Cape Cod Transit is Smart Transit and About to Get Smarter

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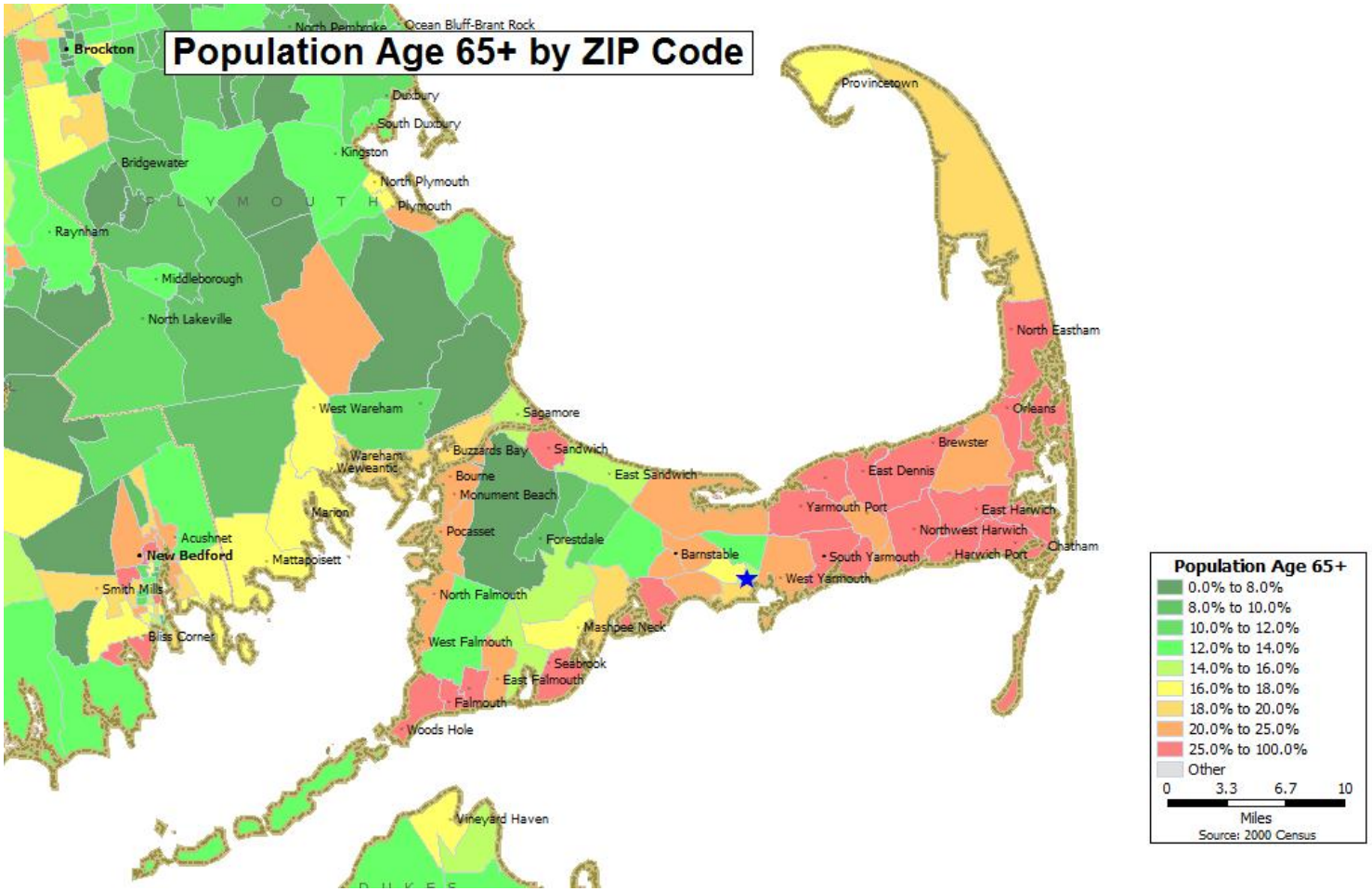
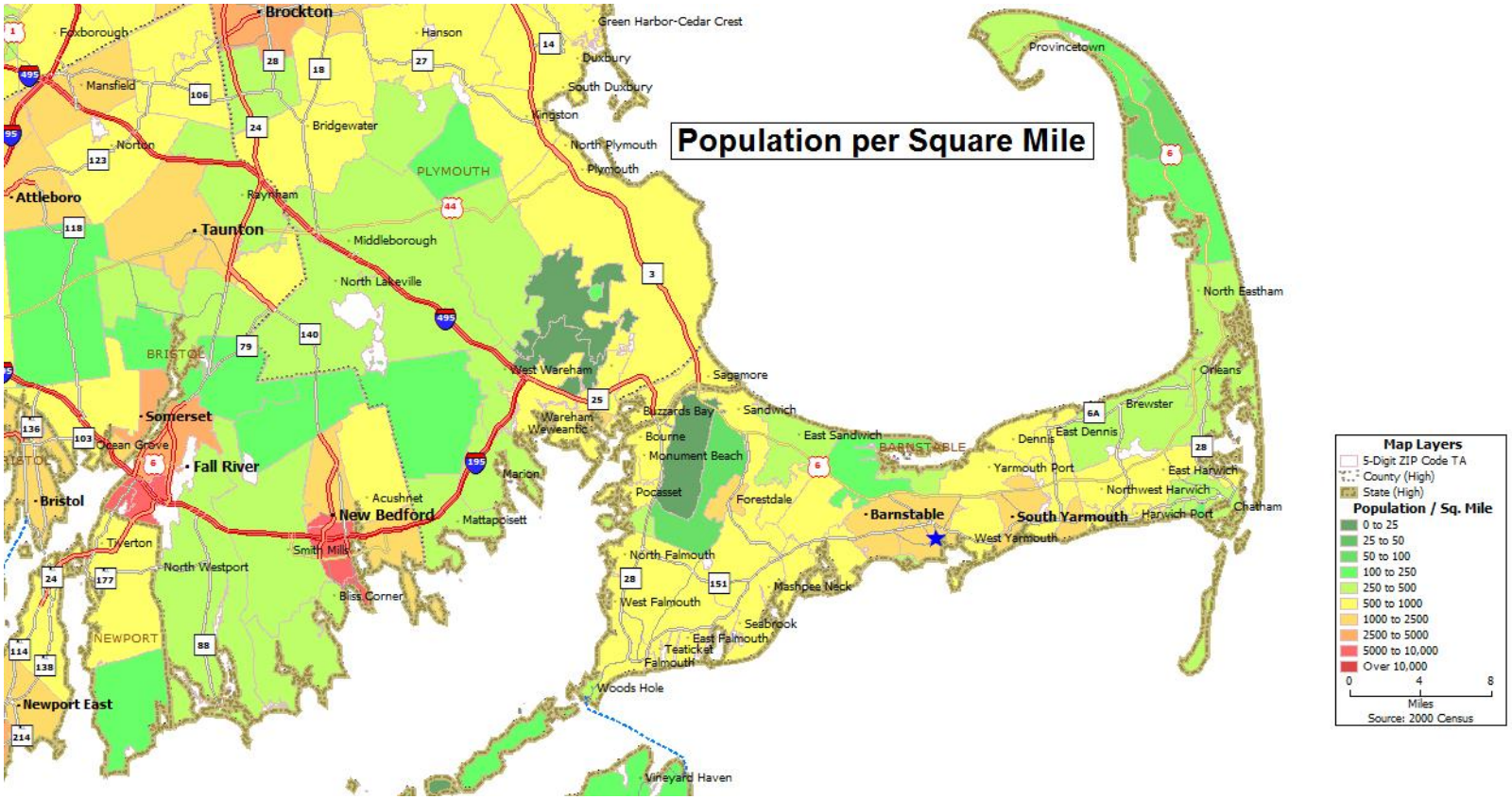
June 2013

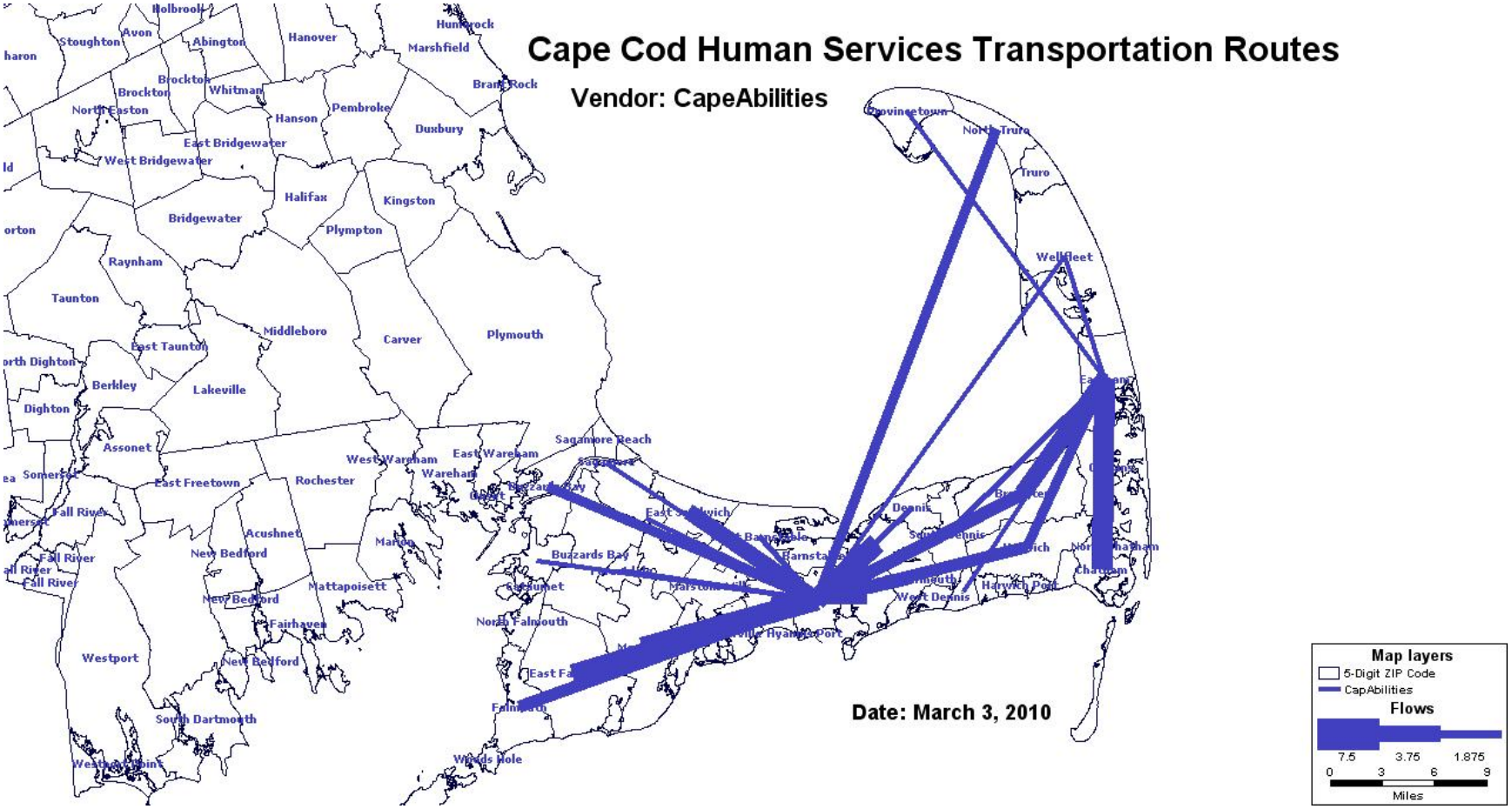
Very High Incidence of Elderly Residents



Low density resident population



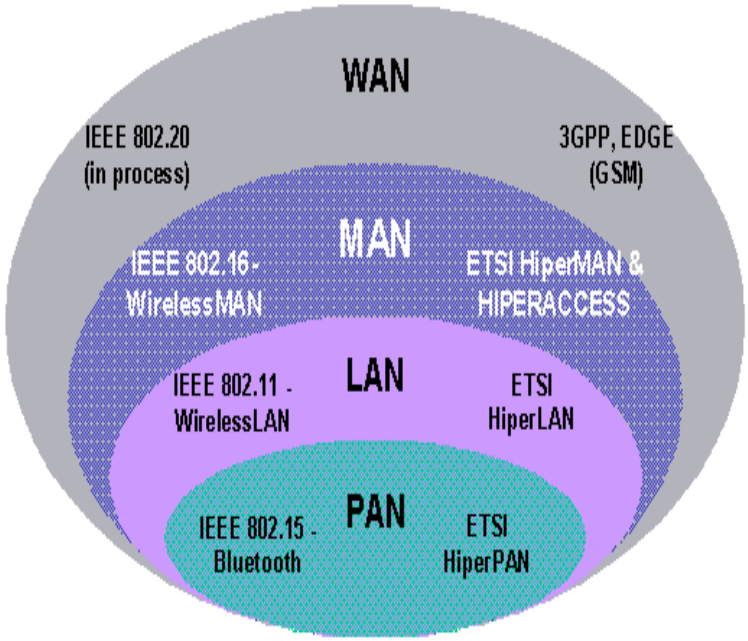
Trip origins and destinations for human services have distinct spatial and temporal characteristics



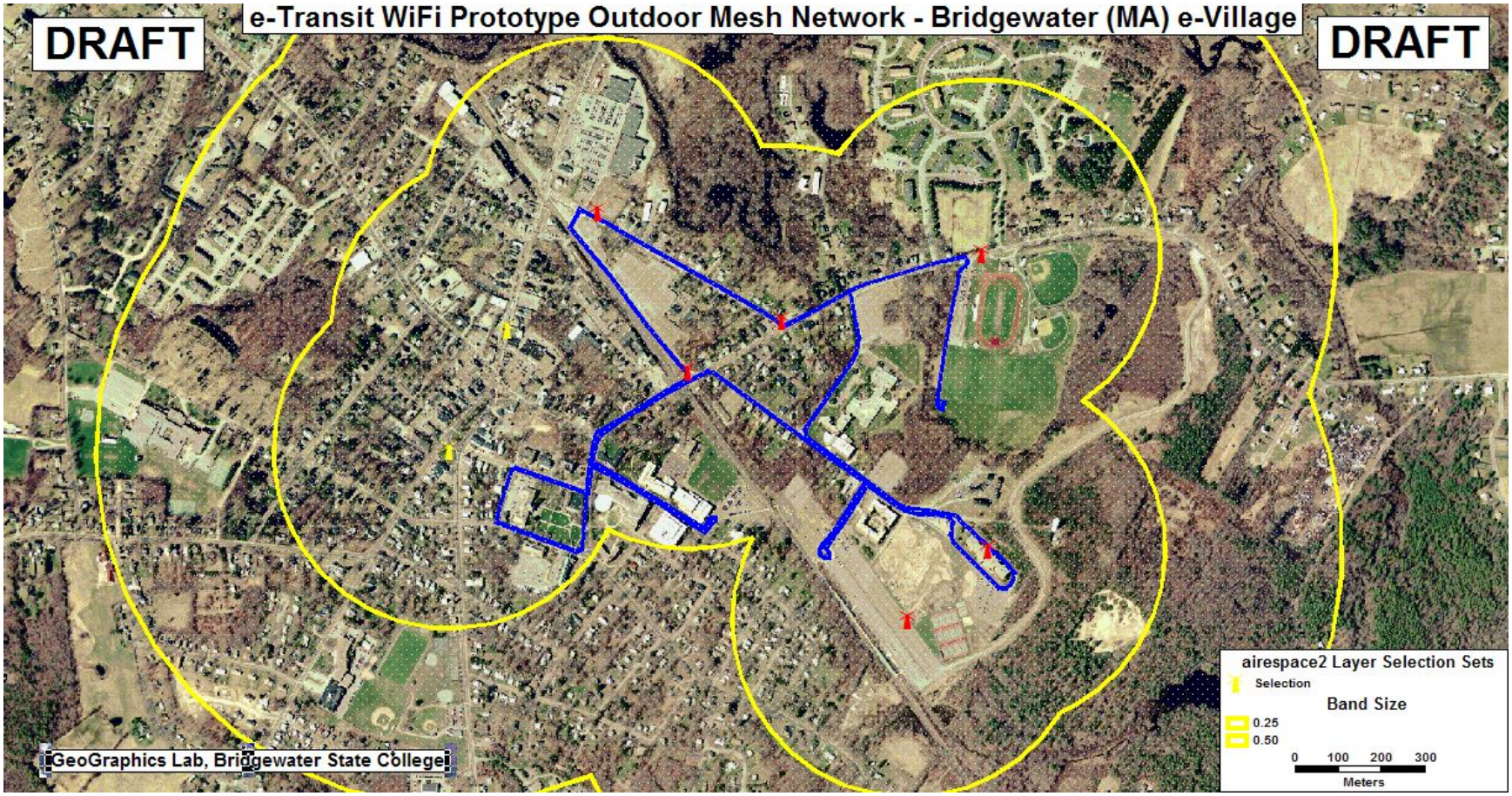
Historical FTA Support to CCRTA

- 1st FTA Rural Transit Intelligent Transportation System Demonstration in U.S. – Real-time Web-Mapping of transit vehicles (c. 1997)
- Geographic Information Systems Decision Support (c. 1998)
- Cape Cod tourist electronic transit pass (c. 2001)
- FTA ITS Foundation Research: “e-Transit village” demonstrating Outdoor WiFi Mesh Network for transit communications (c. 2006)

FTA – Bridgewater State U Outdoor WiFi prototype for Real-Time Transit Information and Security c. 2006

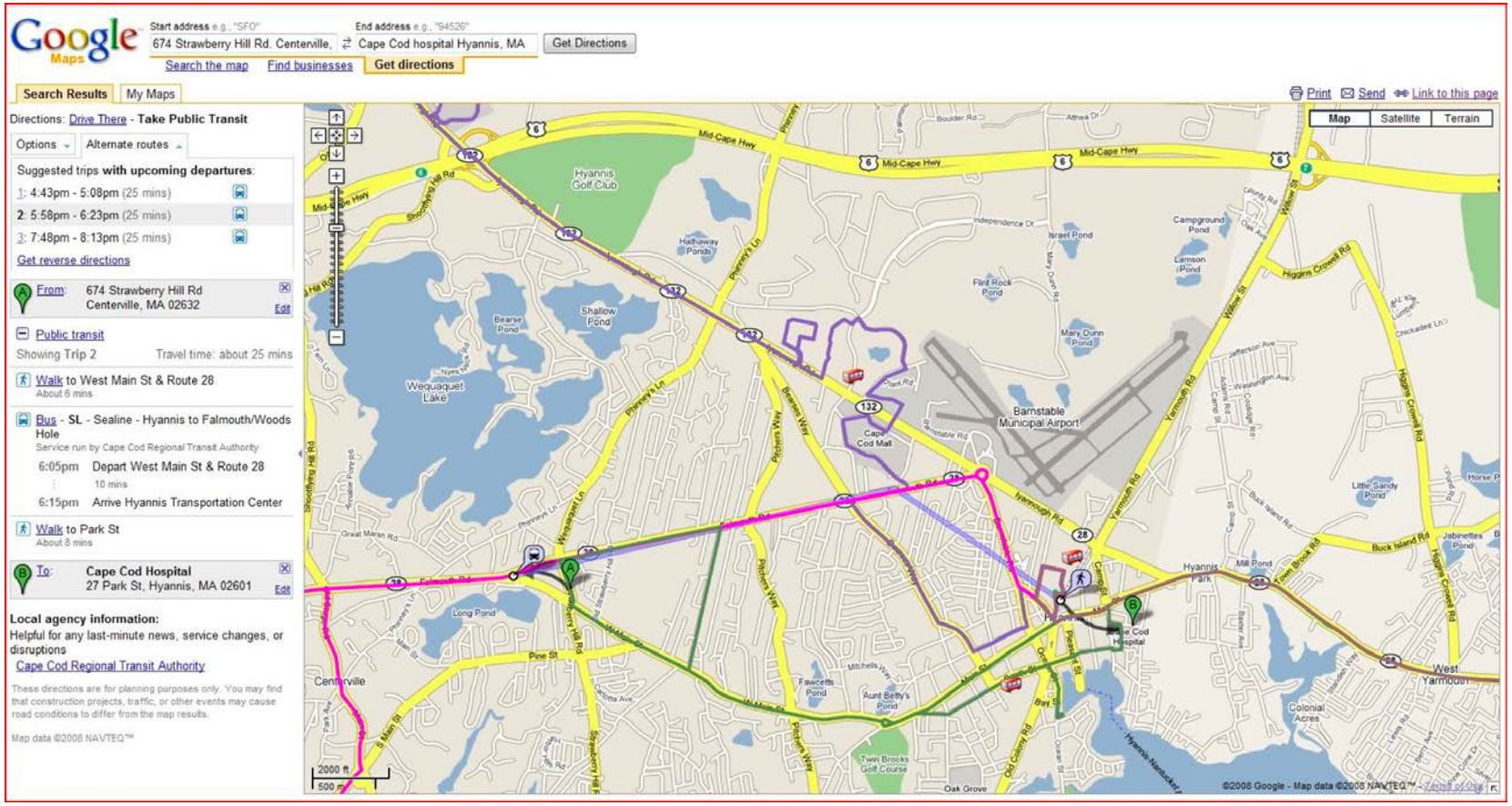


2006 e-Transit Village WiFi Mesh Network



Recent CCRTA ITS (2009- 2013)

- FTA-CCRTA Economic Stimulus ITS project
  - Mobility Management Call Center
  - Multi-Modal Inter-Regional Google Transit
  - Multimodal Inter-Regional Real-Time AVL
  - Smart phone app for p/w/d for all platforms
  - Inter-Regional inter-operable smart card for MA
- Related SE MA Open Cape Broadband Project
  - 100 Gbps middle mile fiber-optic cable to Internet
  - 700 MHz Wireless Public Safety Regional Radio


Google Maps
Start address e.g., "SFO"
674 Strawberry Hill Rd. Centerville,
End address e.g., "94526"
Cape Cod hospital Hyannis, MA
Get Directions
Search the map
Find businesses
Get directions
Search Results
My Maps
Print
Send
Link to this page
Directions: Drive There - Take Public Transit
Options
Alternate routes
Suggested trips with upcoming departures:
1: 4:43pm - 5:08pm (25 mins)
2: 5:58pm - 6:23pm (25 mins)
3: 7:48pm - 8:13pm (25 mins)
Get reverse directions
From: 674 Strawberry Hill Rd
Centerville, MA 02632
Edit
Public transit
Showing Trip 2
Travel time: about 25 mins
Walk to West Main St & Route 28
About 6 mins
Bus - SL - Sealine - Hyannis to Falmouth/Woods Hole
Service run by Cape Cod Regional Transit Authority
6:05pm Depart West Main St & Route 28
10 mins
6:15pm Arrive Hyannis Transportation Center
Walk to Park St
About 8 mins
To: Cape Cod Hospital
27 Park St, Hyannis, MA 02601
Edit
Local agency information:
Helpful for any last-minute news, service changes, or disruptions
Cape Cod Regional Transit Authority
These directions are for planning purposes only. You may find that construction projects, traffic, or other events may cause road conditions to differ from the map results.
Map data ©2008 NAVTEQ™
Map
Satellite
Terrain
Mid-Cape Hwy
Hyannis Golf Club
Hathaway Ponds
Shallow Pond
Wequaquet Lake
Barnstable Municipal Airport
Cape Cod Mall
Hyannis Park
Cape Cod Hospital
Centerville
West Yarmouth
Long Pond
Fawcetts Pond
Aunt Betty's Pond
Twin Brooks Golf Course
Colonial Acres
Oak Grove
2000 ft
500 m
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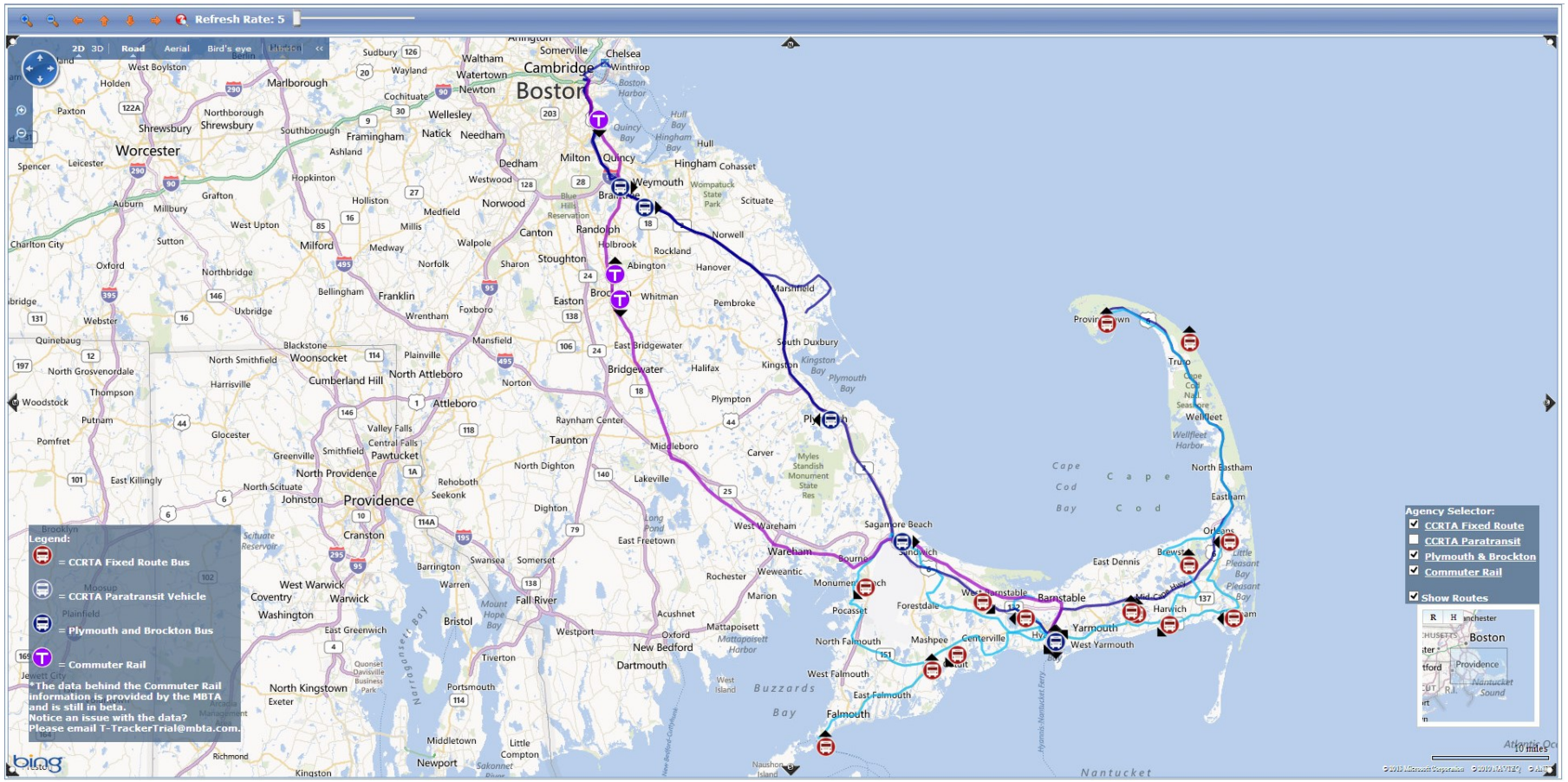
Inter-Regional Web-based Automatic Vehicle Location (AVL) Mapping

- Multimodal Web Mapping of vehicle location
  - Local and regional fixed route service
  - Dial-A-Ride Transportation (DART)
  - Inter-city bus from Boston
  - Inter-city bus from NYC
  - Public and private ferries on Nantucket Sound
  - Private ferries on Cape Cod Bay

Intermodal Web AVL – Prototype



Integration of AVL, MDTs and Electronic Farebox Data

- Vehicle location technology and Mobile Data Terminals (MDT) were upgraded on all CCRTA's fixed route, route deviation and dial-a-ride transportation (DART)
- Automatic Fare boxes and Smart Card technology integrated with GPS-based AVL and computer assisted scheduling and dispatching in real-time through state-of-the-art mobile data terminals.

Innovative Real-Time Customer Information Systems Prototypes

- Large Screen Displays in Terminals and Major Destinations for integrated transit and inter-city connectors.
  - Hyannis Transportation Center, Cape Cod Mall, CC Community College, Barnstable Airport.
- LED displays of bus location at Cape Cod style bus shelters
  - 10 LED displays with ETA installed this spring.
- Smart phone applications for Cape Cod residents, tourists and persons with disabilities.

New Cape Cod Connector Services

New Local Services

New Modes

Transportation Center Info Booth

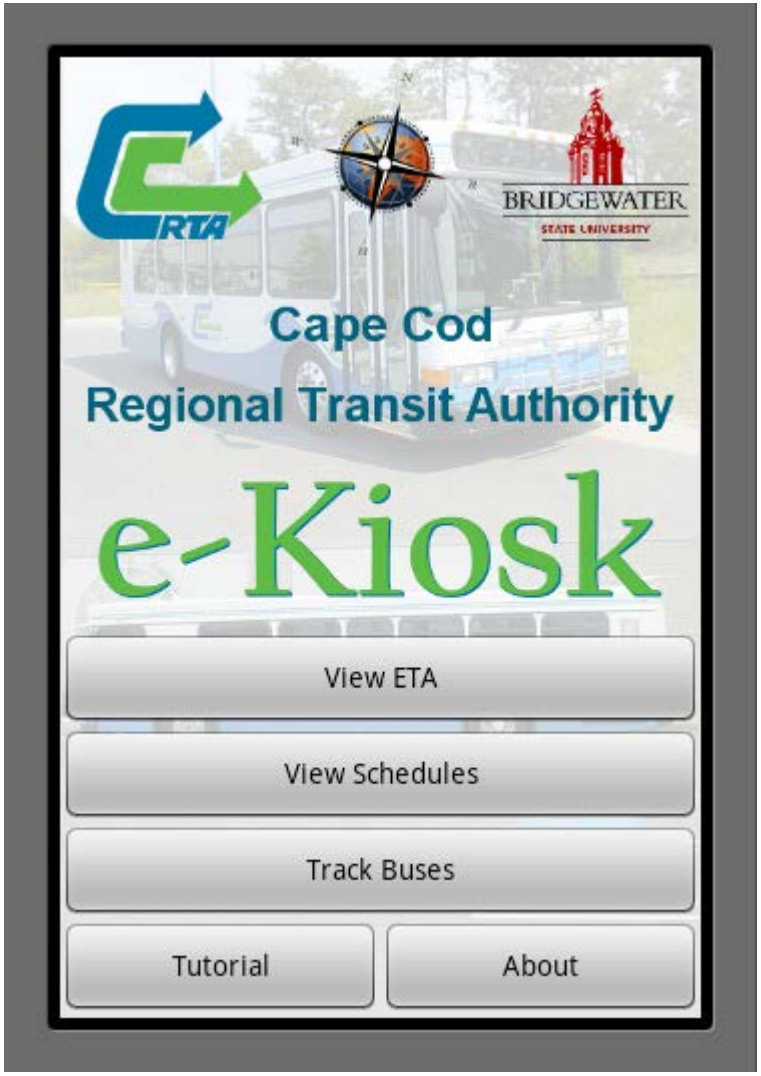
Travelers using real-time Inter-City tracking displays at Hyannis terminal

Enhanced Bus Shelter at Seacoast Shores, East Falmouth

CCRTA Smartphone Application for Tourists and persons with disabilities - work in progress

CCRTA and Bridgewater State University are developing a smartphone application that will combine all the features of the large screen customer information displays and enhanced bus shelter ETA displays into one application that can be downloaded onto a smart phone from the CCRTA website.

In addition to real-time tracking of vehicles on a map, features include NextBus® Estimated Time of Arrival for each stop and for each route. For passengers with cognitive disabilities or memory loss, they can be connected in real-time with caregivers and family including geographic location and video using an emergency button. The application will be available on Android, iPhone, and Window Mobile phones.



Reverse-Geocoding of Intermodal Automatic Vehicle Location

- Personal Data Assistants (PDAs) for persons with disabilities and tourists on smart phones and laptops

Information Retrieved at: 7/25/2011 4:31:19 PM

Refresh

☑ CCRTA Fixed Route ☑ CCRTA Paratransit ☑ Plymouth & Brockton ☑ Peter Pan

CCRTA Fixed Route Vehicles

Route Name	Bus ID	Time	Speed	Location	Heading	Direction
Main St	34	4:31 PM	0 MPH	HYANNIS, MA 02601	N (0°)	OutBound
Whoosh	35	4:30 PM	0 MPH	PRISCILLA ST near MARAVISTA AVE, EAST FALMOUTH, MA 02536	N (0°)	InBound
Whoosh	36	4:30 PM	0 MPH	WORCESTER CT between ROSE ST & DAVIS STRAITS, EAST FALMOUTH, MA 02536	N (0°)	InBound
Whoosh	37	4:27 PM	4 MPH	LUSCOMBE AVE between RAILROAD AVE & WATER ST, WOODS HOLE, MA 02543	S (180°)	OutBound
Villager	24	4:30 PM	0 MPH	MILLWAY near WAY	N (0°)	InBound
Villager	26	4:31 PM	2 MPH	SOUTH DENNIS, MA 02660	SE (135°)	InBound
Villager	29	4:30 PM	0 MPH	HYANNIS, MA 02601	N (0°)	OutBound
Villager	43	4:29 PM	0 MPH	BERTRAN AVE, SOUTH DENNIS, MA 02660	N (0°)	InBound
	44	4:31 PM	0 MPH	RYDER ST E near COMMERCIAL ST, PROVINCETOWN, MA 02657	N (0°)	
	45	4:31 PM	15 MPH	STANDISH ST between COMMERCIAL ST & FREEMAN ST, PROVINCETOWN, MA 02657	SE (135°)	
	42	4:30 PM	24 MPH	near RACE POINT RD, PROVINCETOWN, MA 02657	S (180°)	
Provincetown	38	4:30 PM	11 MPH	S HIGHLAND RD, NORTH TRURO, MA 02652	N (0°)	OutBound
Provincetown	39	4:30 PM	0 MPH	COMMERCIAL ST, PROVINCETOWN, MA 02657	N (0°)	InBound
Flex	40	4:26 PM	40 MPH	US HWY 6, TRURO, MA 02666	SE (135°)	InBound
Flex	41	4:31 PM	0 MPH	HYANNIS, MA 02601	N (0°)	OutBound
Flex	8	4:30 PM	0 MPH	CANAL RD, ORLEANS, MA 02653	N (0°)	InBound
Flex	2	4:31 PM	0 MPH	TOWN HALL RD between TRURO CENTER RD & US HWY 6, TRURO, MA 02666	N (0°)	OutBound
H2O	9	4:31 PM	33 MPH	MAIN ST near JULIEN RD, HARWICH PORT, MA 02646	SW (225°)	InBound
H2O	11	4:30 PM	0 MPH	STATE HWY 28 near LONG POND PLZ, SOUTH YARMOUTH, MA 02664	N (0°)	InBound
H2O	10	4:31 PM	11 MPH	G A R HWY near MAIN ST, ORLEANS, MA 02653	SW (225°)	OutBound
H2O	4	4:30 PM	0 MPH	BERTRAN AVE, SOUTH DENNIS, MA 02660	N (0°)	OutBound
	12	4:31 PM	0 MPH	BERTRAN AVE, SOUTH DENNIS, MA 02660	N (0°)	
Sealine	13	4:30 PM	31 MPH	E FALMOUTH HWY between OLD MENAUHANT RD & CENTRAL AVE, EAST FALMOUTH, MA 02536	NE (45°)	OutBound
Flex	14	4:30 PM	0 MPH	SISSON RD between STATE HWY 28 & HAROLD ST, HARWICH PORT, MA 02646	N (0°)	OutBound
Sealine	15	4:30 PM	0 MPH	FALMOUTH RD near JOB S FISHING RD, MASHPEE, MA 02649	N (0°)	OutBound
Sealine	16	4:30 PM	0 MPH	BERTRAN AVE, SOUTH DENNIS, MA 02660	N (0°)	InBound
Flex	18	4:31 PM	8 MPH	G A R HWY, ORLEANS, MA 02653	NE (45°)	OutBound
Flex	20	4:30 PM	15 MPH	MAIN ST near SEA ST, HARWICH PORT, MA 02646	W (270°)	InBound

CCRTA Paratransit Vehicles

Route Name	Bus ID	Time	Speed	Location	Heading
	327	4:27 PM	9 MPH	INDEPENDENCE DR near ATTUCKS LN, HYANNIS, MA 02601	S (180°)
	330	4:30 PM	11 MPH	SANDWICH RD between PINECREST BEACH DR & JOHN PARKER RD, EAST FALMOUTH, MA 02536	SW (225°)
	331	4:30 PM	12 MPH	BAKERS RD near MAIN ST, MASHPEE, MA 02649	NW (315°)
	334	4:30 PM	11 MPH	COTUIT RD near EARLY RED CIR, SANDWICH, MA 02563	S (180°)
	336	4:29 PM	0 MPH	MAIN ST between HIGH SCHOOL RD & WINTER ST, HYANNIS, MA 02601	N (0°)
	345	4:30 PM	0 MPH	BERTRAN AVE, SOUTH DENNIS, MA 02660	N (0°)
	350	4:30 PM	0 MPH	BERTRAN AVE, SOUTH DENNIS, MA 02660	N (0°)
	351	4:28 PM	11 MPH	BREWSTER CHATHAM RD between SCOTCH PINE FARM & SCOTCH PINE FARM, HARWICH, MA 02645	SE (135°)

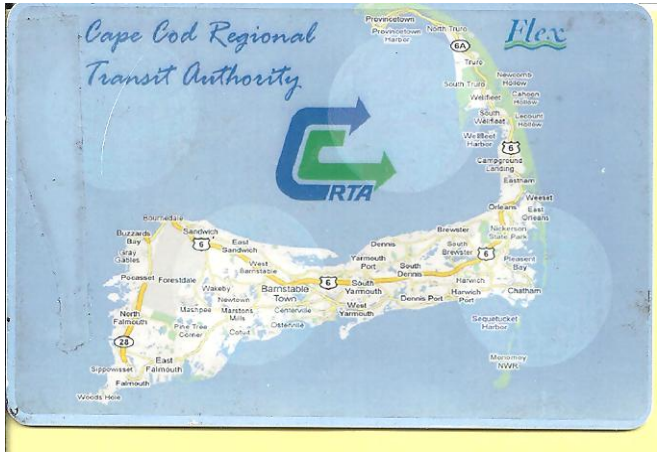
Cape Cod “Charlie Cards”

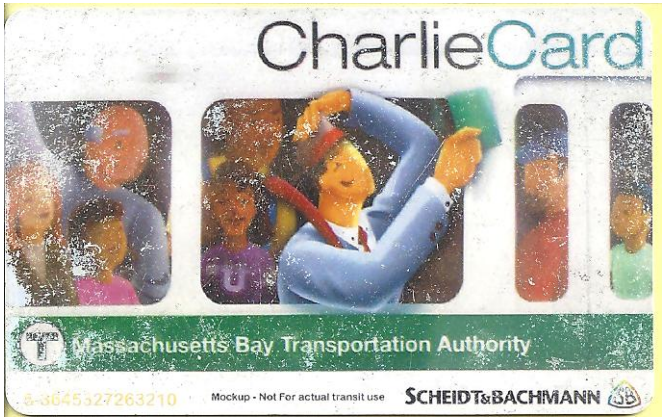
- Electronic Fare Systems (EFS) for Cape Cod transit users that are
  - Interoperable with the MBTA’s “Charlie Card” and 12 other Massachusetts transit agencies.
  - *Integrated with real-time spatial data collection* on every vehicle for service planning and evaluation.
    - Provides bi-directional data flow between EFS and operations databases -- uploads and downloads.
    - Collateral data streams provide redundancy

Cape Cod's
inter-regional "smart card"

CCRTA's Charlie Card

Interoperable with MBTA and 12 Massachusetts RTA's +

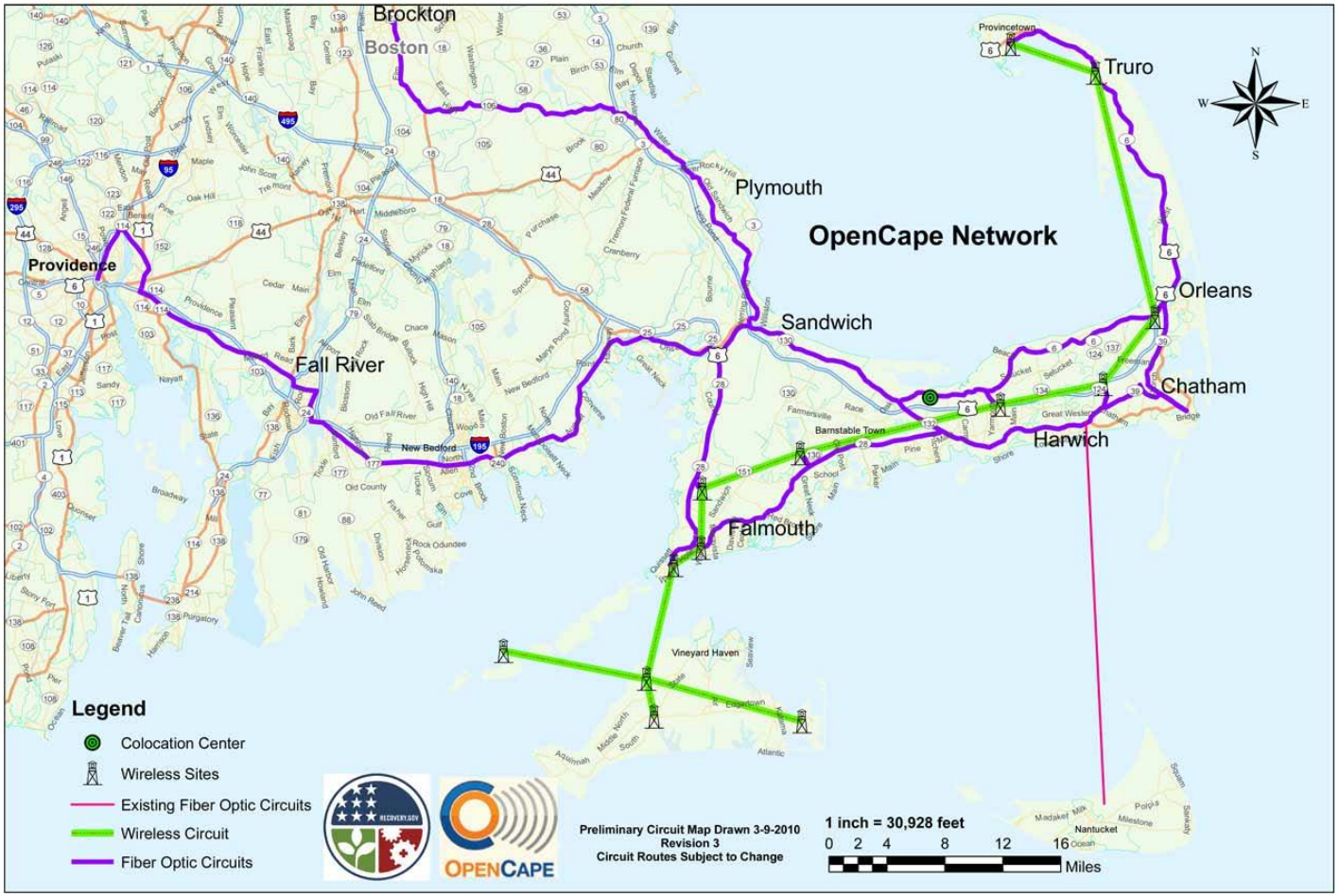




MBTA mTicketing on Smartphones

The Massachusetts Bay Transportation Authority has introduced smart phone ticketing on it's commuter rail and ferry services using the Mesabi payment system. This system is being extended to the seasonal CapeFLYER passenger rail service from Boston to Cape Cod and, in the future, to inter-city bus connections to Cape Cod.

Convergence of Economic Stimulus Infrastructure Projects on Cape Cod



Smarter Regional Transit Rqmts

- Need to provide **“last mile”** wireless broadband to complete OpenCape Broadband’s “middle mile” connectivity, especially in *“forever rural” Outer Cape and Cape Cod National Seashore*.
- Need to provide high capacity “Wi-Gig” for wireless local area network **on** transit vehicles, **in** transit shelters and **at** major destinations for real-time en-route trip planning, *particularly for persons with disabilities using smart phones for navigation.*
- *Provides alternative to GPS for real-time local positioning systems (LPS) along transit routes.*

Smart is as Smart Does 1

- **Institutionally** – build "outdoor WiFi" using 21st Century ***emerging technologies***, *e.g.:*
  - WLAN – WiFi/WiGig: IEEE 802.11ac, ad, and p
  - Connected vehicles (USDOT)
    - Vehicle to vehicle (V2V) for safety
    - Vehicle to infrastructure (V2I *e.g*. *e-Transit/security*)
    - Vehicle to Transportation Center (Remote Drivers/*robo-Dial-A-Ride Transportation [DART])*
    - ***Vehicle-to-consumer with streaming video inside and outside vehicle and shelters at 1 Gbps. (V2V, V2I)***

Smart is as Smart Does 2

- **Individually** – create mobile devices as tools for access and mobility
  - Smart phone/tablet of the next decade for CIS
  - *Adaptive computing* approaches to individual access and mobility from *mass market* technology
    - *Open systems* for operating handheld computing (*e.g*. Android "phablet")
    - *Open data exchange* for the smart traveler
    - *Travel training* for individuals with disabilities to use technology as *enablers not barriers*

2020 Vision for Transit Technology

- It's all about the customer
  - Easy to use intermodal travel planning on the Internet
  - Easy to find up-to-the minute status, location, and ETA for all modes to, from and on Cape Cod using the Web
  - Easy to use reservation, cancellation and trip change applications using the Internet and telephone.
  - Easy to pay intermodal smart cards to travel to, from and throughout the Cape and Islands.
  - Transparency and accountability of public and private transportation providers through technology (OpenGov).
  - ***Carless and carefree on Cape Cod***
  - ***Semi-autonomous vehicles for p/w/d and seniors***

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