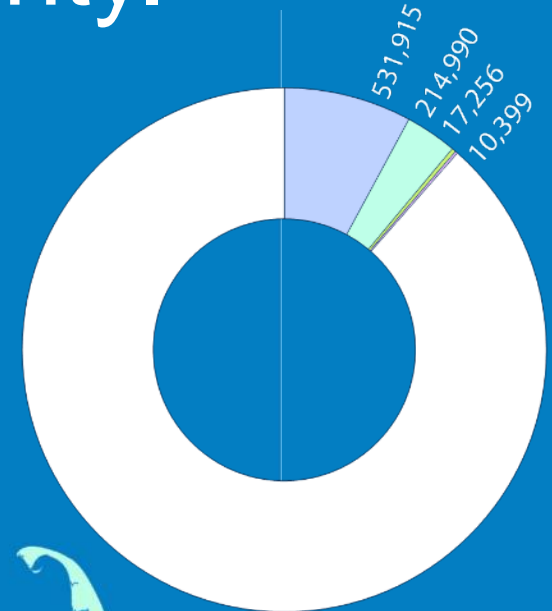
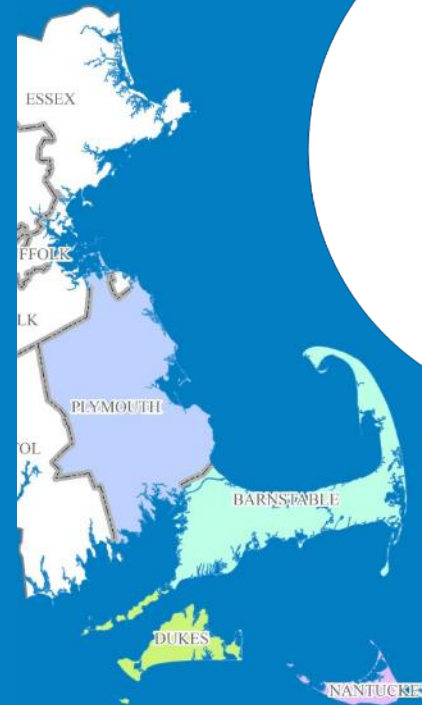
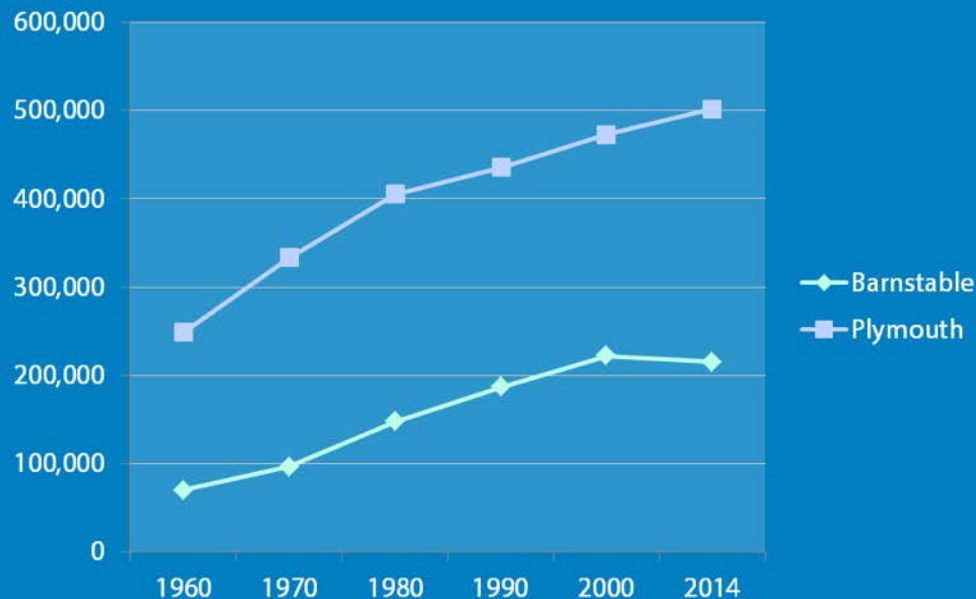
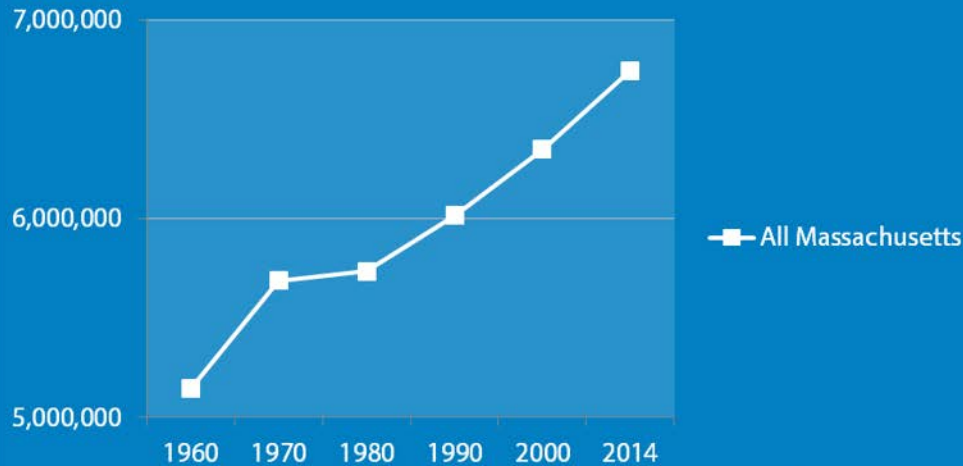
- Powerline/Utility
- Focus Area

Demographic Information

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

Population – County.

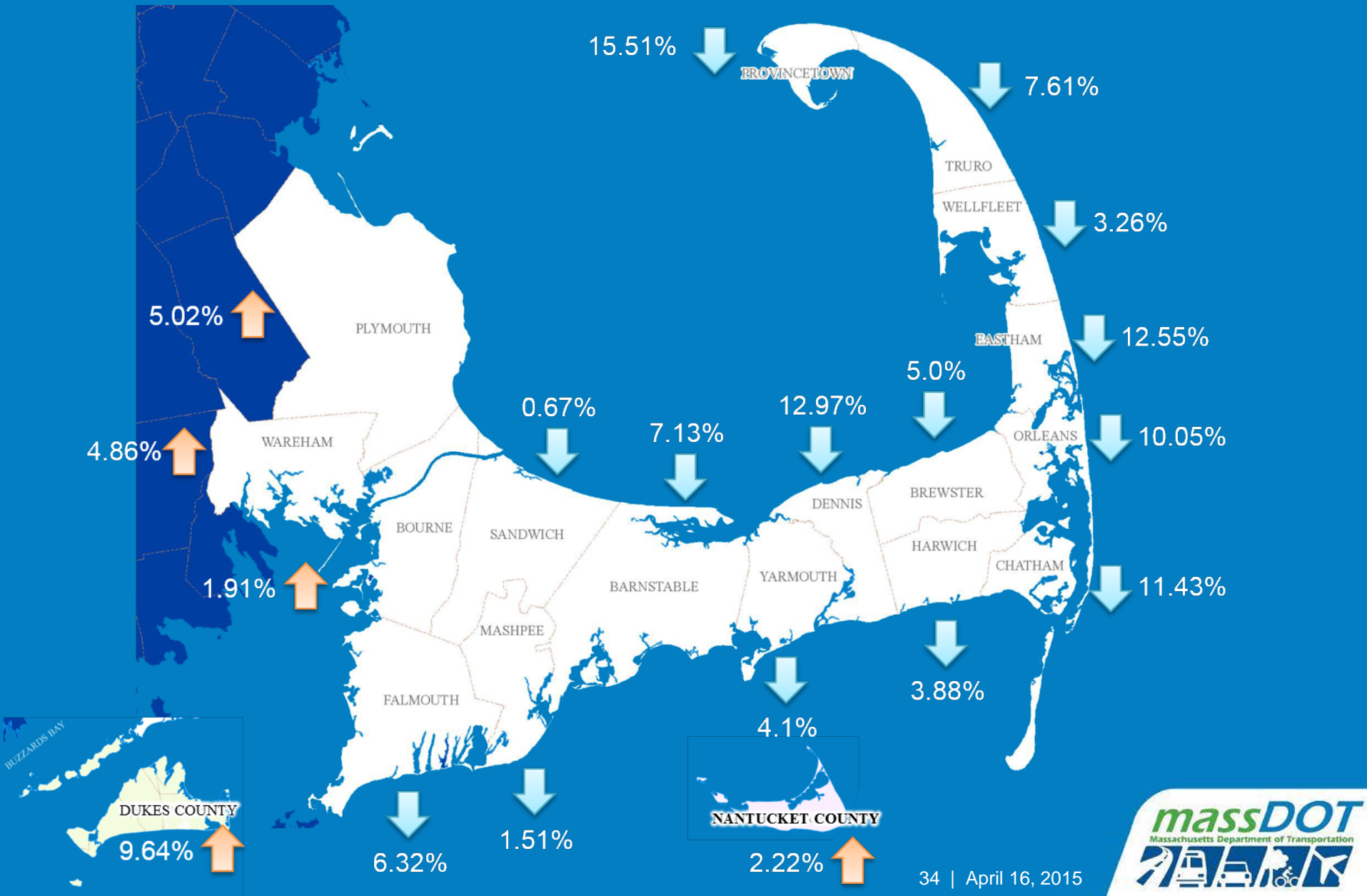
Historic Population Growth



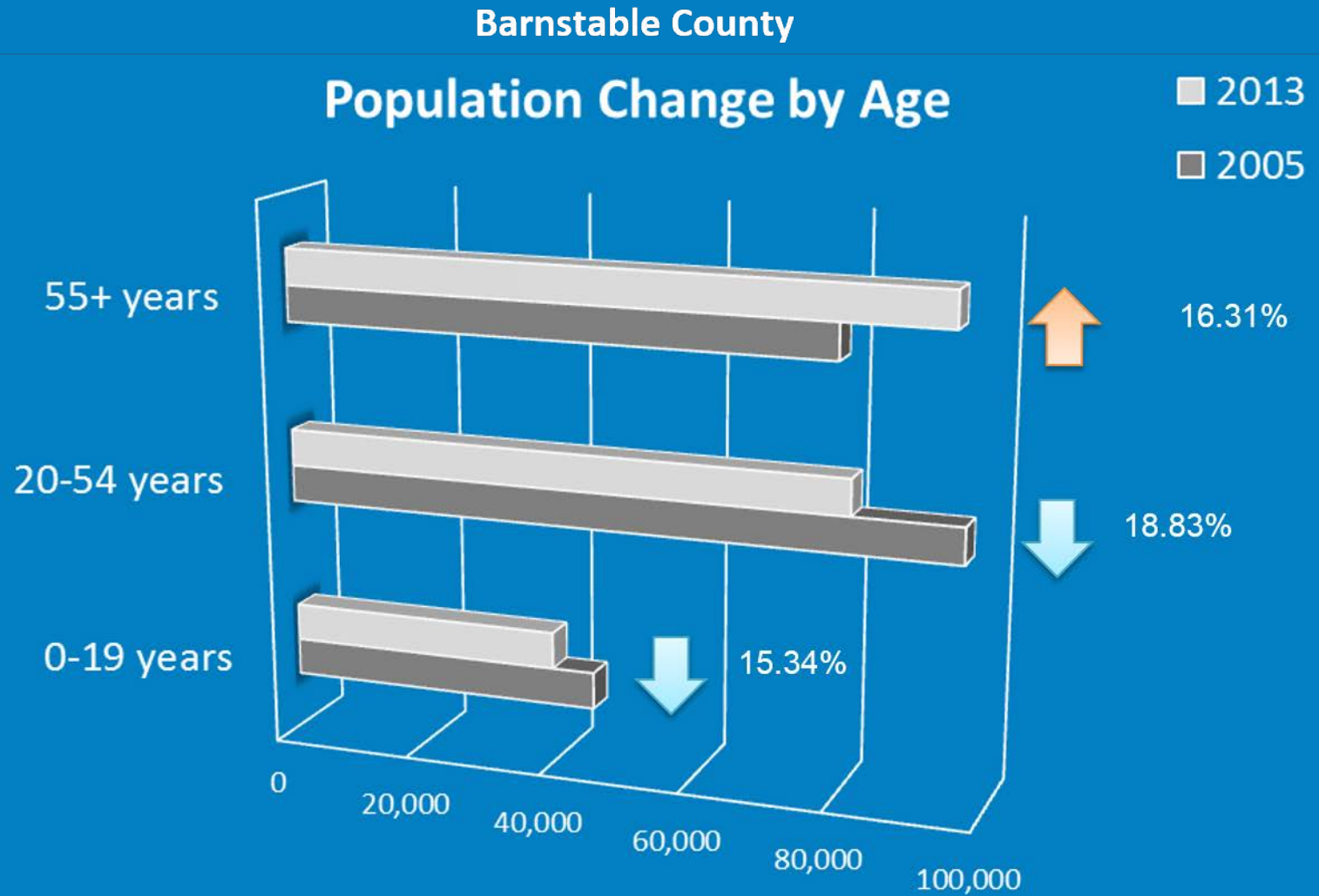
County Population Change 2005 to 2013

Barnstable	Plymouth	Statewide
-5.36%	4.42%	4.39%
Dukes	Nantucket	
9.64%	2.22%	

Population Change 2005 to 2013.



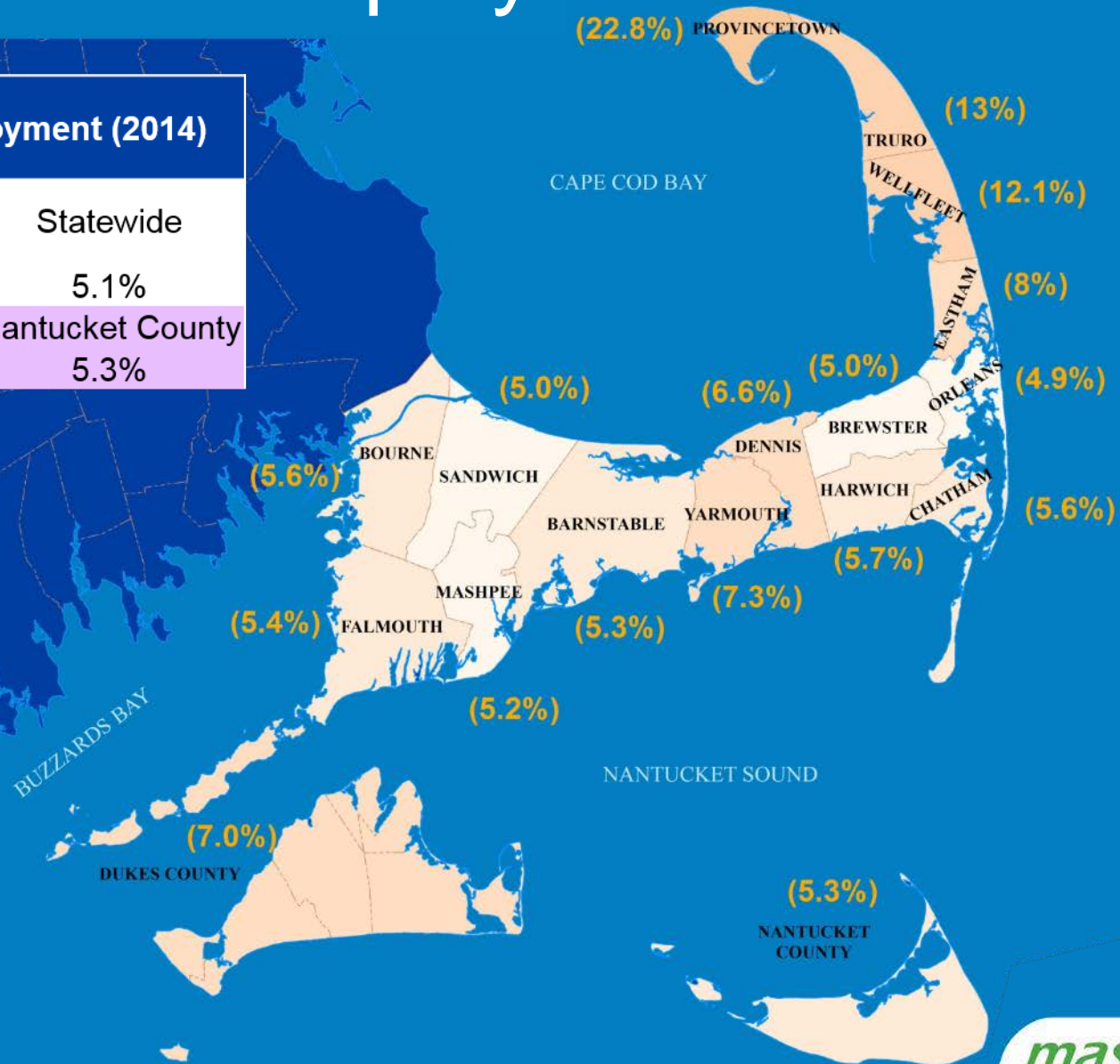
Focus on Barnstable County.



(22.8%) PROVINCETOWN

Barnstable County	Statewide
5.8%	5.1%

Nantucket County
5.3%

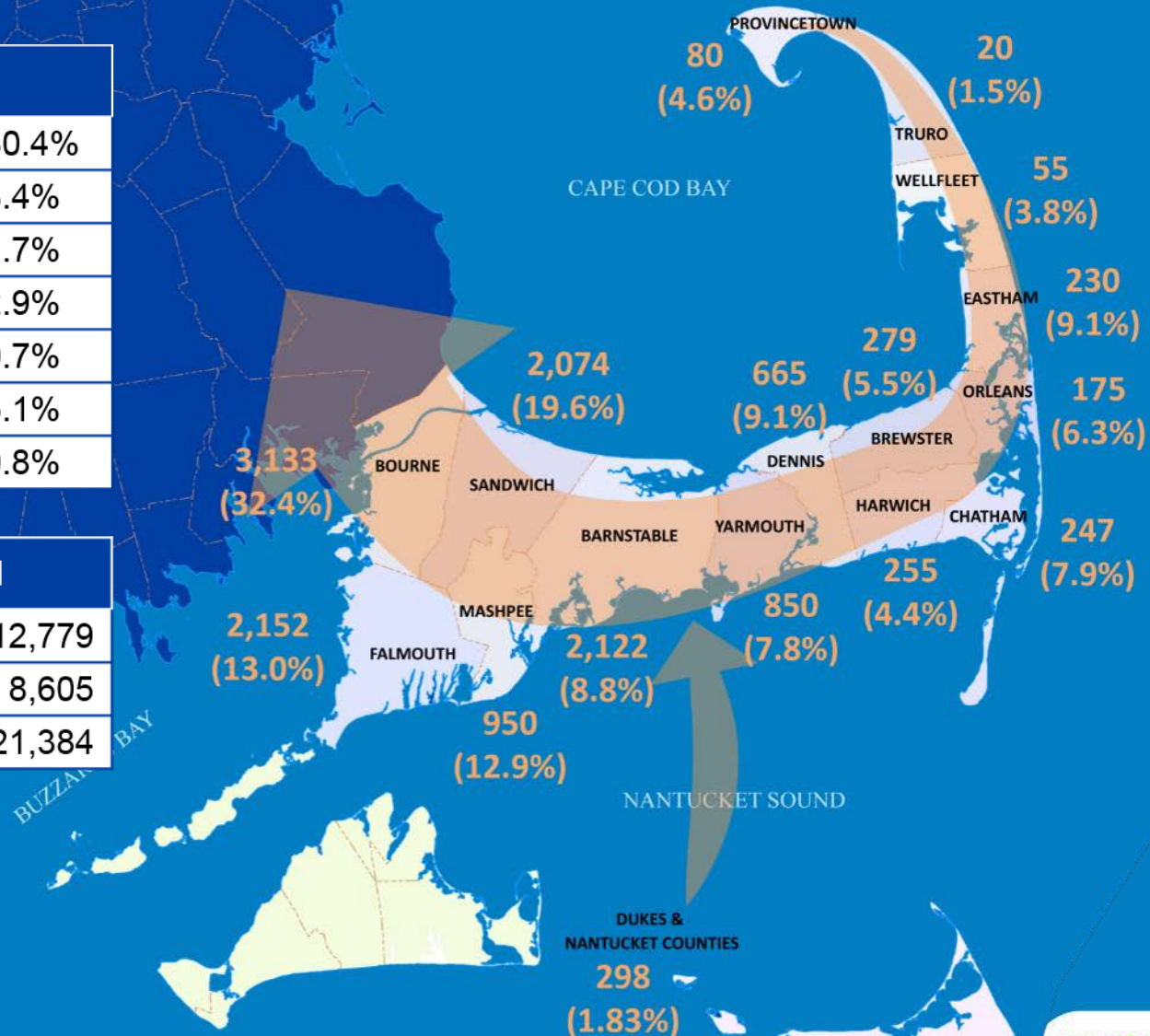


Journey to Work:

Percent of labor force who travel off-cape for work

Mode of Travel	
Vehicle (alone)	80.4%
Carpool	8.4%
Public Transportation	1.7%
Walk	2.9%
Bicycle	0.7%
Work at Home	5.1%
Other	0.8%

Daily Worker Travel	
Cape to Off-Cape	12,779
Off-Cape to Cape	8,605
Total	21,384



Transportation.

- Traffic operations.
- Crashes.
- Multi-Modal (transit, bicycles and pedestrians).

Analysis of Traffic Operations.

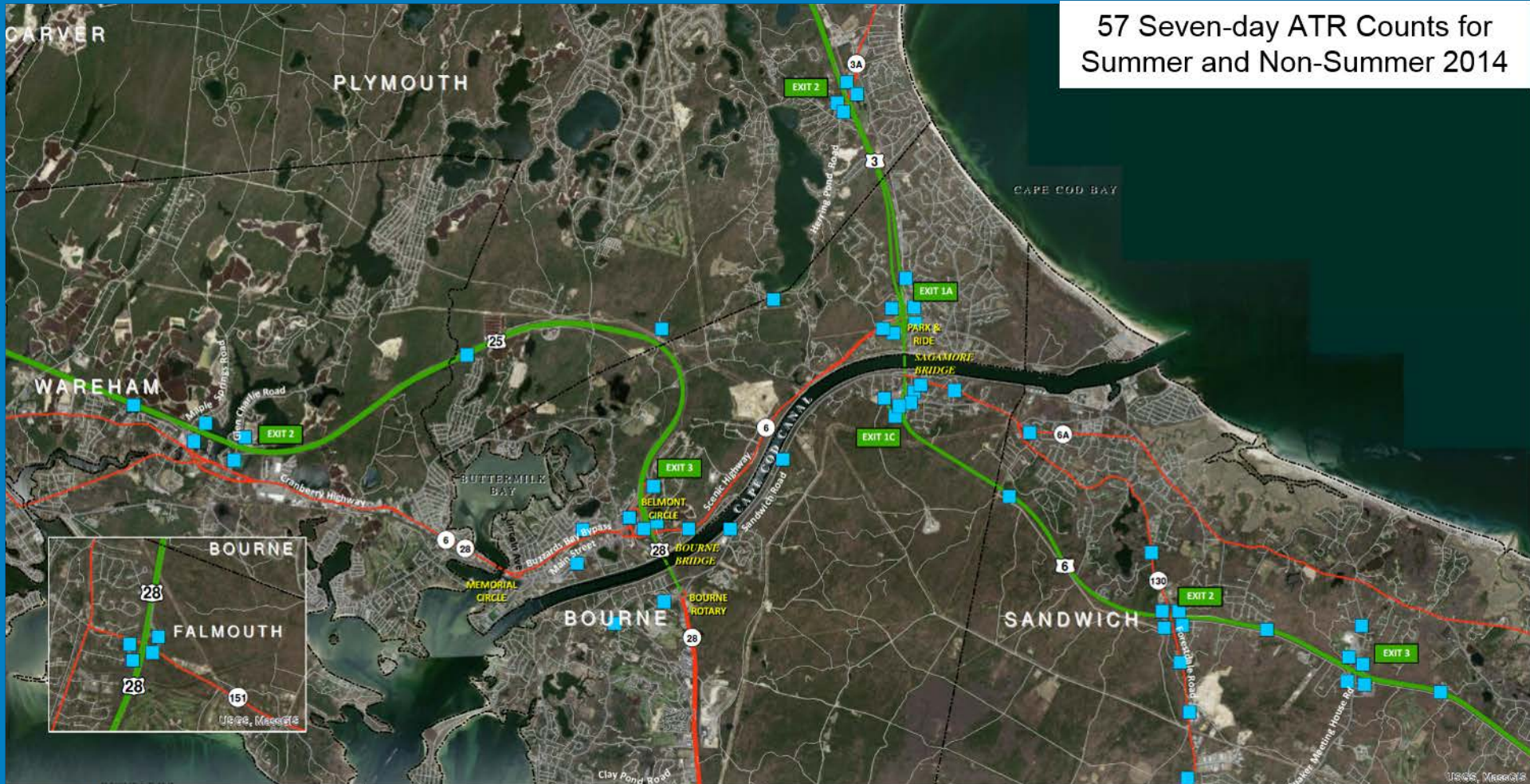
Where should we collect data?

Travel Corridors.



ATR Locations.

57 Seven-day ATR Counts for
Summer and Non-Summer 2014

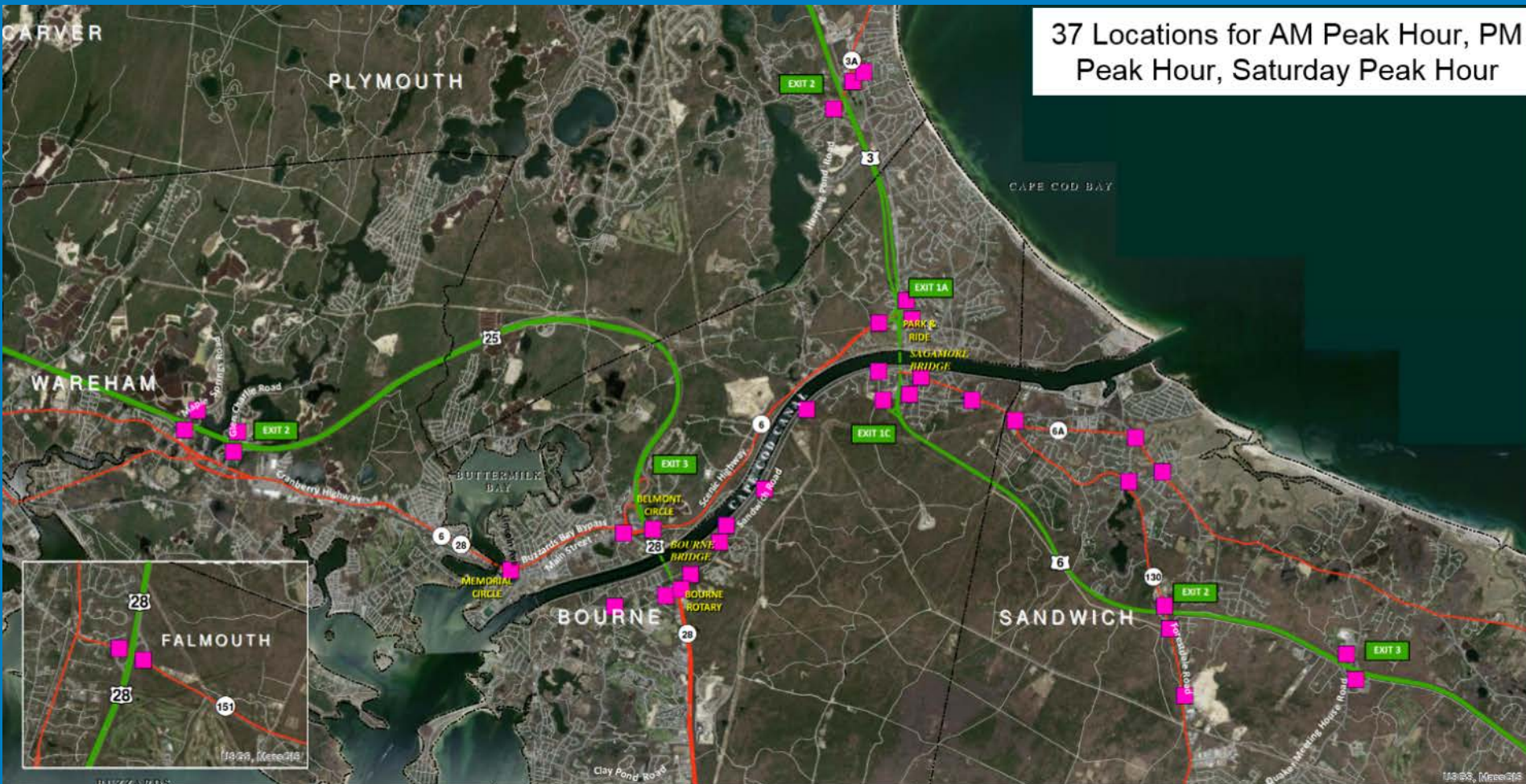


Legend

- Town Boundary
- Map Enlargement Areas
- ATR Locations

TMC Locations.

37 Locations for AM Peak Hour, PM Peak Hour, Saturday Peak Hour

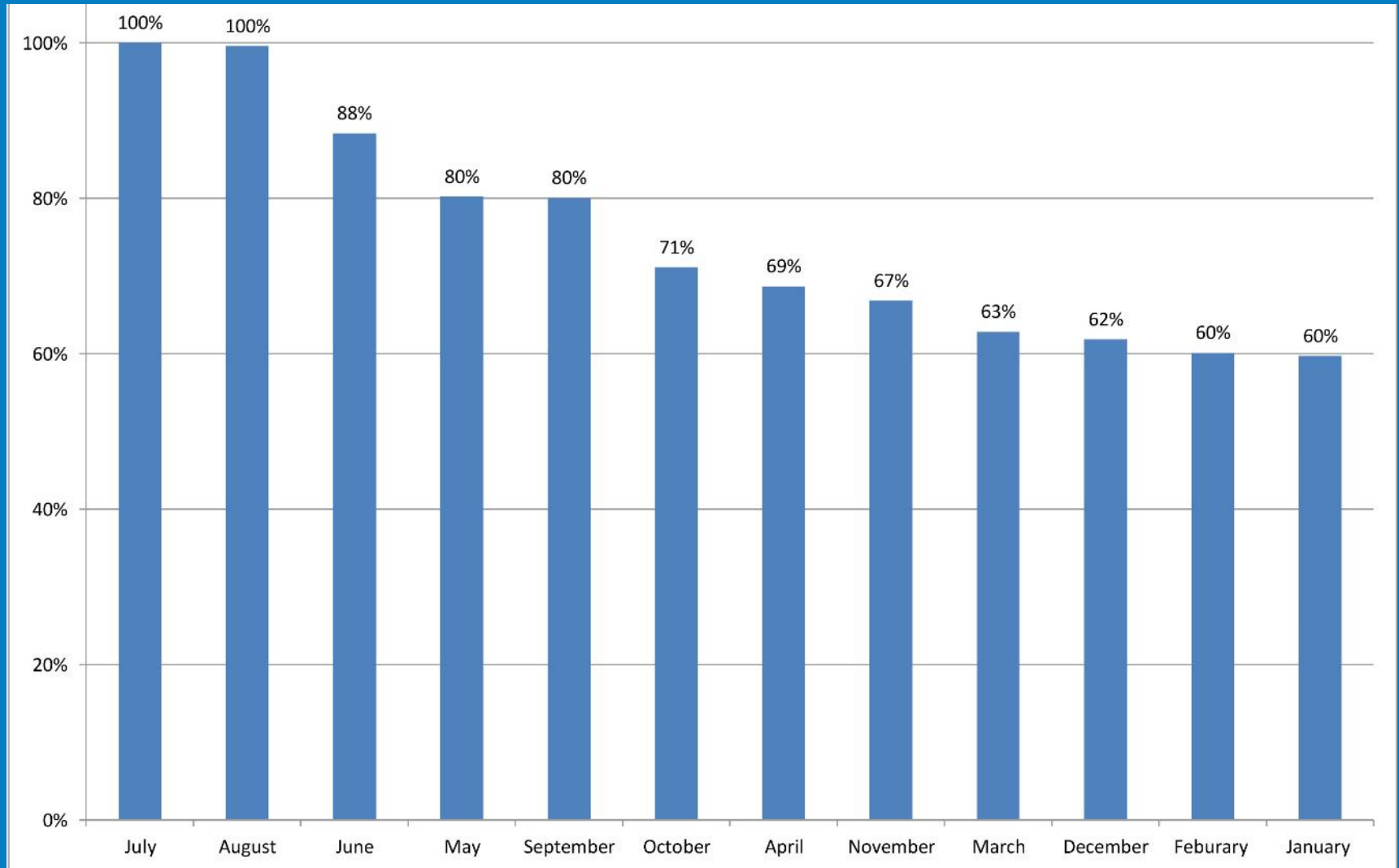


- Legend**
- Town Boundary
 - Map Enlargement Areas
 - Turning Movement Count Locations

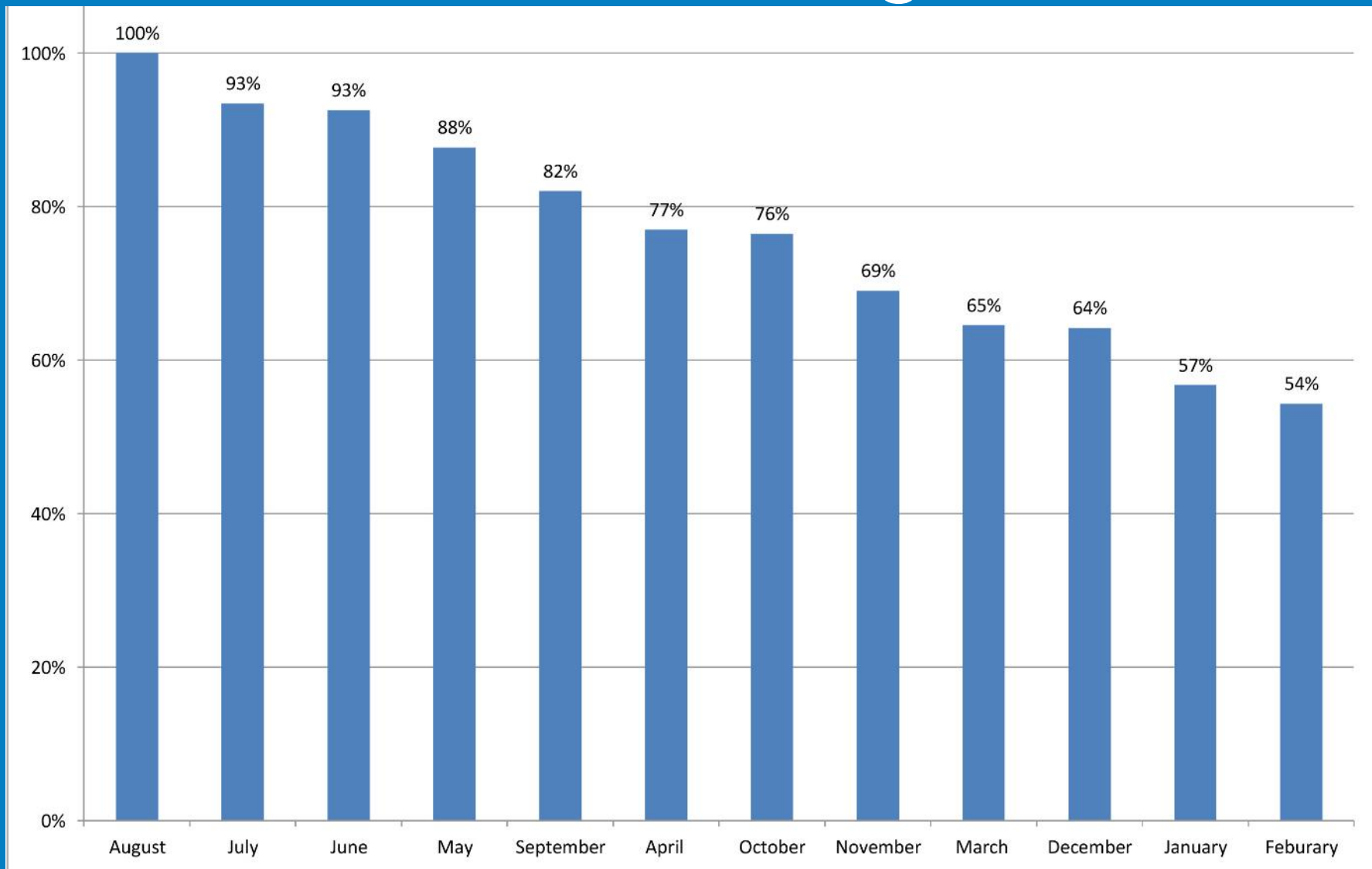
When should we collect traffic data?

Cape Cod has two traffic
seasons:
Summer and Non-summer

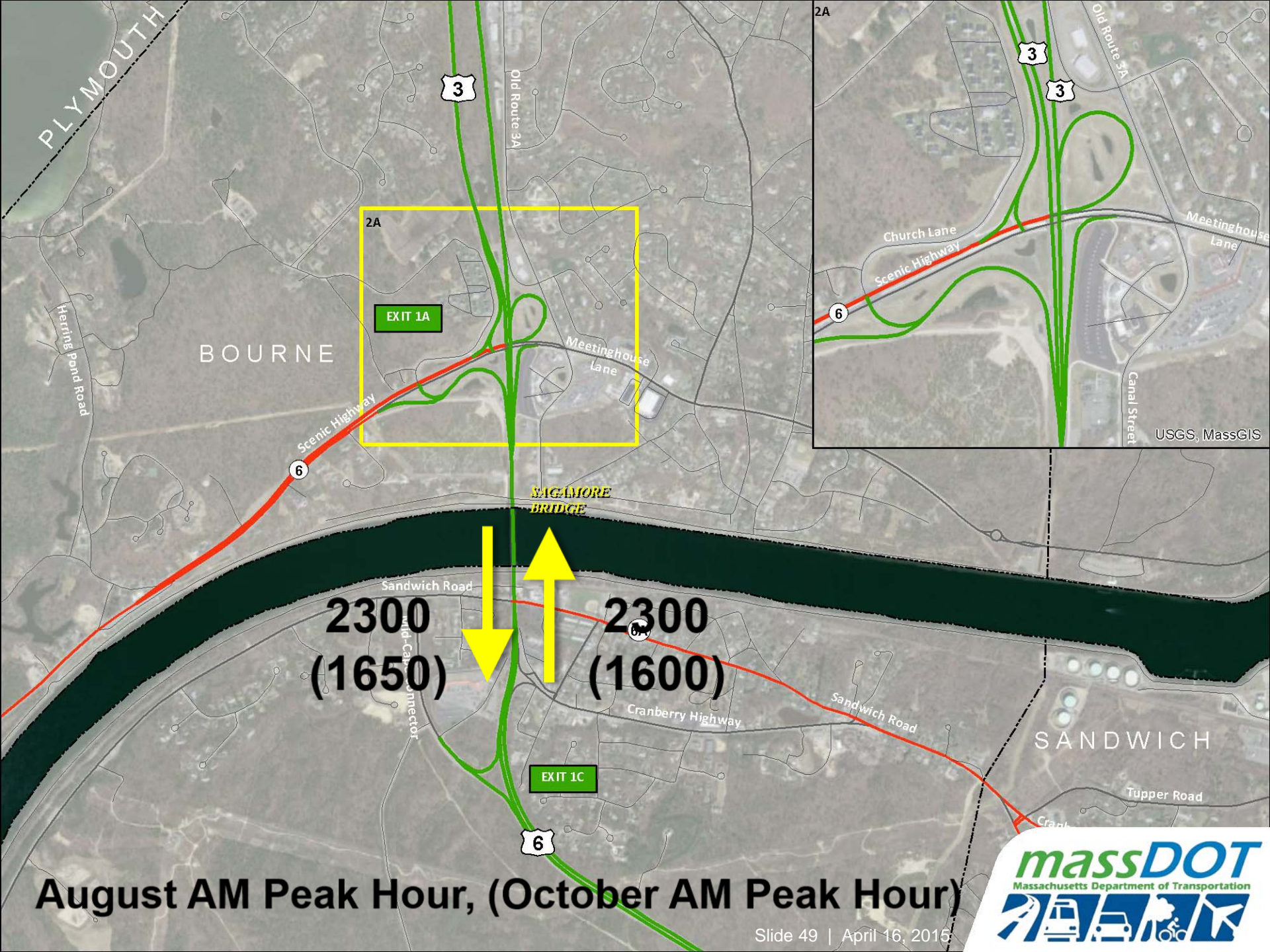
Sagamore Bridge.



Bourne Bridge.

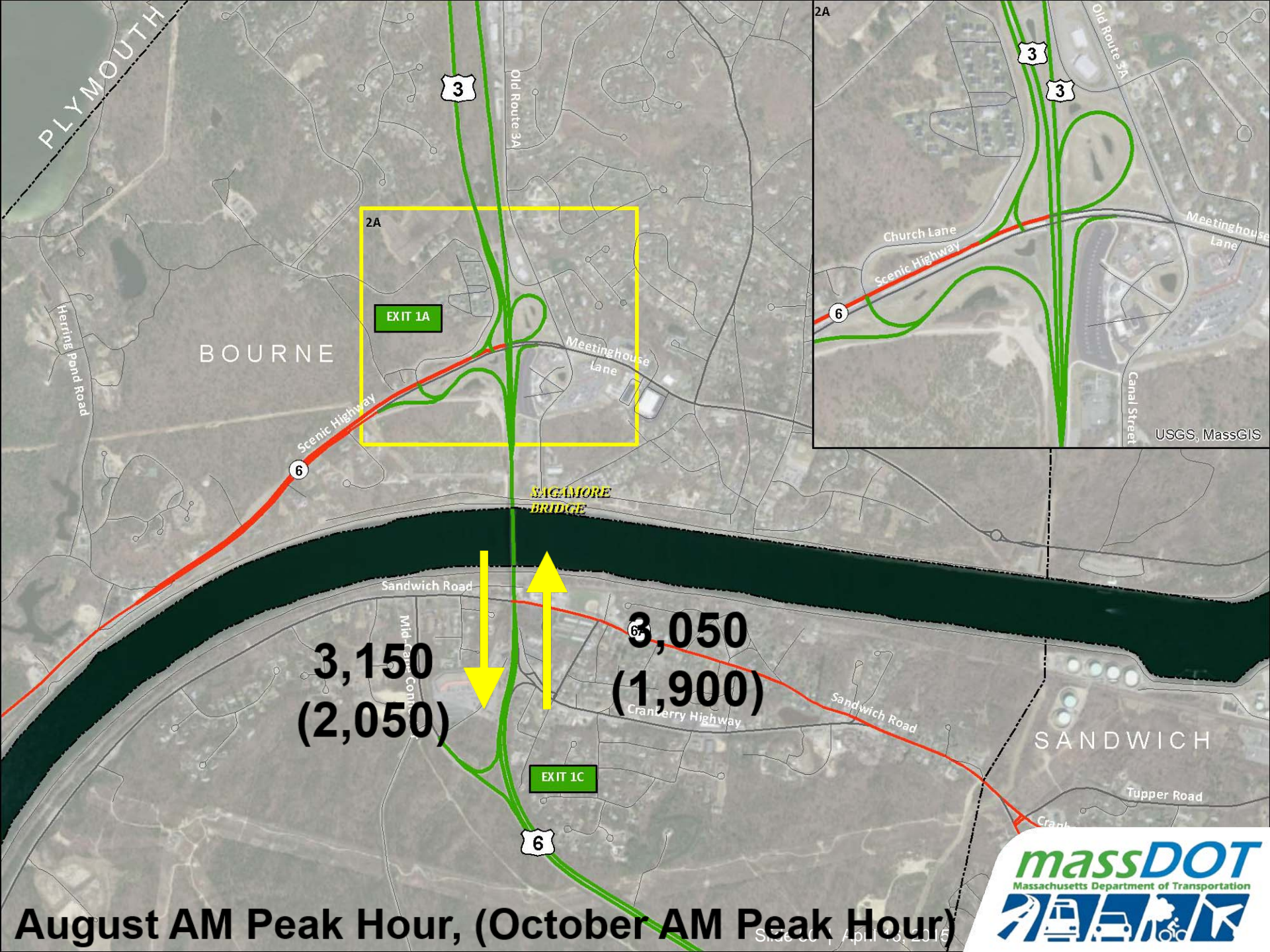


How different are summer and non-summer traffic volumes?



August AM Peak Hour, (October AM Peak Hour)

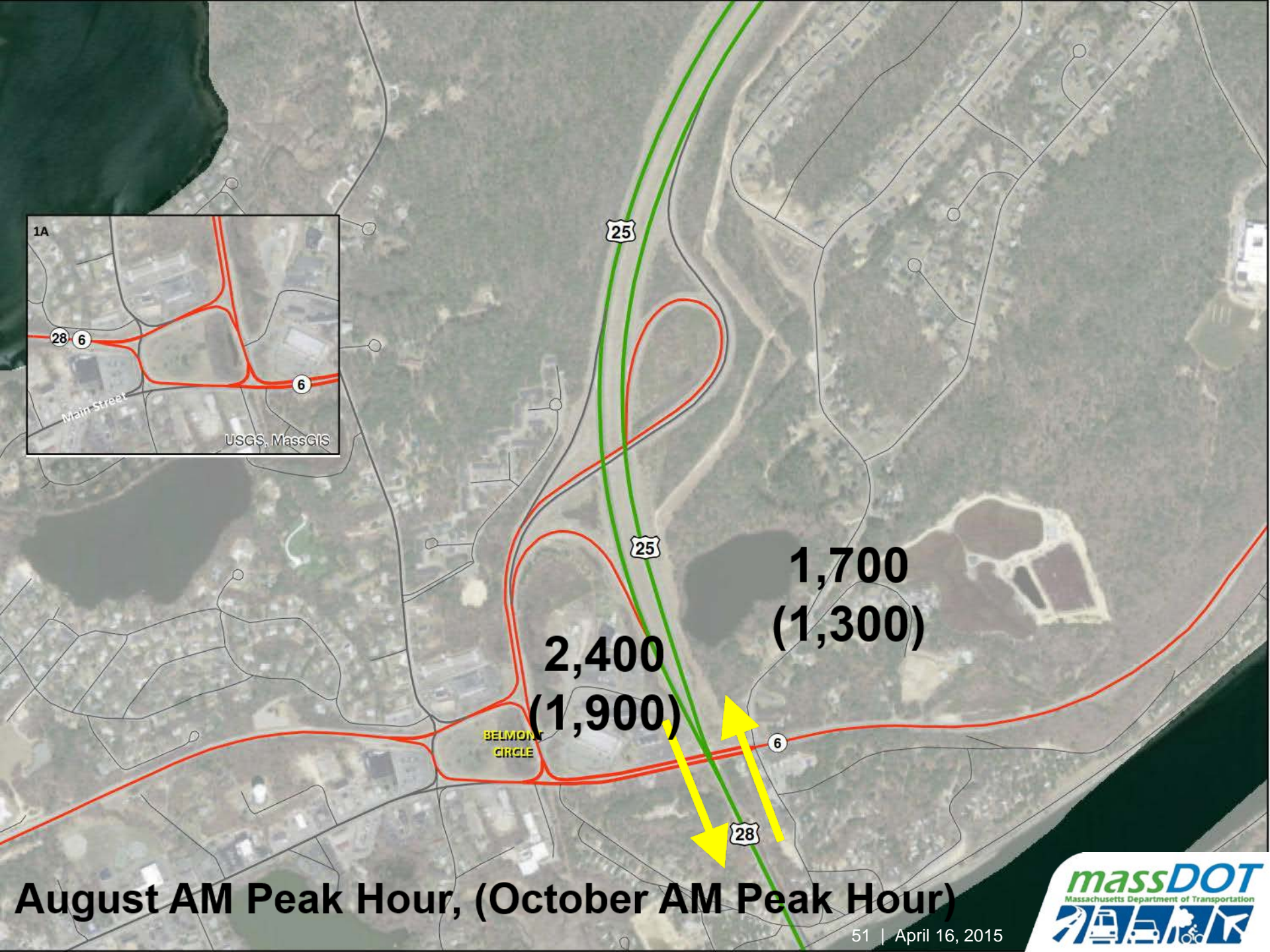




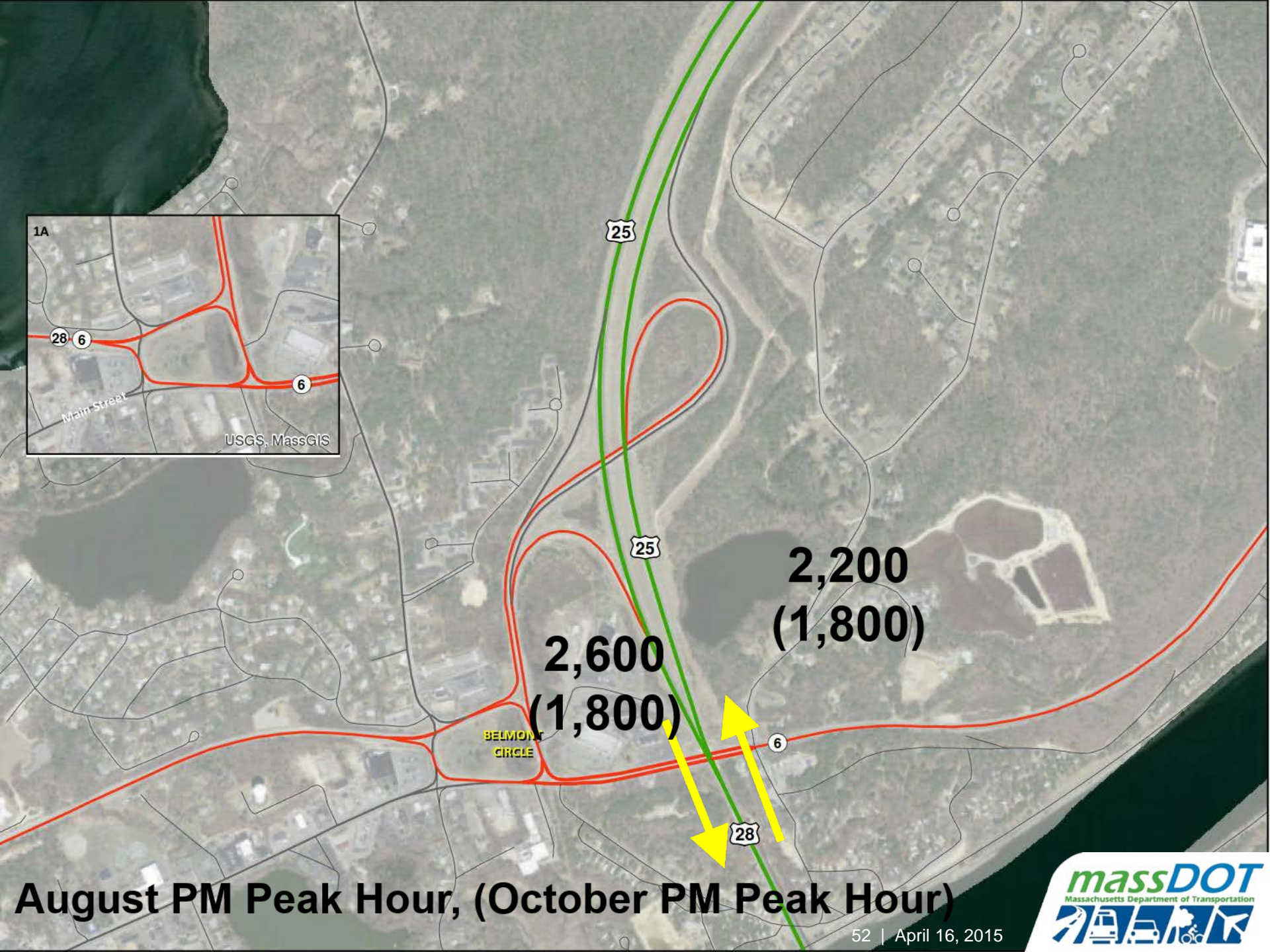
August AM Peak Hour, (October AM Peak Hour)



Source: April 13, 2016



August AM Peak Hour, (October AM Peak Hour)



August PM Peak Hour, (October PM Peak Hour)

Summer and Non-Summer Daily Traffic Volumes.

Scenic Highway	
Summer	38664
Non-Summer	22908
Change (%)	51%

Route 3	
Summer	51613
Non-Summer	38848
Change (%)	28%

Route 25	
Summer	67734
Non-Summer	42648
Change (%)	45%

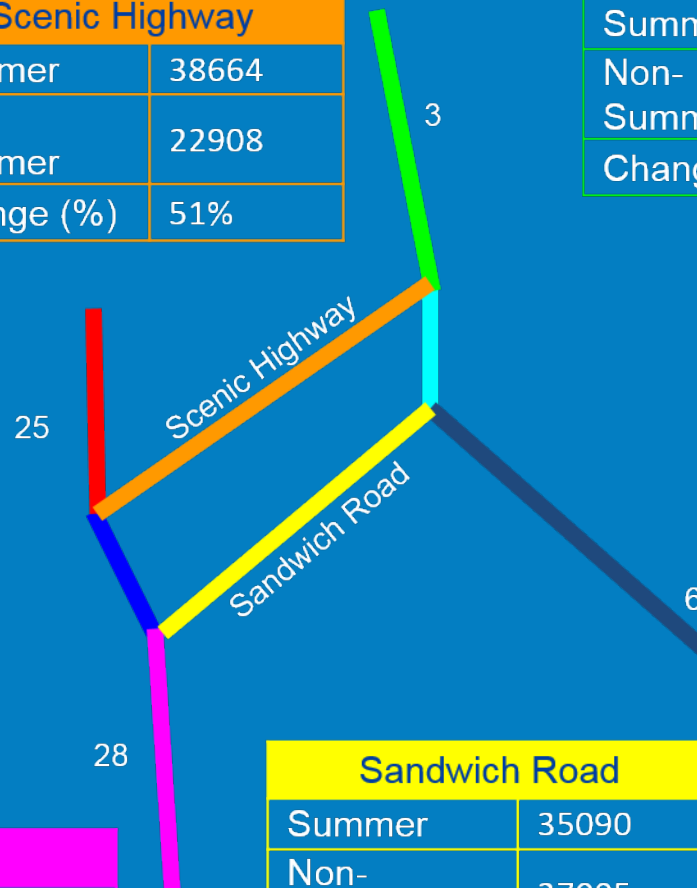
Sagamore Bridge	
Summer	73371
Non-Summer	49837
Change (%)	38%

Bourne Bridge	
Summer	62655
Non-Summer	44794
Change (%)	33%

Route 6	
Summer	78709
Non-Summer	41114
Change (%)	63%

Route 28	
Summer	52145
Non-Summer	30000
Change (%)	54%

Sandwich Road	
Summer	35090
Non-Summer	27005
Change (%)	26%



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.

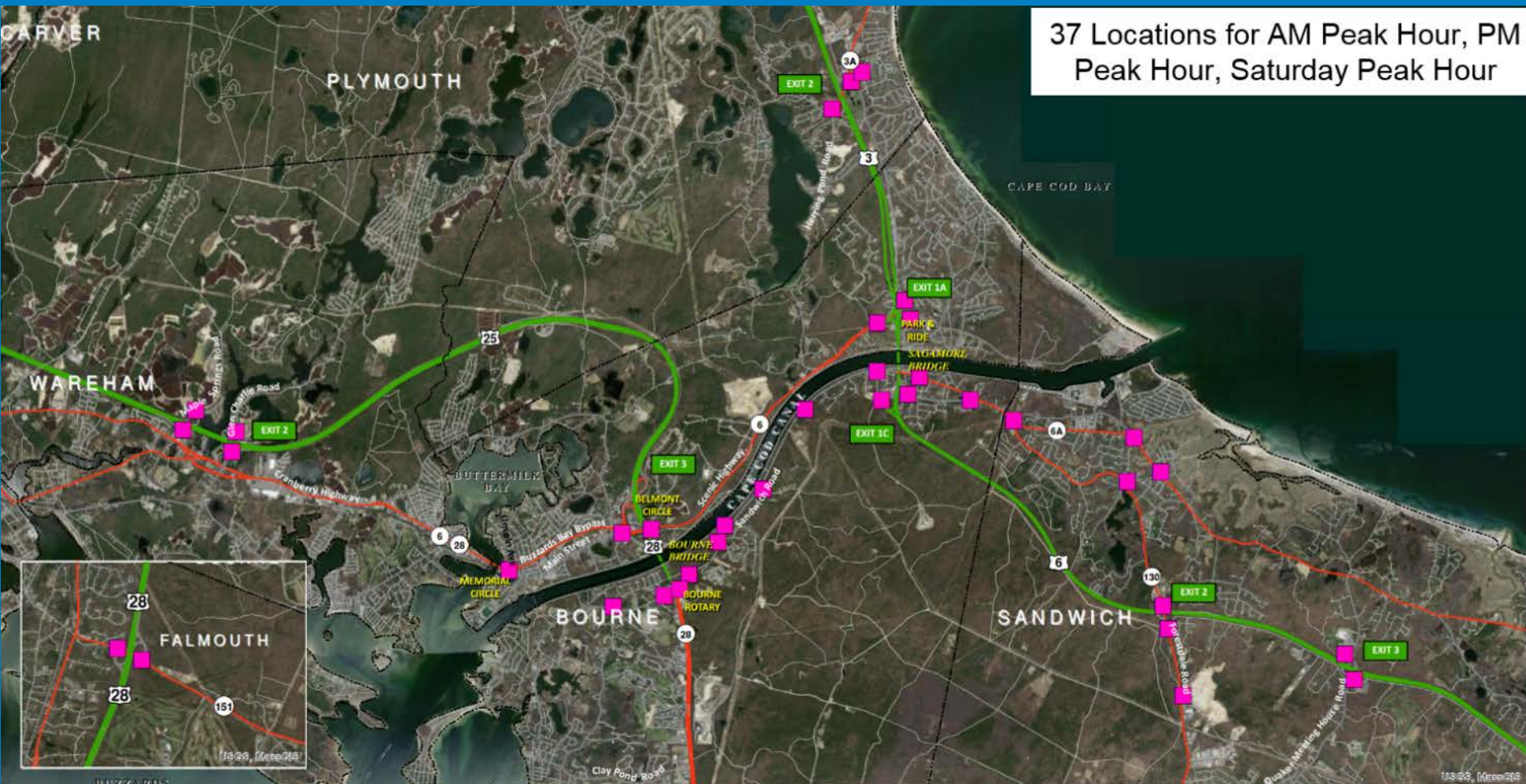
- Intersection of Local streets:
 - Conflicting turning movements at unsignalized and signalized location.
- Operations within Rotaries:
 - Conflicting turning movements.
- Travel lanes on limited access roads:
 - Density of traffic inhibits freedom to maneuver.

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.***

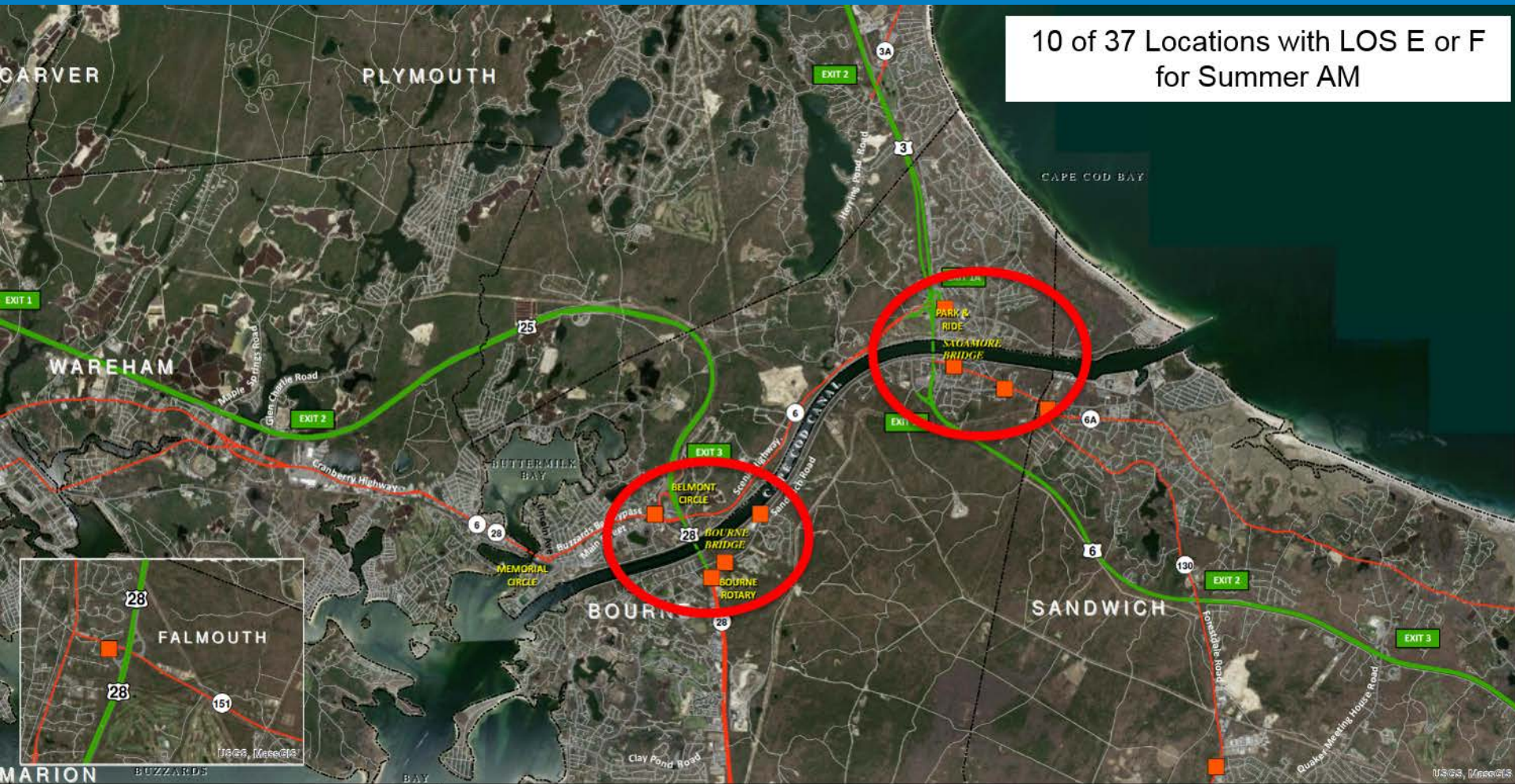
Focus on where are the problem locations?

TMC Locations.

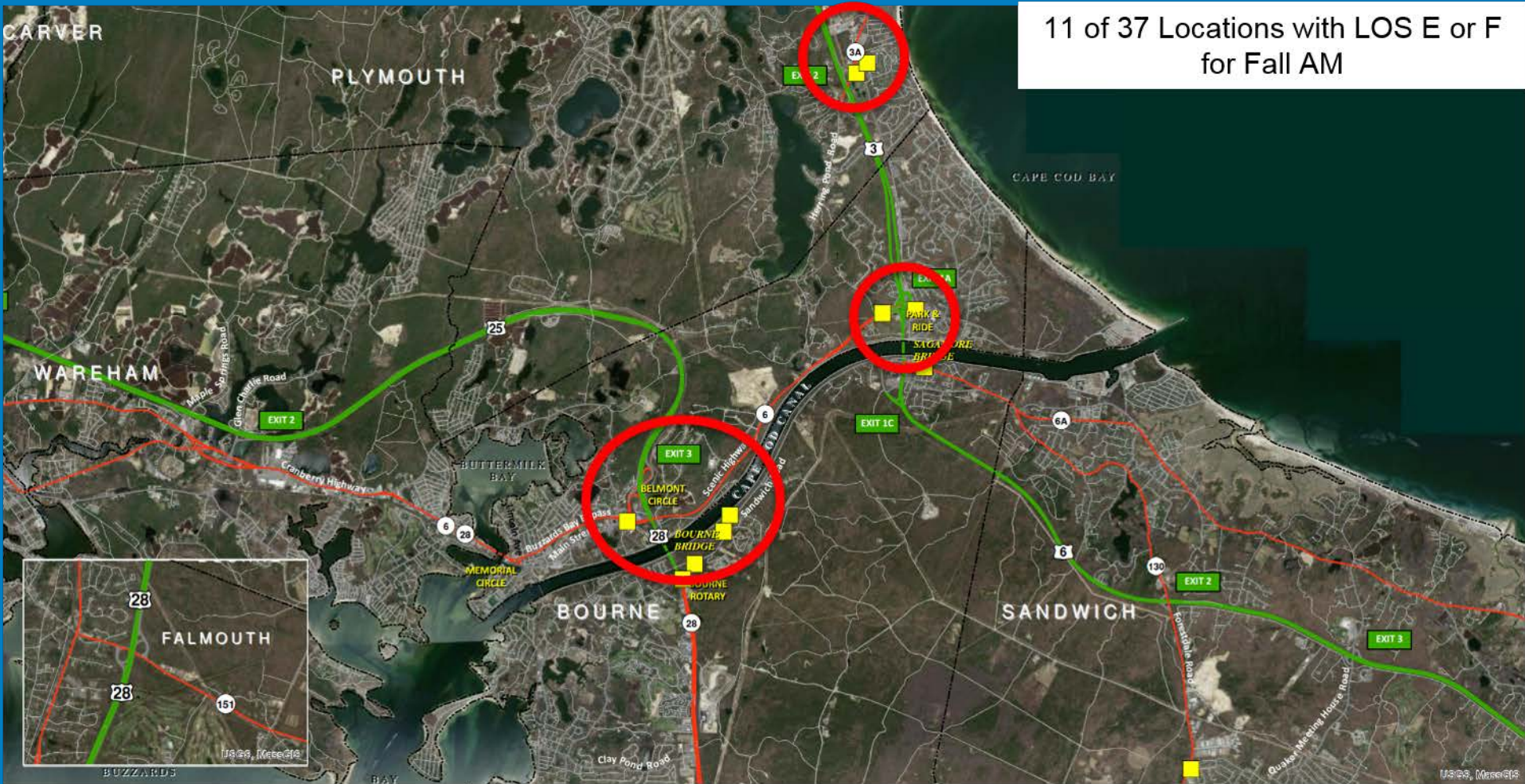


- Legend**
- Town Boundary
 - Map Enlargement Areas
 - Turning Movement Count Locations

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.

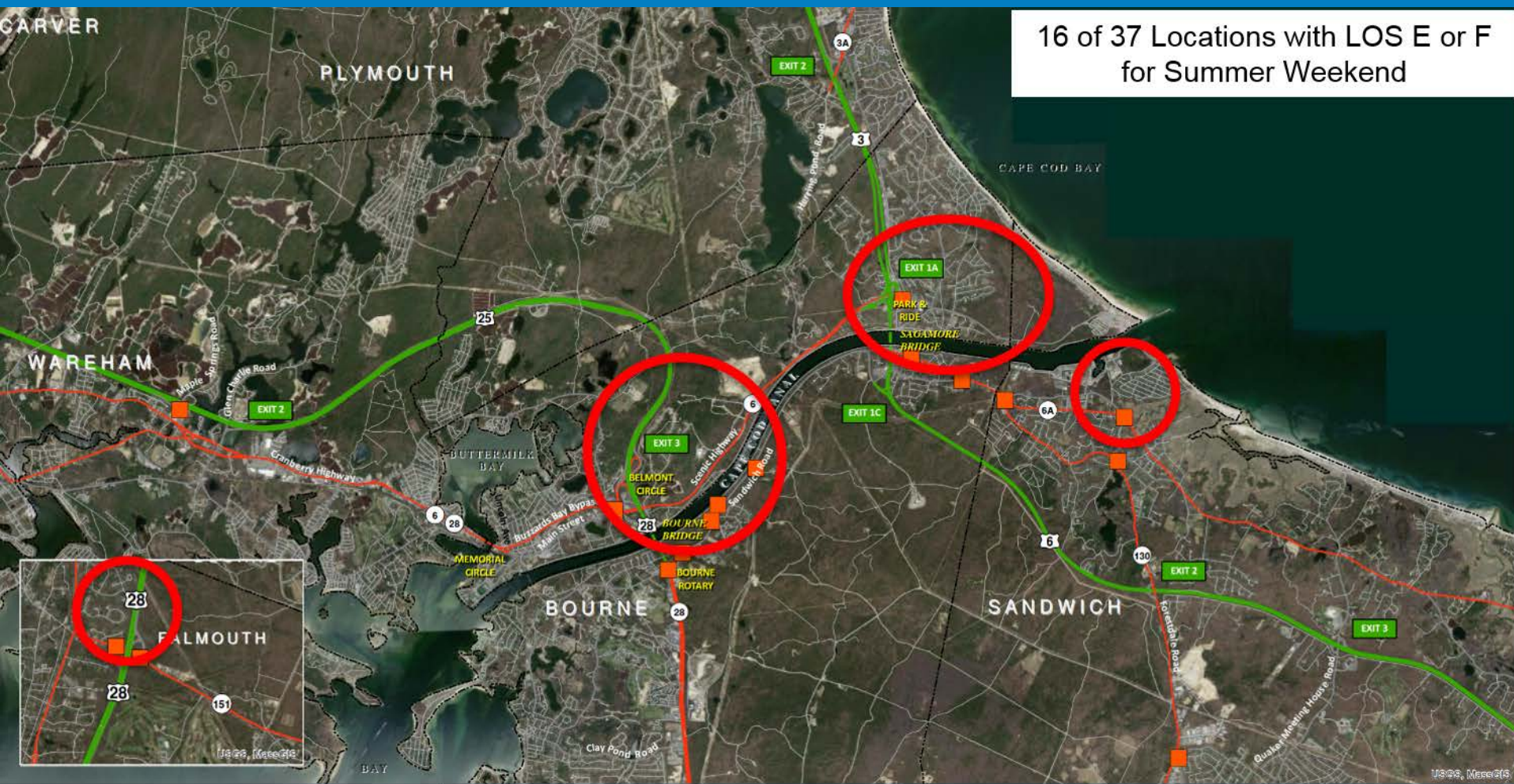


13 of 37 Locations with LOS E or F
for Fall PM

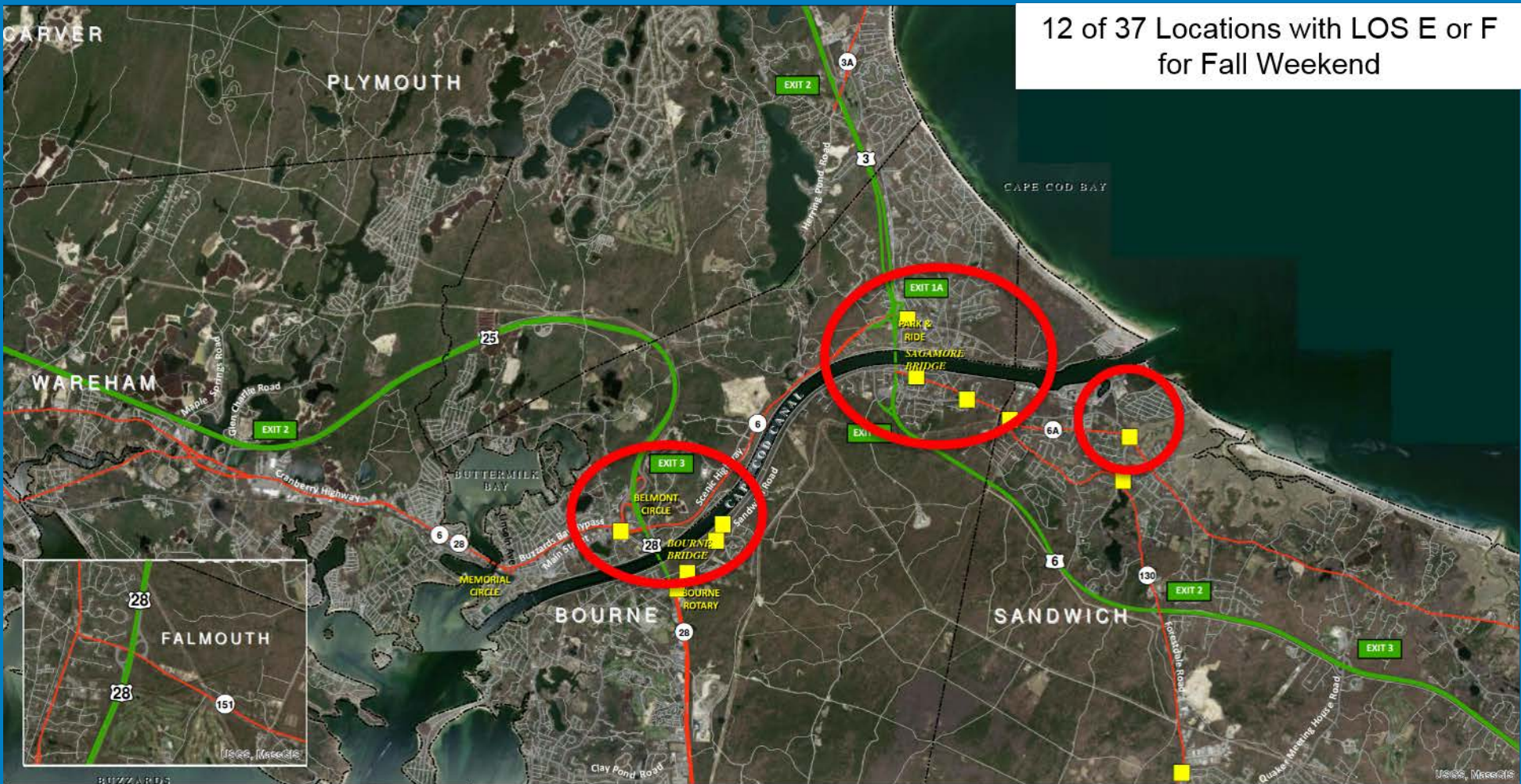


----- Town Boundary
 [Yellow Box] Locations with LOS E or F

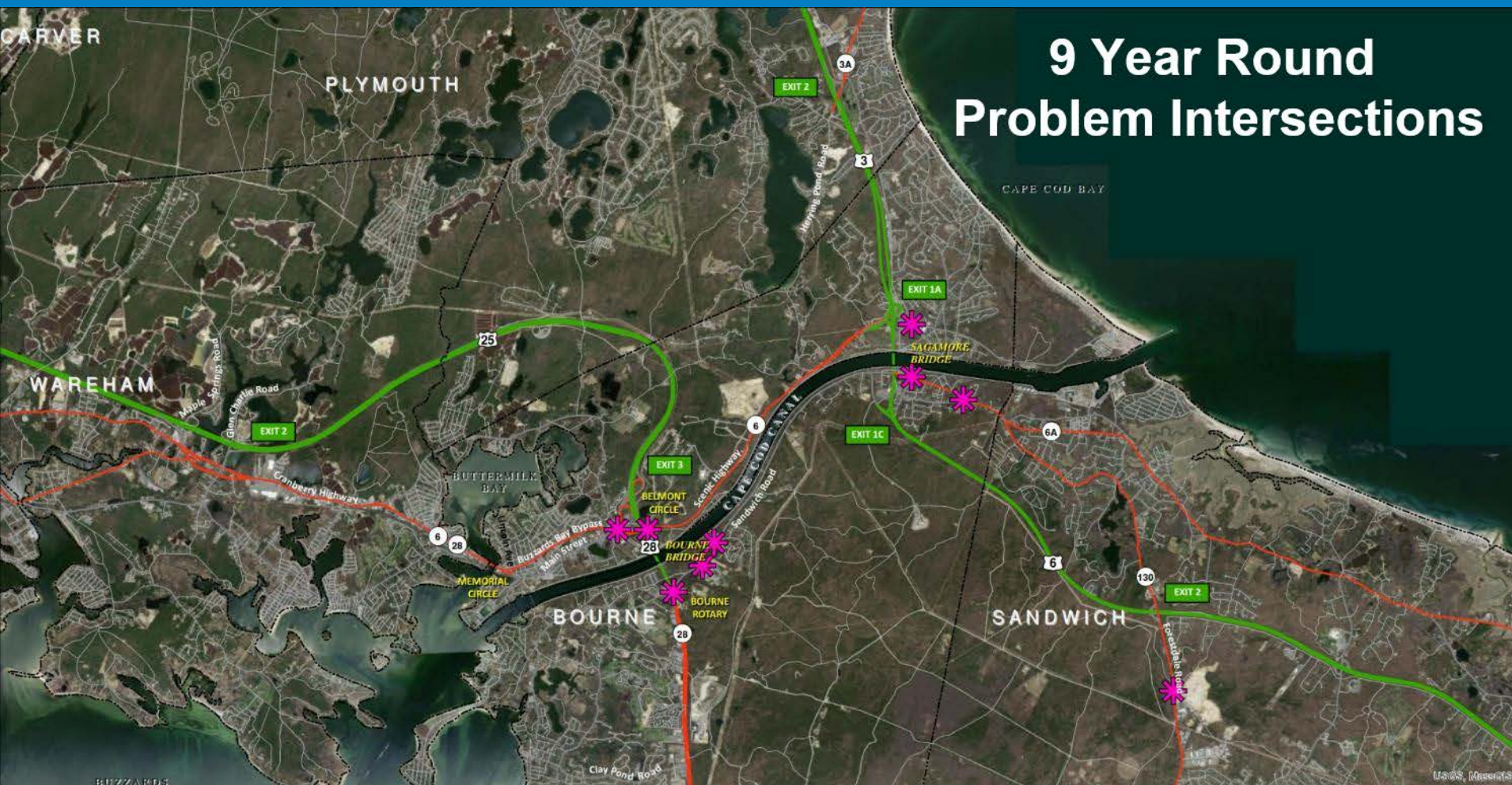
Intersections with LOS E or F: Summer Weekend.



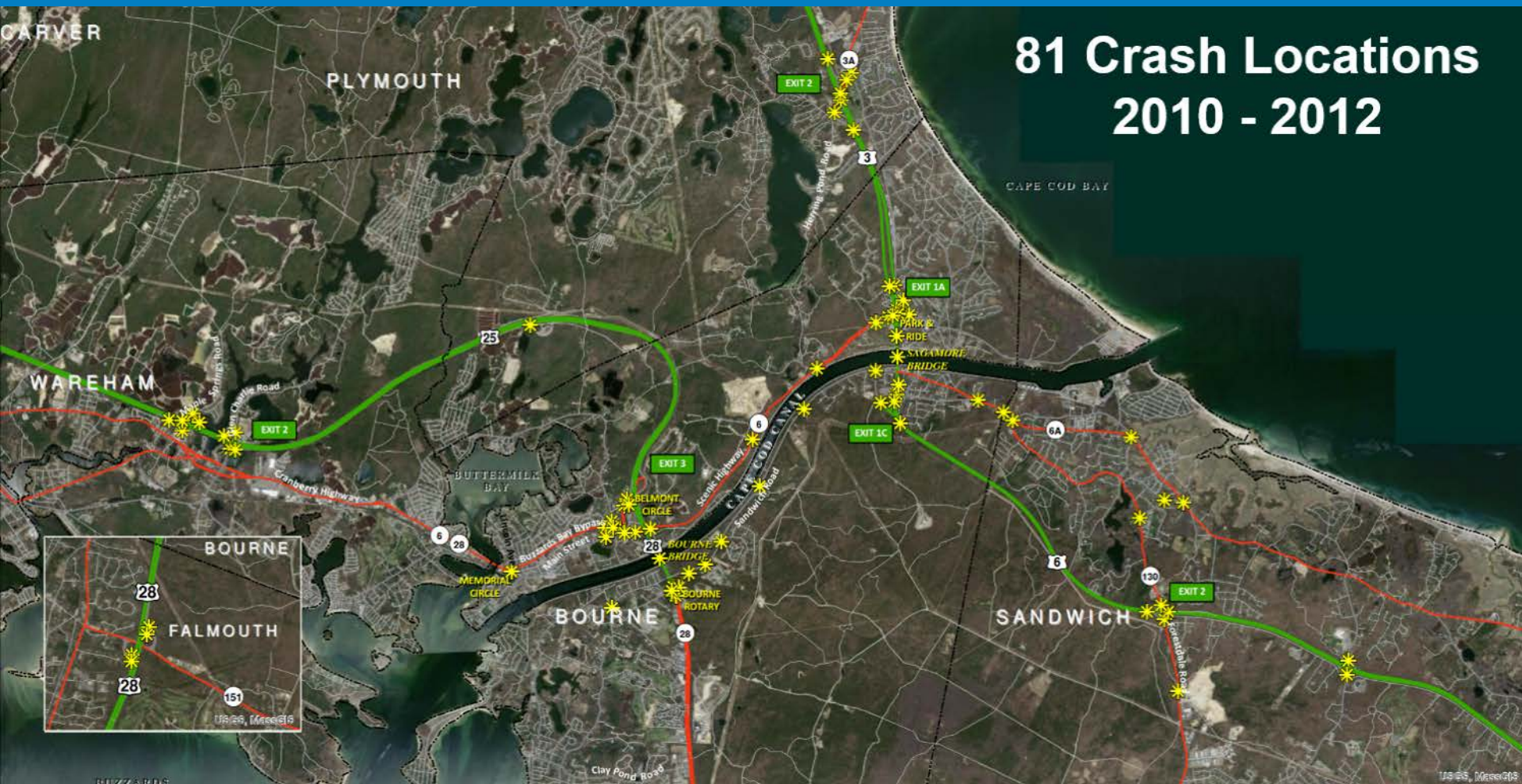
Intersections with LOS E or F: Non-Summer Weekend.



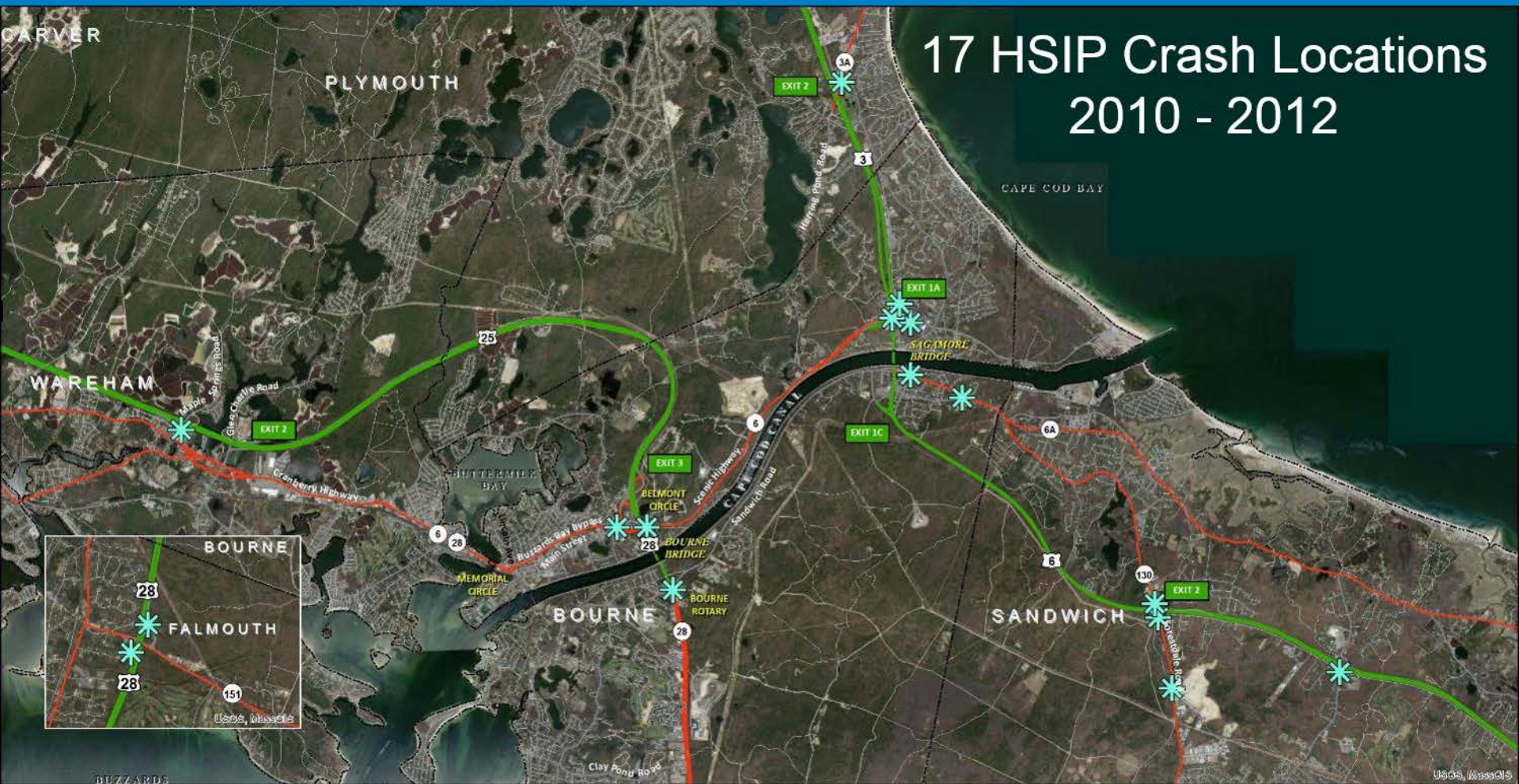
Year Round Problem Intersections



Crash Analysis Locations.



HSIP High Crash Analysis Locations.



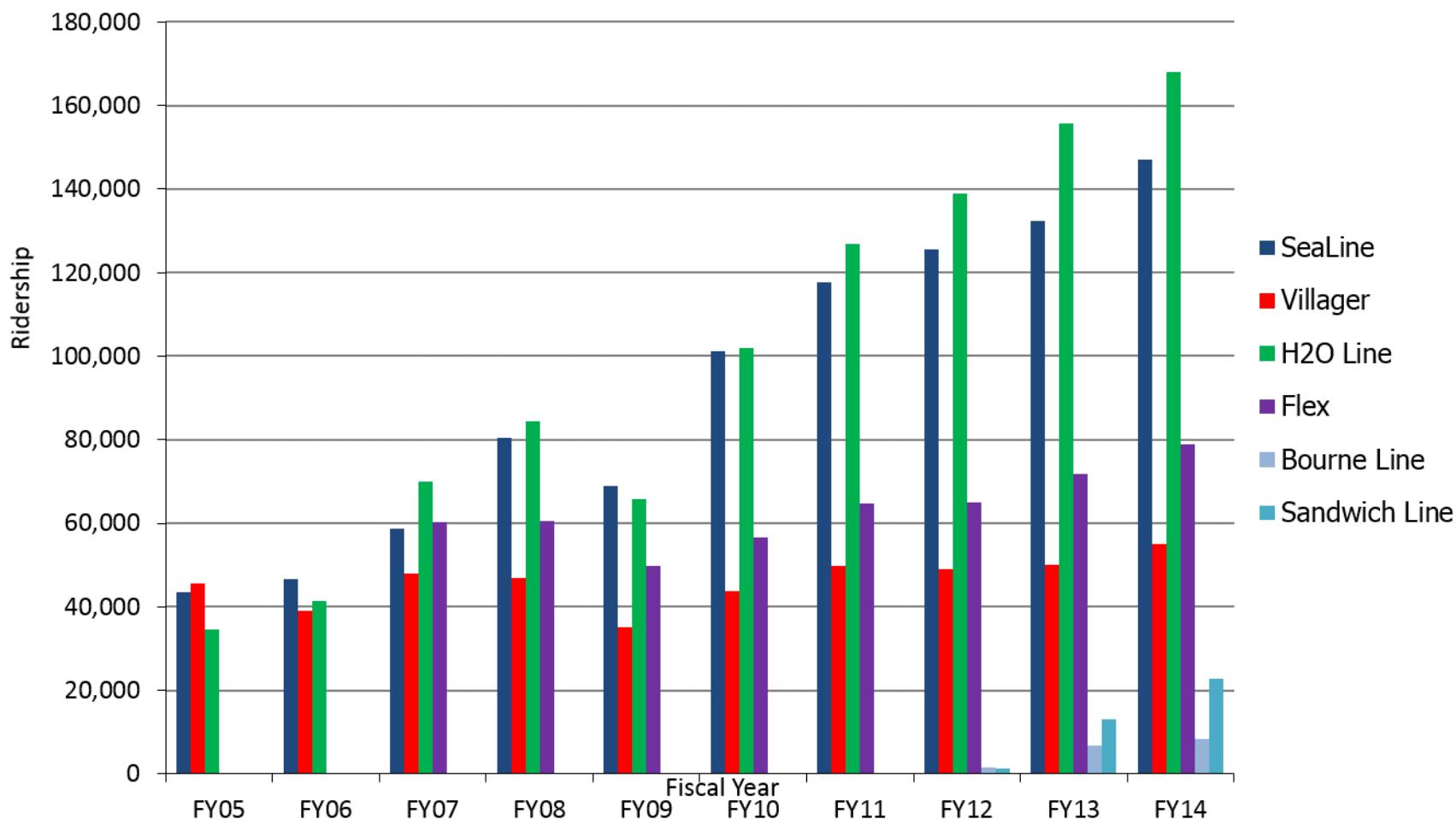
Cape Cod Commission – Cape Wide: Top 50 Crash Locations by # of Crashes

CCC Rank	Location	High Crash	LOS E or F Year Round?	Town
2	Bourne Rotary	Yes	Yes	Bourne
5	Otis Rotary	Yes	No	Bourne
6	Route 6 at Route 130	Yes	No	Sandwich
7	Route 6 at Exit 1A/1B	Yes	No	Bourne
9	Belmont Circle	Yes	Yes	Bourne
12	Route 28 at Route 151	Yes	No	Falmouth
22	Route 6 at Quaker Meeting House Road	Yes	No	Sandwich
42	Sandwich Road at Adams Street	Yes	Yes	Bourne
45	Route 6A at Cranberry Hwy/Sandwich Road	Yes	Yes	Bourne
46	Route 130 at Cotuit Road	Yes	Yes	Sandwich

Multi-Modal Transit, Bicycle and Pedestrian

Annual Fixed-Route Ridership.

Annual Fixed Route Ridership



The Bourne Run.

Bourne Run Map



Bourne Run Fares		
CCRTA Fares	Adults and Youth	People 60 and older People with disabilities**
One-way ride	\$2	\$1
PASSES		
Day Pass	\$6	\$3
31-Day Pass (Unlimited Rides)	\$60	\$30

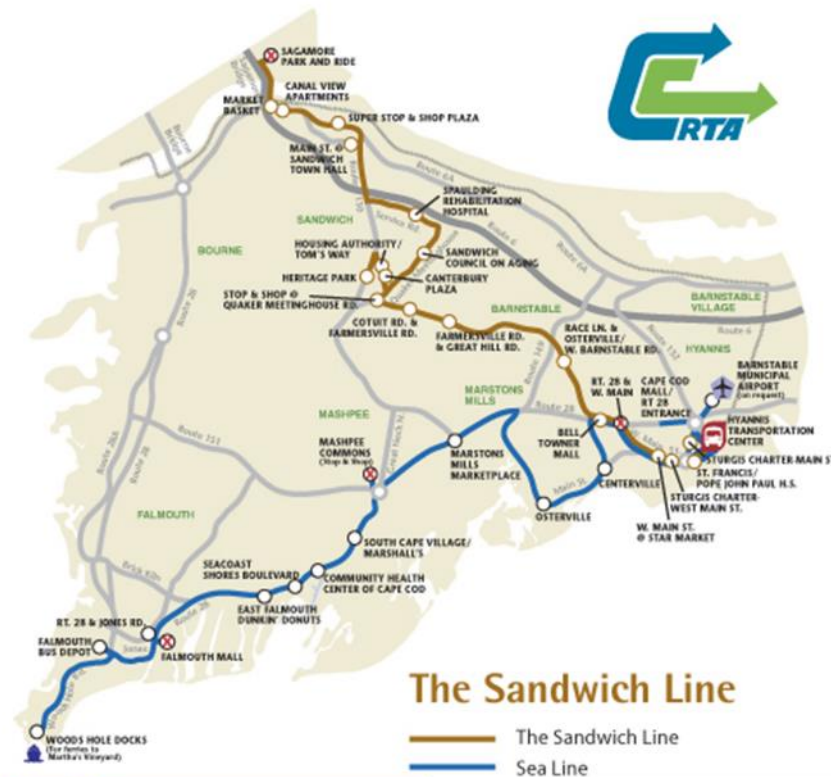
- Exact fare only. Drivers will not make change.
- Children age five and younger, with an adult, ride free.
- ** Also, persons holding Medicare cards. Transit Access Passes for disabled persons available from the RTA 508-775-8504 Ext. 200.

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

CCRTA Fares	Adults and Youth	People 60 and older People with disabilities**
One-way ride	\$2	\$1
PASSES		
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.

Bus and Train Alternatives to Reach Cape Cod

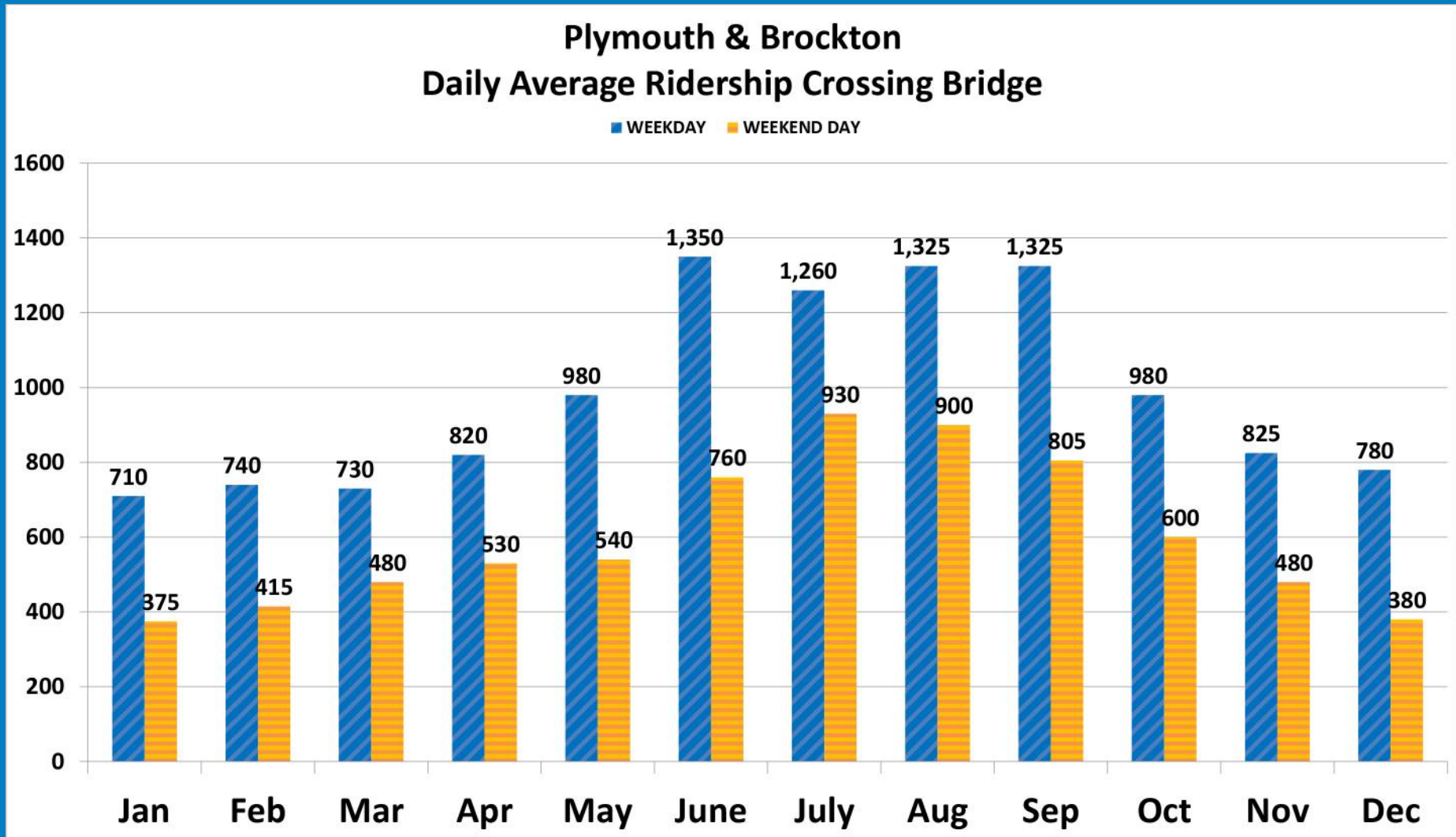
Service Providers.

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

Cape Flyer

- Ridership in 2013: May – October (Columbus Day) – 15,000.
- Ridership in 2014: May – September – 12,625.

Daily Average Ridership Crossing Bridge.



Park and Ride Lots.



Bicycles and Pedestrians

Bicycle Facilities.



Statewide Bicycle Facilities

- Existing Off Road
- Existing On Road

Bicycle Facilities.



Statewide Bicycle Facilities

- Existing Off Road
- Existing On Road
- Envisioned Off Road
- Envisioned On Road

Schedule and Next Steps

Study Schedule.

	2014			2015											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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.

	2014			2015											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TASK 3 Alternatives Development															
Working Group Meeting									♦						
Public Meeting										♦					
TASK 4 Alternatives Analysis															
Mobility/Accessibility Analysis															
Safety Analysis															
Environmental Effects Analysis															
Land Use/Economic Development															
Community Effects/TitleVI/EJ															
Cost Analysis															
Working Group Meeting											♦				
Public Meeting												♦			
TASK 5 Recommendations															
Draft report															
Working Group Meeting												♦			
Public Meeting													♦		
TASK 6 Final Report															

Next Steps.

- Project and analyze 2035 No-Build Traffic Volumes.
- Complete economic analysis.
- Begin consideration of improvement alternatives.

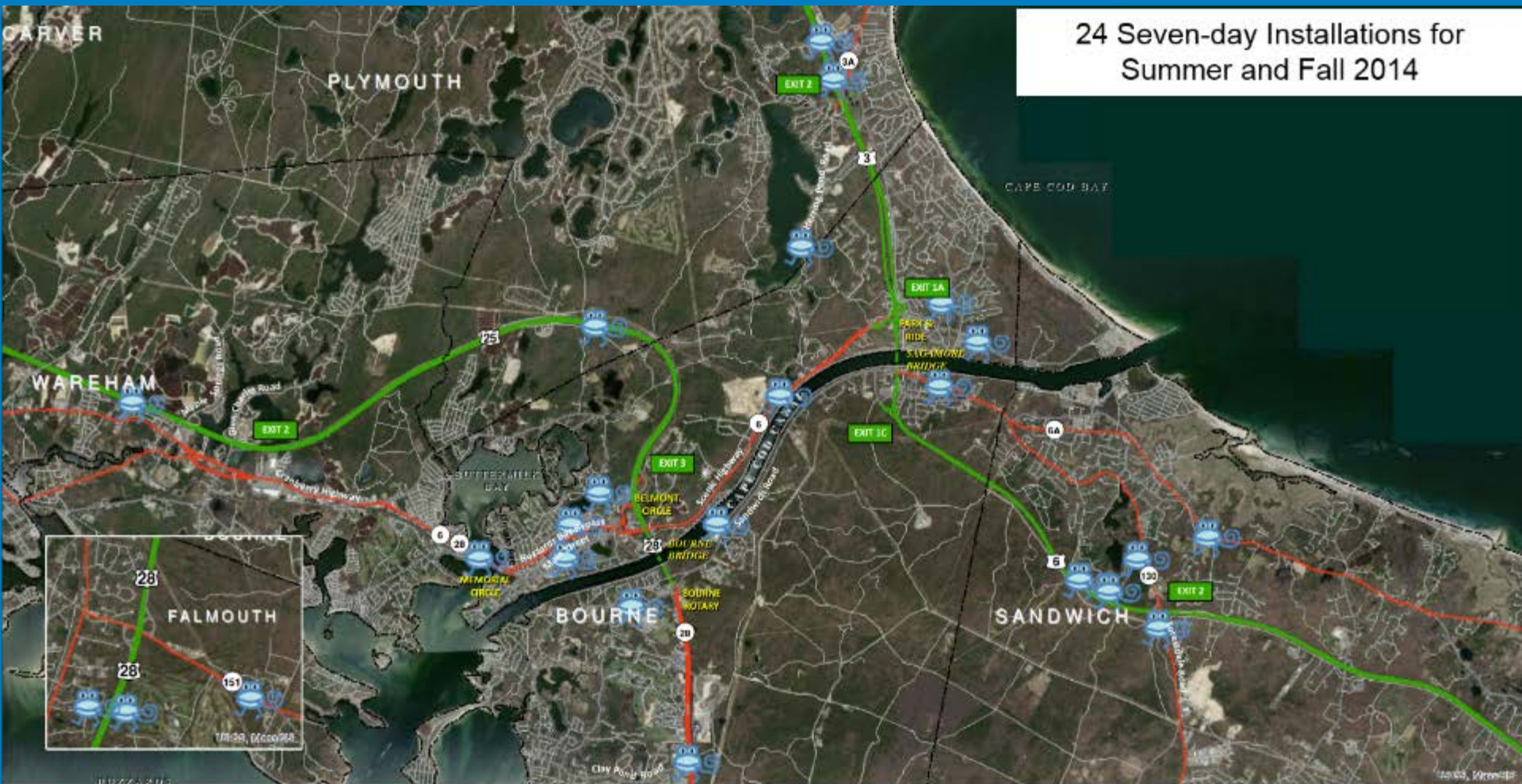
An aerial photograph of a wide river flowing through a densely forested landscape. A large bridge with multiple spans crosses the river. The surrounding land is covered in green trees, with some buildings and parking areas visible on the left bank. The river curves to the right in the distance.

Questions?

Comments and feedback can be emailed to
Ethan Britland - ethan.britland@state.ma.us

Where are drivers going and how do they get there?

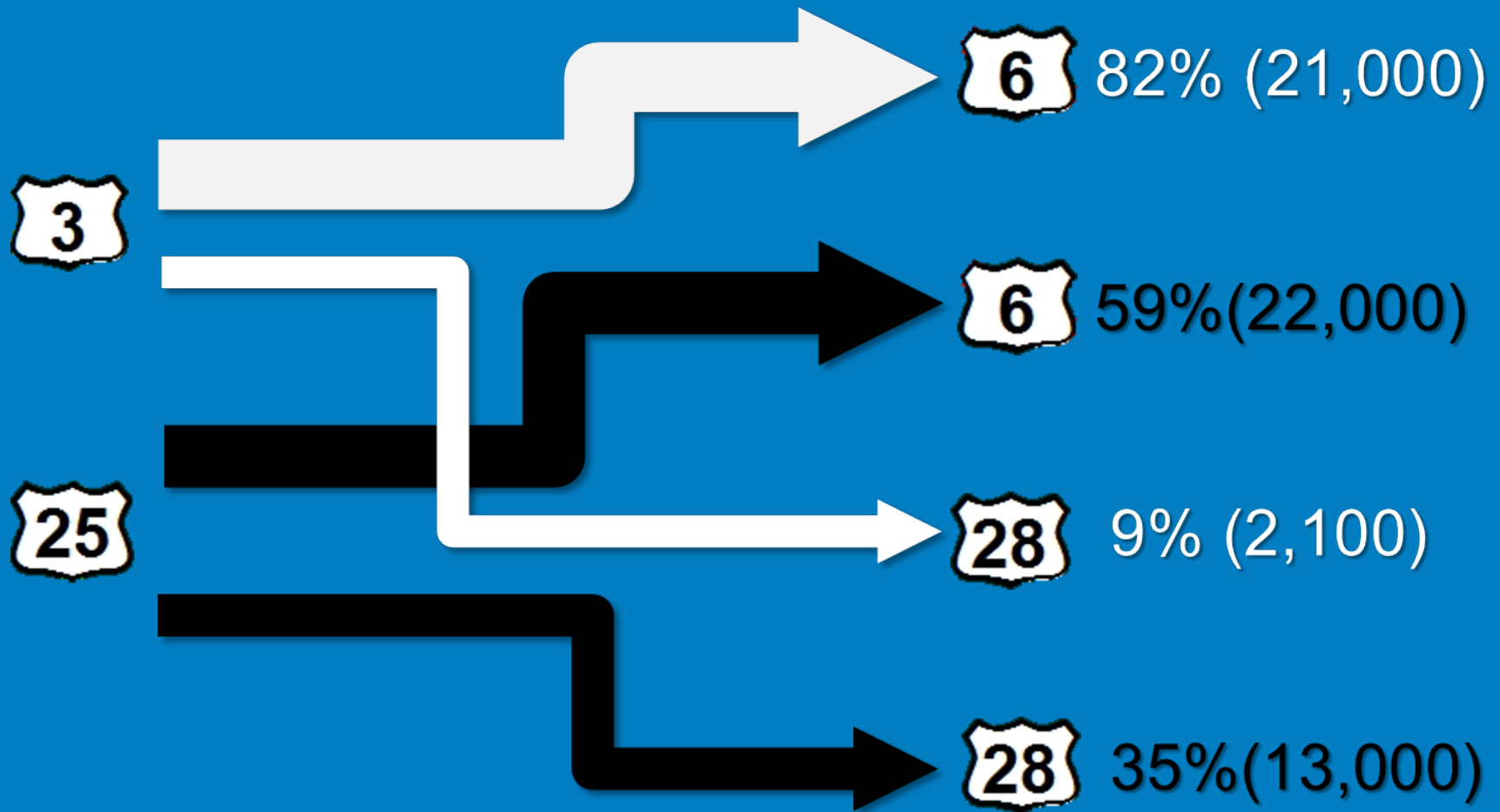
BlueTOAD Locations.



BlueTOADS.



Summer Saturday Cape-Bound Routing.



Summer Sunday Off-Cape Routing.

