

# Regional Rail on the Agricultural Branch

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# What is the Agricultural Branch?

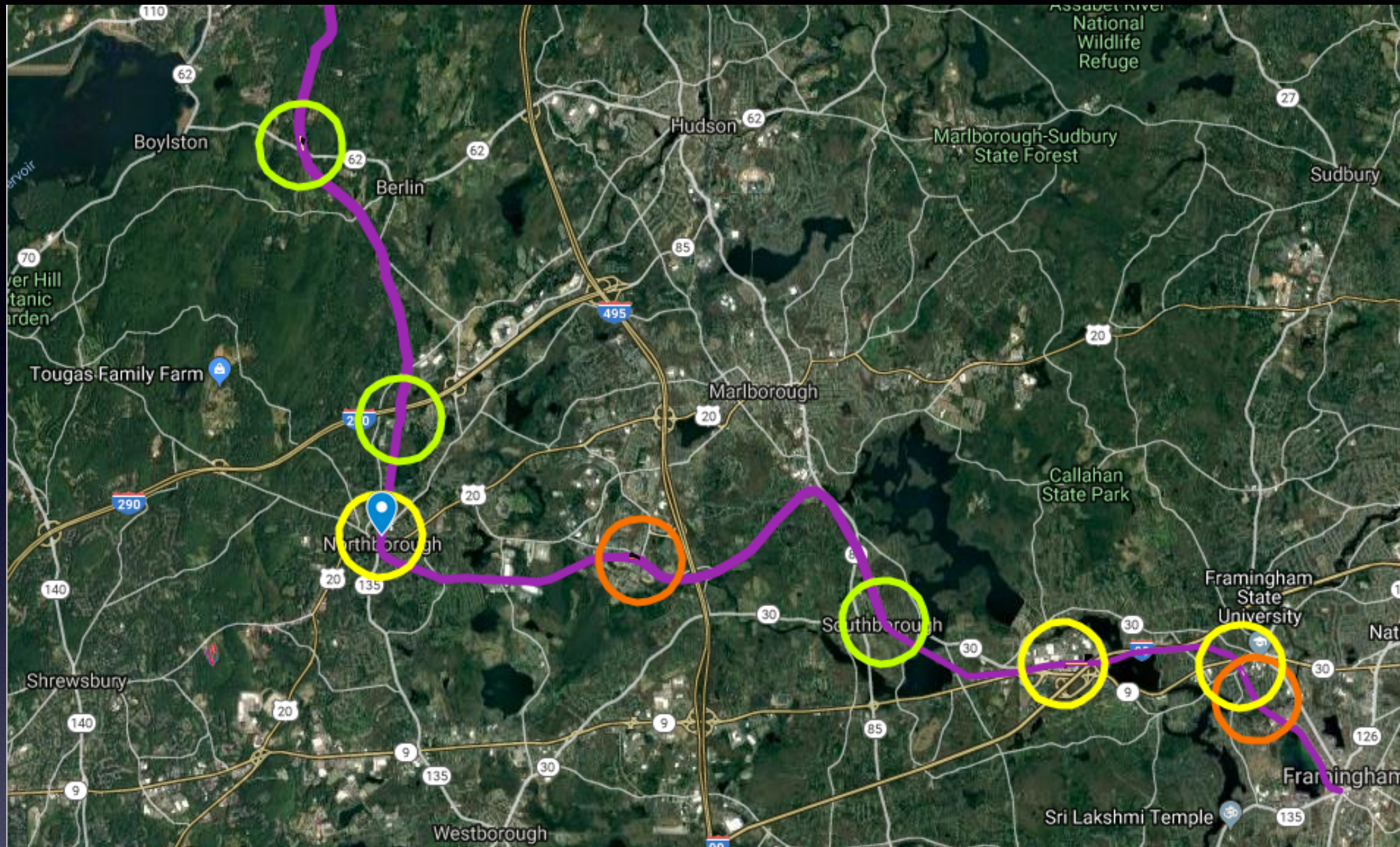
- Freight railroad serving Framingham, Southborough, Marlborough, Northborough, Berlin, Clinton
  - Branch off the Worcester Main Line just east of Framingham station
- Currently owned by CSX
- 1 train per day in each direction
- Passes three high-job-density areas and Framingham State University



# Why operate Regional Rail on the Ag Branch?

- Spread parking utilization from existing (full) Worcester Line stations
- Reverse commuting to employment centers in Framingham and Marlborough
- Phase 1 layover facility for Regional Rail
- Phase 3 economic development in Clinton
- Support TOD, access to downtown businesses in Framingham, Northborough, Clinton





# The Agricultural Branch

Not all station locations shown



# Overview of the project

- Existing line is 24 miles from Framingham to Clinton
- Mostly single-track (would require significant double-tracking and railbed rehabilitation to make attractive schedules)
- Extension last studied in the 1980s (state decided to re-extend Framingham service to Worcester instead)
- Full build is 11 stations in four phases (final phase is optional infill stations), \$490m — potential for PPPs and cost controls to reduce this
- All the cost numbers are semi-educated guesses, exclude cost of acquiring trackage rights or whole line from CSXT



# Project phasing

- Phase 1: South Framingham (existing Framingham station) to Framingham Technology Park, including EMU layover facility for Worcester Line and potentially Worcester Line substation
- Phase 2: Tech Park to Northborough/290
- Phase 3: Northborough/290 to Clinton
- Phase 4: Infill stations at Mt. Wayte Ave., Marlborough Jct., Berlin/Boylston
- Possible phase 5: extend route to Worcester via PAR?



# Employment picture: phases 1–2

- 16,000 jobs within walking distance of a station
- 3,650 workers within walking distance of a station (most in Framingham)
- 66,000 jobs (34,000 workers) within 2 miles
- 450 workers within walking distance (5,200 within 2 miles) who currently work along the inner Worcester Line, Red Line, Orange Line, or SL1
- 600 (2,350) reverse commuters in same scenario



# Employment picture: full build (including infill)

- 20,000 jobs within walking distance of a station
- 7,000 workers within walking distance of a station (most in Framingham and Clinton)
- 79,000 jobs (52,000 workers) within 2 miles
- 950 workers within walking distance (9,300 in 2 miles) who currently work along the inner Worcester Line, Red Line, Orange Line, or SL1
- 1,150 (4,650) reverse commuters in same scenario



# Data Sources

- Missouri Census Data Center: Circular Area Profiles – ACS
  - American Community Survey 2012–17 data set
- Center for Economic Studies, US Census Bureau: OnTheMap
  - LEHD Origin–Destination Employment Statistics (LODES) 2015 data set
- Note: I was a bit inconsistent about the parameters I used for each data set: for ACS data, studied radii of 0.5, 1, 2, 3, and 5 miles; for LODES data, studied radii of 0.5, 1, and 2.5 miles, with some exceptions (noted)
- I have rounded the numbers to multiples of 50 or \$1000



# Origin and Destination Walkability

- In urban areas, destinations within about 15 minutes ( $\frac{3}{4}$  mile) are considered walkable
- In suburban and rural areas, only destinations within 10 minutes ( $\frac{1}{2}$  mile) are considered walkable due to limited pedestrian affordances
- I didn't consider factors like presence of sidewalks, freeway ramps, etc., which affect walkability
- Stations are fairly closely spaced, especially in full-build scenario, so park-and-ride commutershed beyond  $2\frac{1}{2}$  miles was not studied (another station would be closer)



# Other assumptions

- I assume a full build of Regional Rail including West Station and Newton Corner
- “Inner stations” refers to Regional Rail stations from West Natick to South Station and rapid transit stations accessible with a single transfer (i.e., Red Line, Orange Line, Silver Line Transitway) plus Logan Airport
- Some data shows current commuting patterns, but Regional Rail with Ag Branch build-out may make certain commutes feasible that were not previously



# Station Overviews



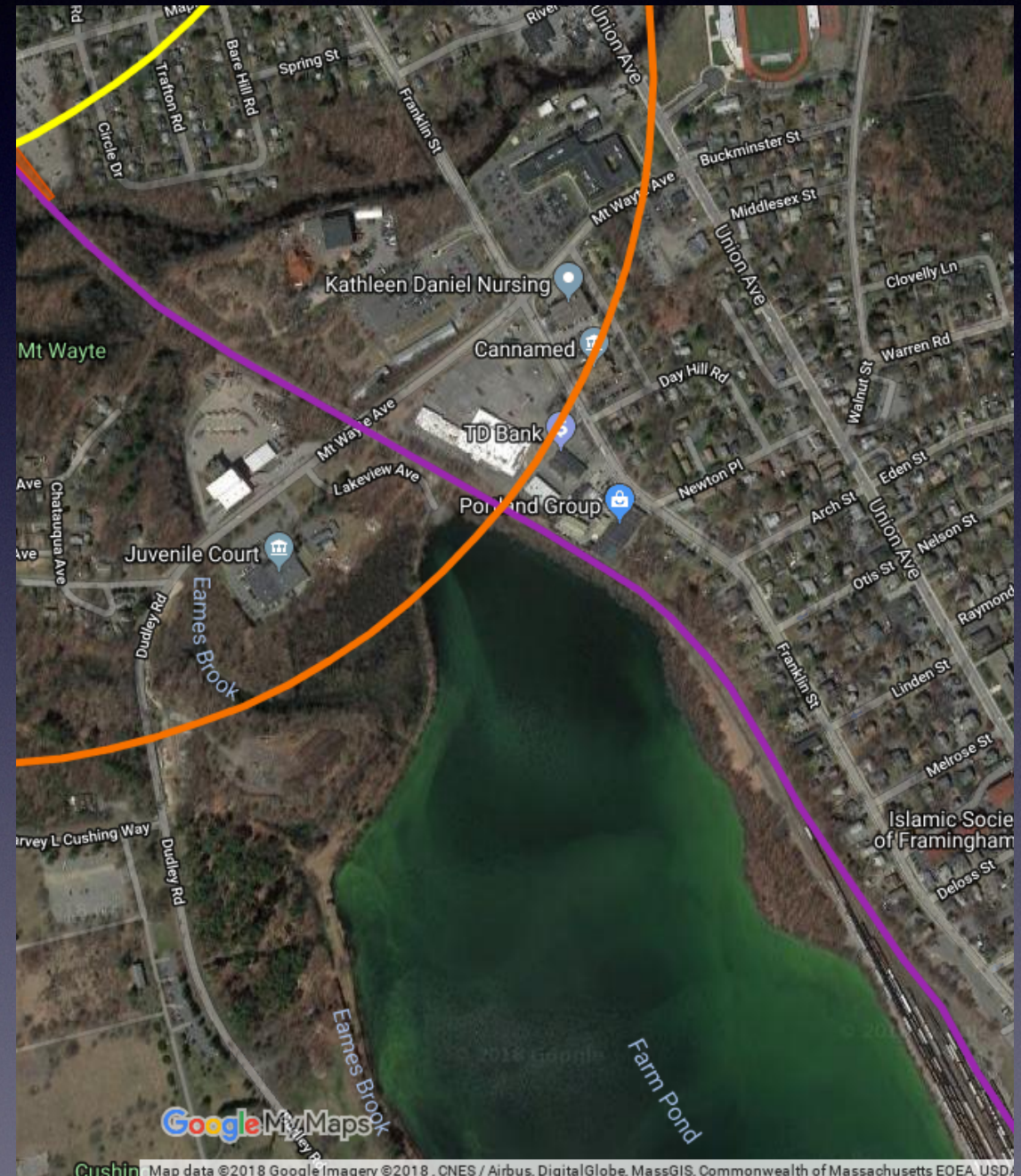
# South Framingham

- Station was renamed to “Framingham” after passenger service to Framingham Center (via the Ag Branch and the Framingham & Lowell / Sudbury Branch) was terminated
- Active freight yard, requires track relocation or yard closure/relocation to build project
- Excellent TOD potential in downtown Framingham if yard closed or relocated
- Requires new double-track platforms (with freight passing track if yard remains open) because Ag Branch track does not serve existing station platforms



# Mt. Wayte Ave.

- Phase 4 infill station, not shown on schedule
- Existing strip-mall at Franklin & Mt. Wayte being redeveloped
- Too close to Maple St. if that location is chosen for FSU station; compatible with FSU station at Salem End Rd.





# Mt. Wayte: Demographics

	Within walking distance
Residents	2,400
Residents in poverty	150
Residents employed	1,400
Household median income	\$65,250
Median house value	\$346,000



# Mt. Wayte: Commuting

	Within walking distance
Single-occupancy car commuters	875
Transit commuters	75
Households w/o access to car	125
Work within walking distance of inner stations	300



# Mt. Wayte: Employment

	Within walking distance
Jobs	1,000
Work here, live within walking distance of inner stations	90



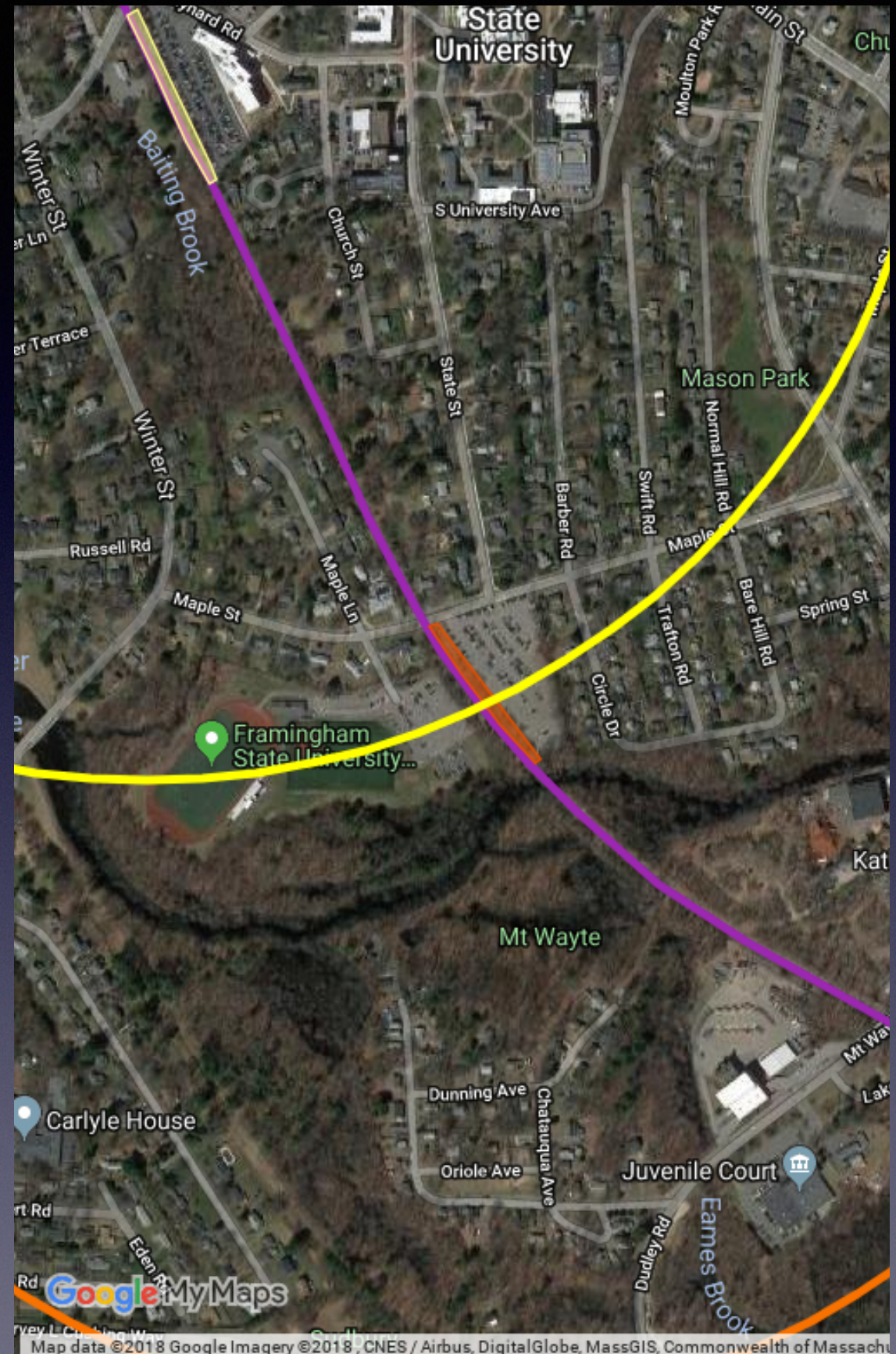
# Framingham State University

- Two possible station sites
- Line crosses Maple St. between two FSU-owned parking lots, adjacent to ball fields
- Line crosses Salem End Rd. to the west of FSU's Maynard Rd. parking lot
- Maple St. location is probably easier to construct but a less desirable location
- Both locations have platform length limits and nearby private landowners



# FSU Maple St.

- Platform length limited by Sudbury River bridge
- FSU campus is uphill and nearly ½ mile away
- Surrounded by SFR with little upzoning potential, no CRE
- Dispreferred option for FSU





# Maple St: Demographics

	Within walking distance
Residents	3,900
Residents in poverty	170
Residents employed	2,300
Household median income	\$73,400
Median house value	\$337,000



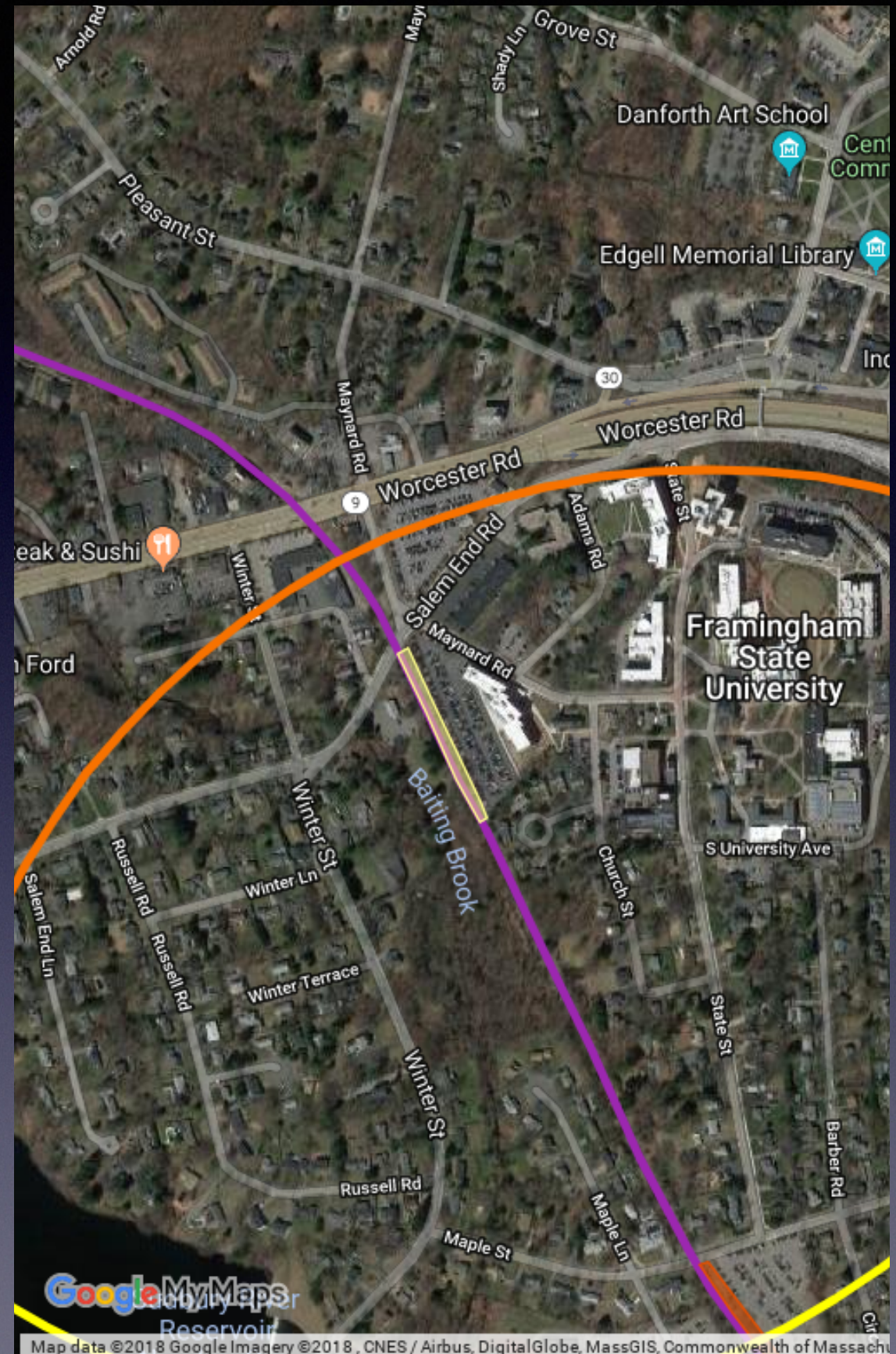
# Maple St: Commuting

	Within walking distance
Single-occupancy car commuters	1,300
Transit commuters	175
Households w/o access to car	125
Work within walking distance of inner stations	nd



# Salem End Rd. and Maynard Rd.

- 2.7 miles driving distance to downtown via Franklin St.
- FSU shuttles, MWRTA service to downtown/existing station
- FSU campus within walking distance
- Framingham Center to NE





# Salem End: Demographics

	Within walking distance
Residents	3,700
Residents in poverty	200
Residents employed	2,200
Household median income	\$77,000
Median house value	\$356,000



# Salem End: Commuting

	Within walking distance
Single-occupancy car commuters	1,250
Transit commuters	150
Households w/o access to car	100
Work within walking distance of inner stations	350



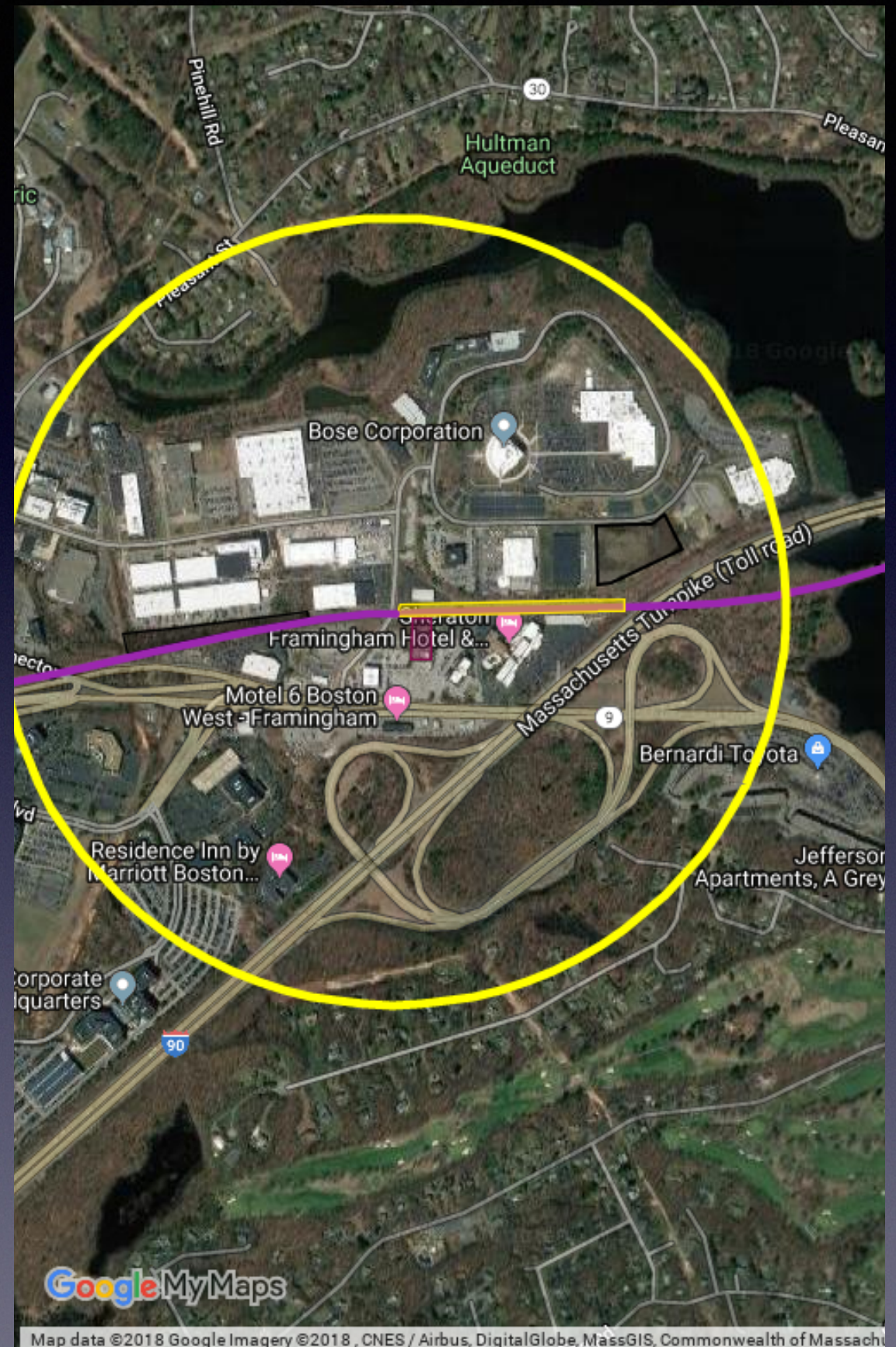
# Salem End: Employment

	Within walking distance
Jobs	3,000
Work here, live within walking distance of inner stations	200



# Framingham Technology Park/I-90

- Major employment center (Bose HQ, Sanofi, Staples), hotels, apartments
- Location of layover facility
- Strong P&R potential
- TOD potential if existing low-rise warehouses replaced
- Existing MWRTA bus service
- 3.6 road miles to Cordaville





# Tech Park: Demographics

	Within 2 miles
Residents	15,000
Residents in poverty	1,000
Residents employed	8,150
Household median income	\$103,000
Median house value	\$451,000



# Tech Park: Commuting

	Within 2 miles
Single-occupancy car commuters	6,450
Transit commuters	300
Households w/o access to car	350
Work within walking distance of inner stations	2,200 (2.5 mi)



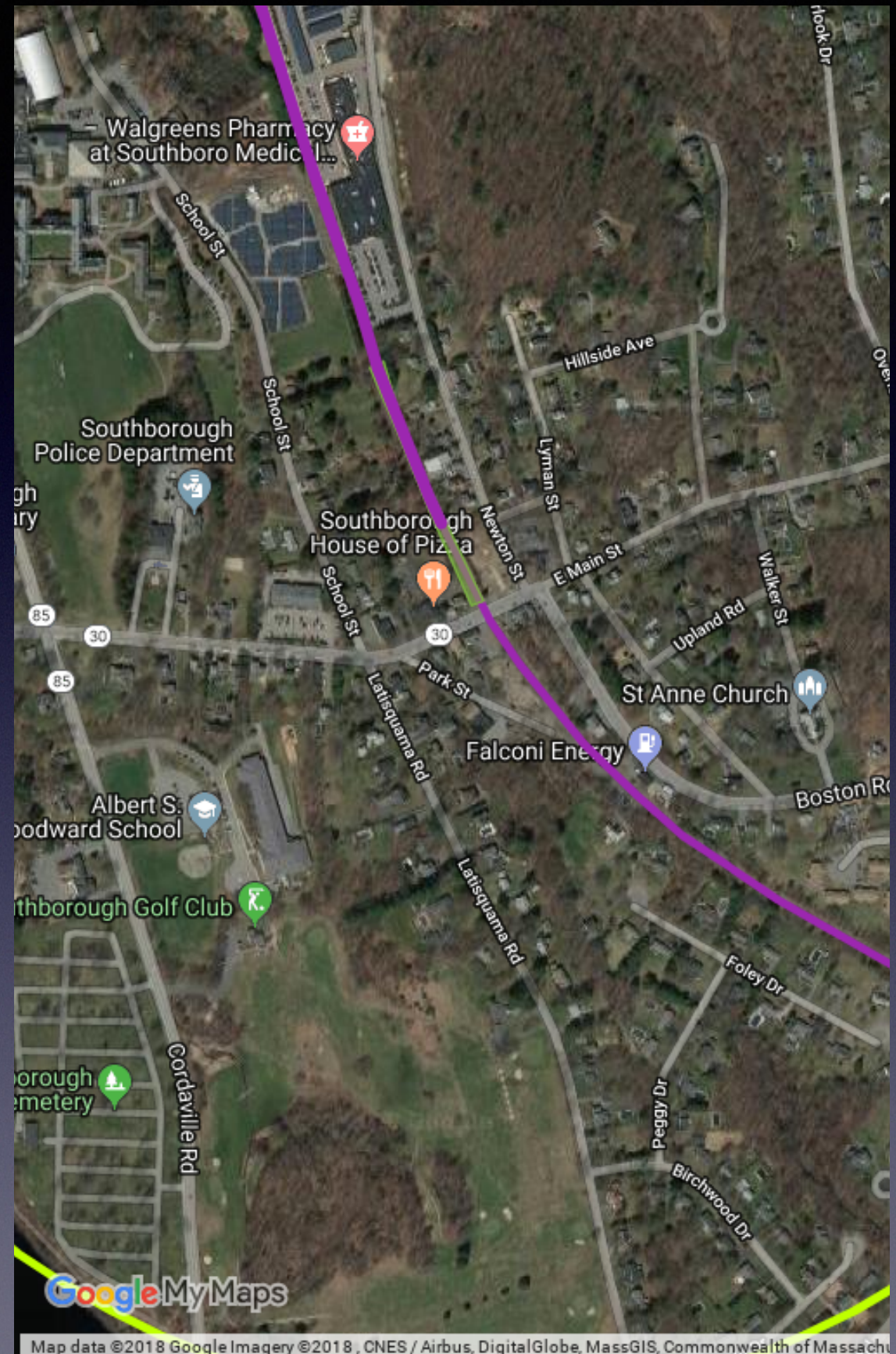
# Tech Park: Employment

	Within 1 mile
Jobs	12,250
Work here, live within walking distance of inner stations	900



# Southborough

- Existing Southborough station (3.0 miles to the south) to be renamed Cordaville
- Historic town center to the west, medical center to the north, otherwise low-density SFR
- Two private schools are the primary employers





# Southborough: Demographics

	Within walking distance	Within 2 miles
Residents	1,100	6,500
Residents in poverty	nd	300
Residents employed	nd	3,250
Household median income	nd	\$139,000
Median house value	nd	\$620,000



# Southborough: Commuting

	Within 2 miles
Single-occupancy car commuters	2,700
Transit commuters	50
Households w/o access to car	50
Work within walking distance of inner stations	1,100 (2.5 mi)



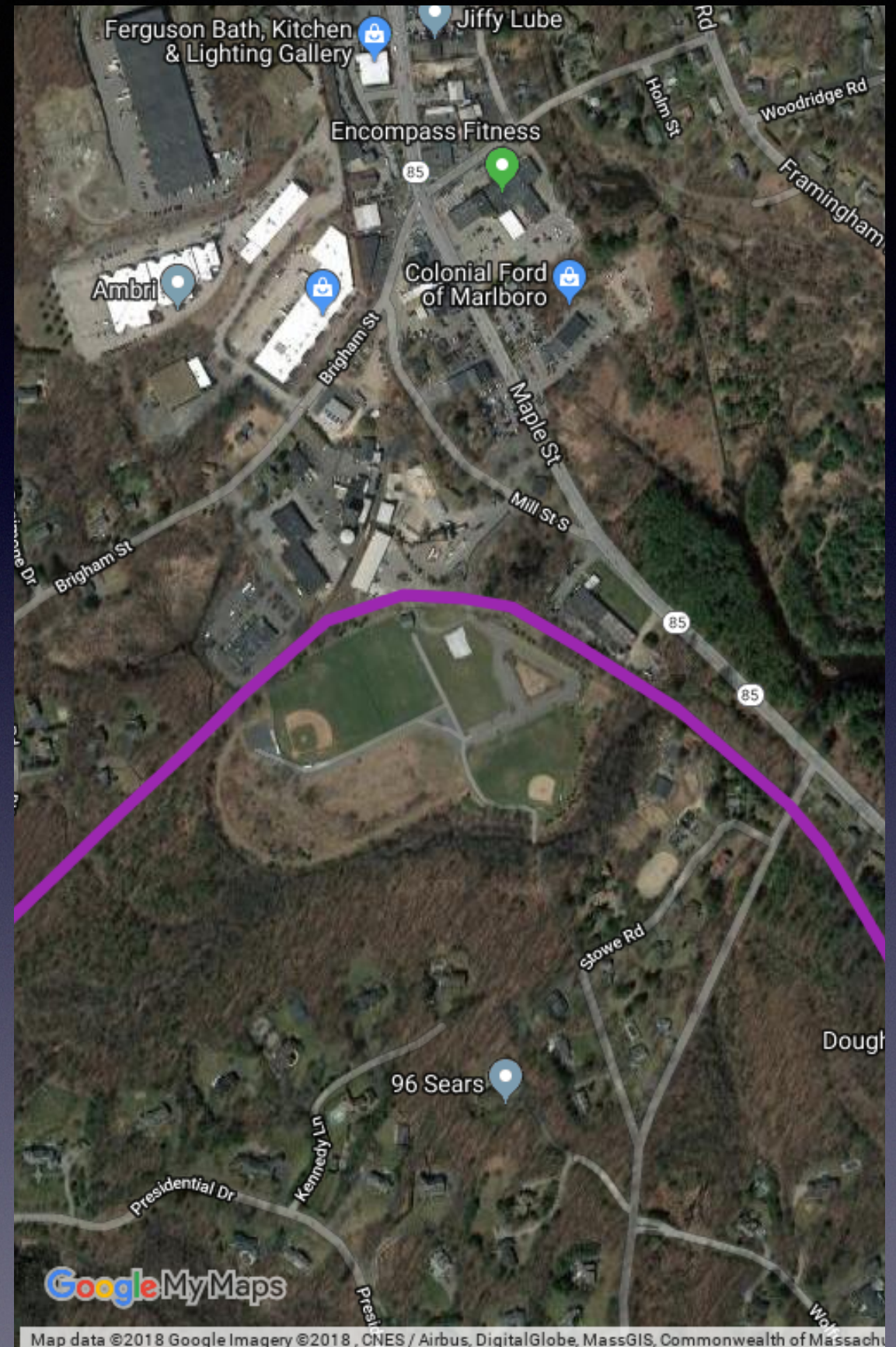
# Southborough: Employment

	Within 2 miles
Jobs	16,500
Work here, live within walking distance of inner stations	1,300 (2.5 mi)



# Marlborough Jct.

- Infill station pending future land-use changes or transit to downtown
- Former branch through Marlborough obliterated; Assabet Valley Rail Trail north of downtown Marlborough
- 300 residents, 500 jobs within walking distance
- Existing land use is auto-oriented low-rise (car dealers, strip malls, etc.)





# Marlborough Jct.: Demographics

	Within 1 mile
Residents	4,400
Residents in poverty	300
Residents employed	2,550
Household median income	\$92,000
Median house value	\$451,000



# Marlborough Jct.: Commuting

	Within 1 mile
Single-occupancy car commuters	1,900
Transit commuters	<50
Households w/o access to car	>50
Work within walking distance of inner stations	1,800 (2.5 mi)



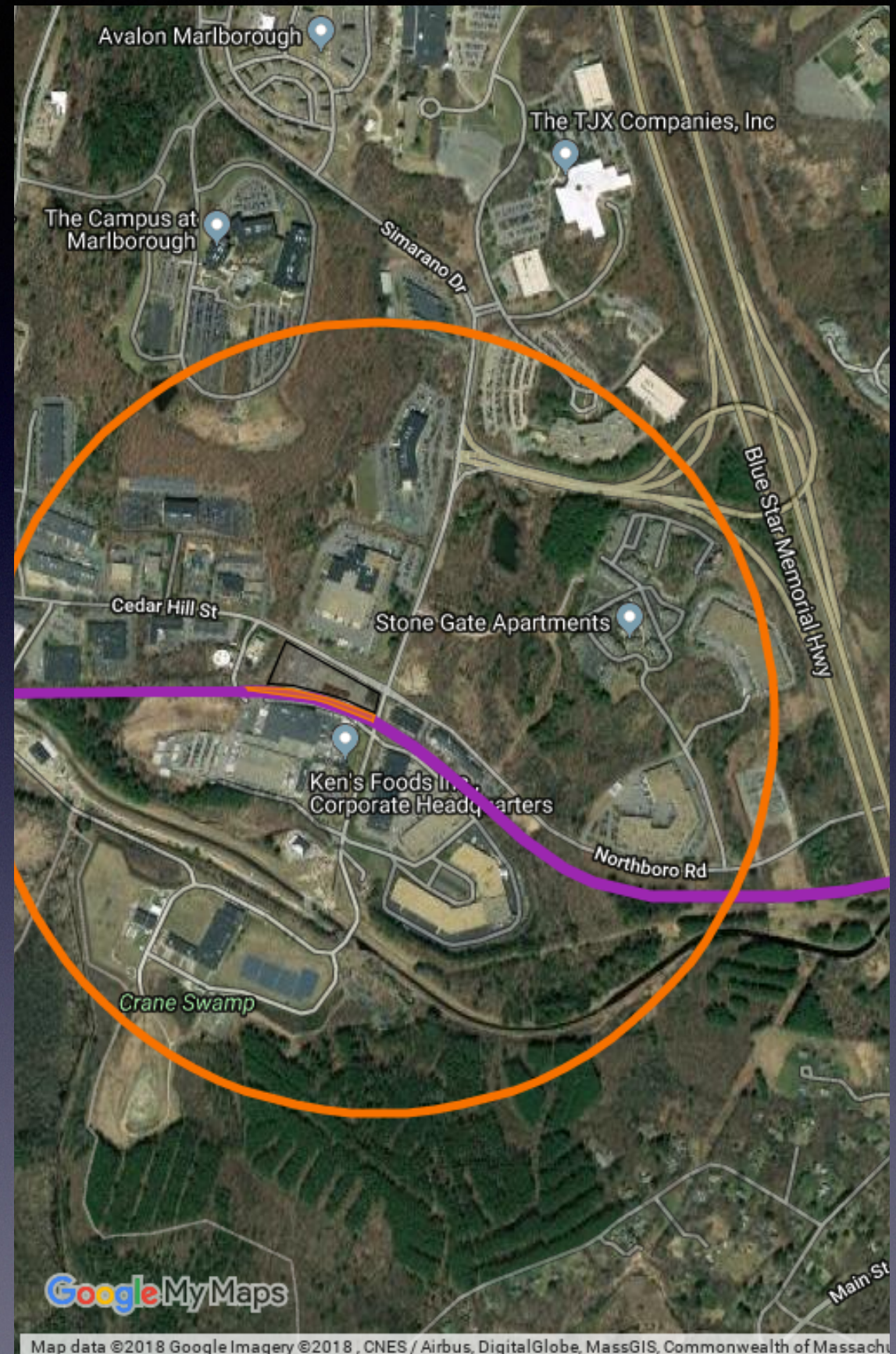
# Marlborough Jct.: Employment

	Within 1 mile	Within 2 miles
Jobs	1,500	12,200
Work here, live within walking distance of inner stations	<50	750 (2.5 mi)



# Marlborough/ 495 (Simarano Dr & Cedar Hill St)

- Highest job density on line
- 6.9 road miles from Cordaville, 9.2 miles from Westborough
- 21,000 jobs in surrounding office parks
- High P&R potential
- Station at LPG distributor site





# Marlborough/495: Demographics

	Within 2 miles
Residents	7,400
Residents in poverty	300
Residents employed	3,800
Household median income	\$112,000
Median house value	\$489,000



# Marlborough/495: Commuting

	Within 2 miles
Single-occupancy car commuters	3,050
Transit commuters	100
Households w/o access to car	100
Work within walking distance of inner stations	1,000 (2.5 mi)



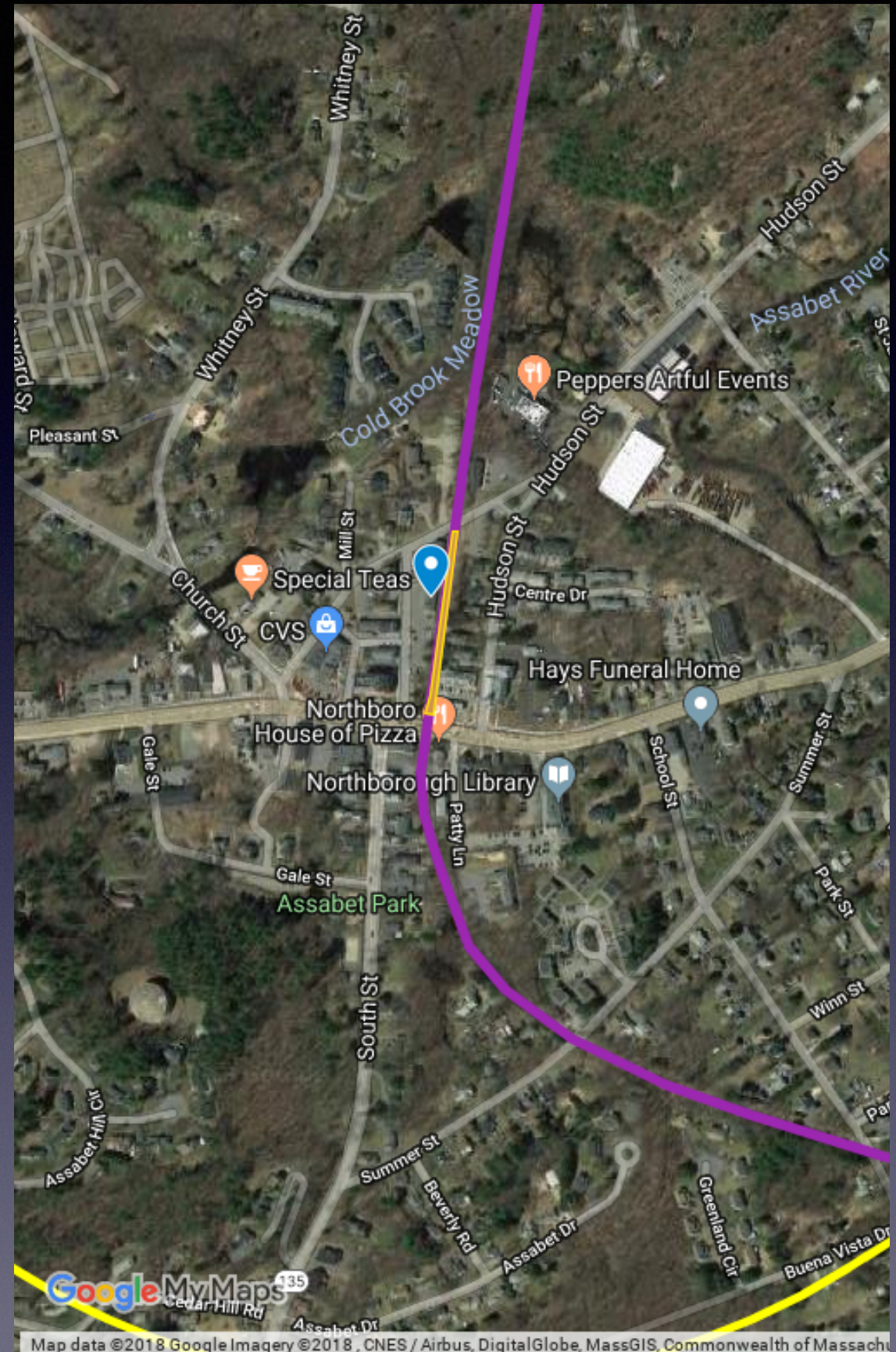
# Marlborough/495: Employment

	Within walking distance	Within 2 miles
Jobs	2,000	20,800
Work here, live within walking distance of inner stations	100	1,100 (2.5 mi)



# Northborough Center

- Historic station location in Northborough business district
- Residential and commercial locations within walking distance
- No parking (only 1½ miles from Northborough/290 station)
- 4.4 road miles from Westborough station





# Northborough Center: Demographics

	Within walking distance
Residents	1,700
Residents in poverty	50
Residents employed	900
Household median income	\$87,000
Median house value	\$379,000



# Northborough Center: Commuting

	Within walking distance
Single-occupancy car commuters	700
Transit commuters	<25
Households w/o access to car	<50
Work within walking distance of inner stations	100



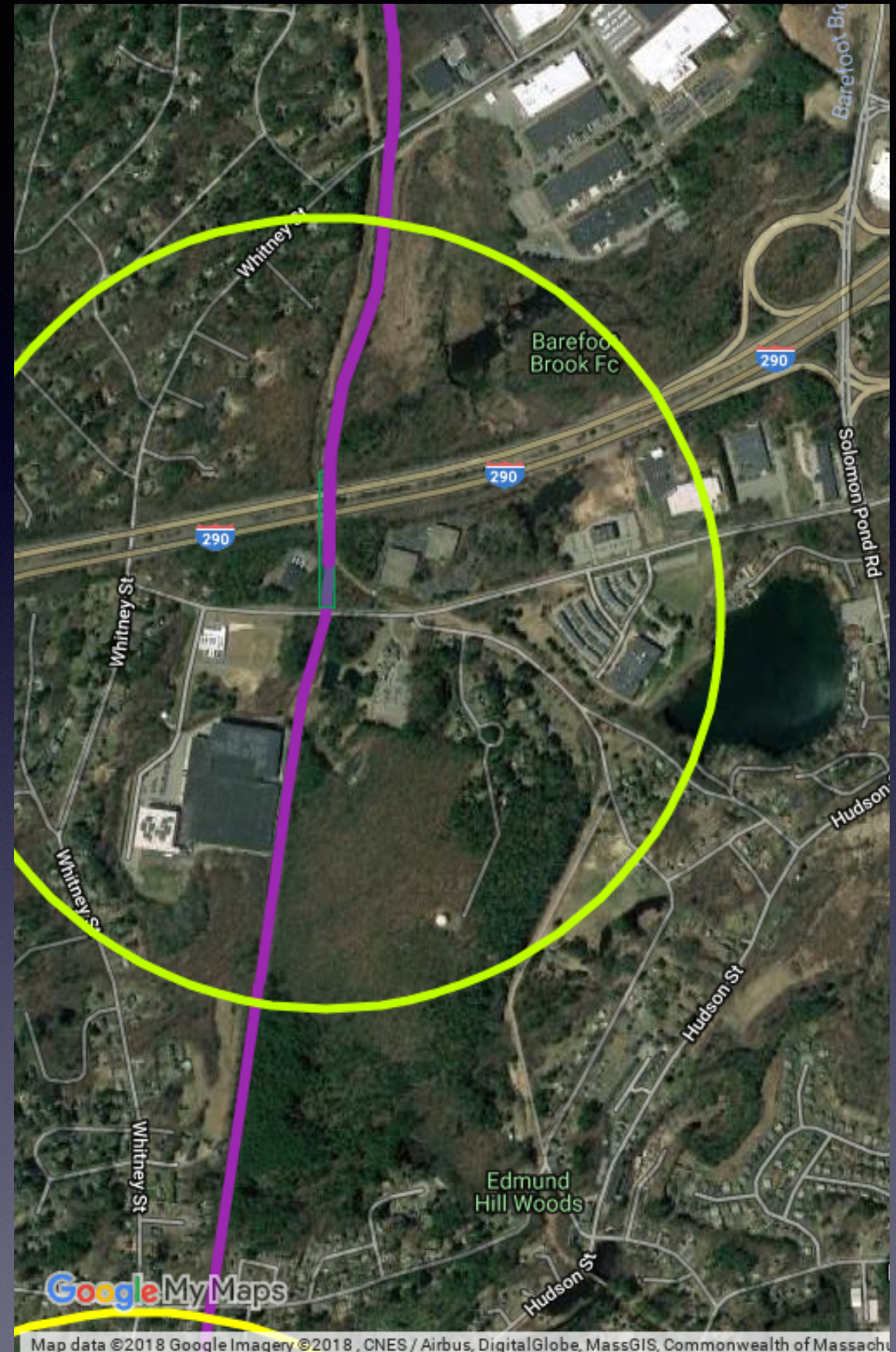
# Northborough Center: Employment

	Within walking distance	Within 2 miles
Jobs	550	5,500
Work here, live within walking distance of inner stations	0	400 (2.5 mi)



# Northborough/ I-290 (Bearfoot Rd.)

- Large interceptor P&R facility
- Potential for half-urban interchange on Worcester side
- Employment centers mainly to the NE (8,000 jobs within 2 miles)
- 6.1 road miles to Westborough station





# Northborough/290: Demographics

	Within 2 miles (includes all of Northborough)
Residents	9,300
Residents in poverty	400
Residents employed	4,900
Household median income	\$106,000
Median house value	\$388,000



# Northborough/290: Commuting

	Within 2 miles
Single-occupancy car commuters	2,800
Transit commuters	nd
Households w/o access to car	<100
Work within walking distance of inner stations	600 (2.5 mi)



# Northborough/290: Employment

	Within 2 miles
Jobs	8,000
Work here, live within walking distance of inner stations	450 (2.5 mi)



# Berlin/Boylston (West St.)

- Historic station location
- Phase 4 infill: unclear if this is even worth building
- If the surrounding towns want it and are willing to help with land acquisition (station site appears to be a DPW yard?) and permitting, building it would not hurt service
- Very limited residential and employment nearby: this would be a P&R almost exclusively



# Berlin/Boylston: Demographics

	Within walking distance	Within 2 miles
Residents	200	5,500
Residents in poverty	7	300
Residents employed	110	3,150
Household median income	\$83,000	\$75,000
Median house value	\$374,000	\$305,000



# Berlin/Boylston: Commuting

	Within walking distance	Within 2 miles
Single-occupancy car commuters	200	5,500
Transit commuters	nd	nd
Households w/o access to car	0	<100
Work within walking distance of inner stations	nd	400 (2.5 mi)



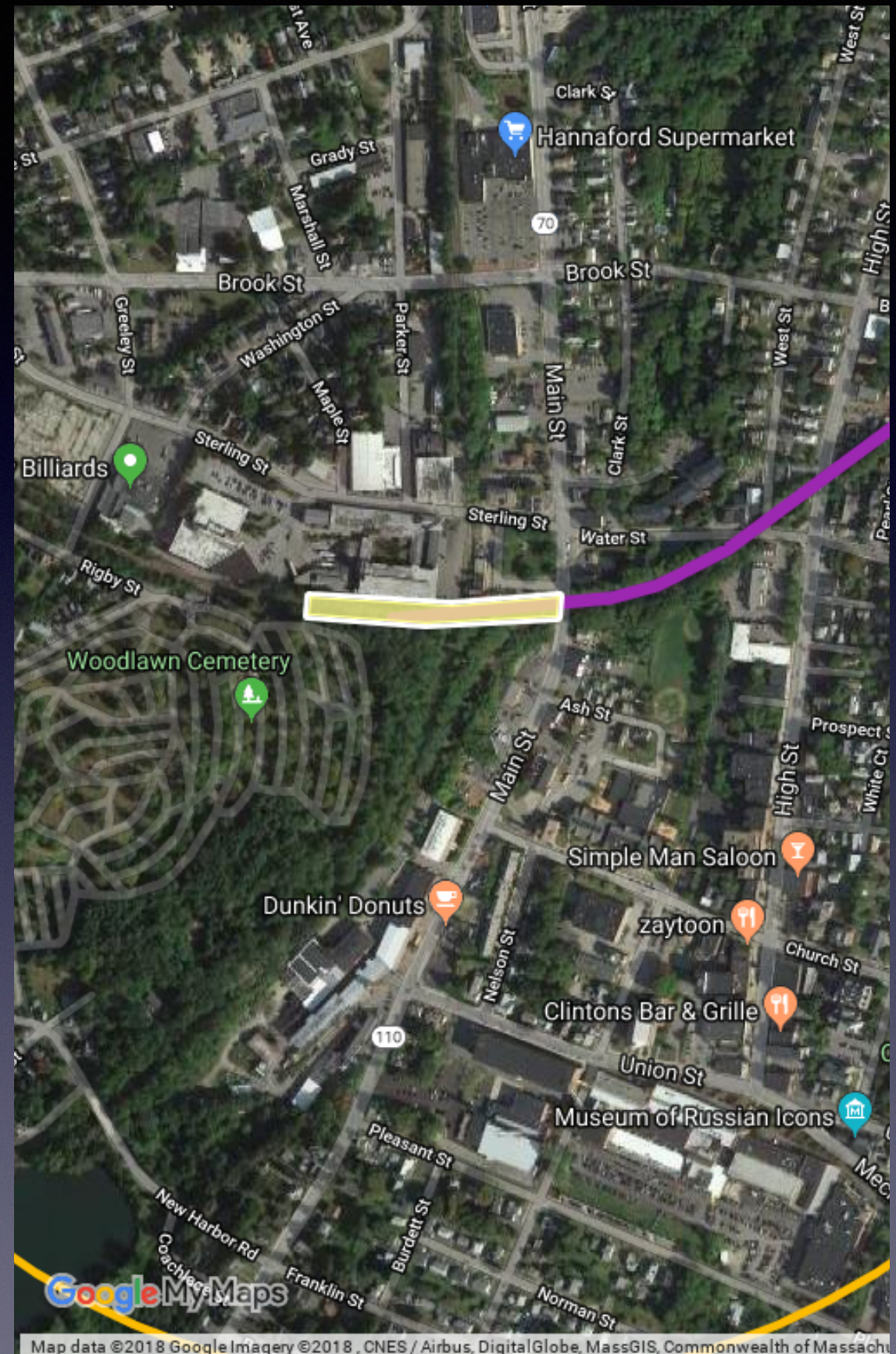
# Berlin/Boylston: Employment

	Within walking distance	Within 2 miles
Jobs	30	800
Work here, live within walking distance of inner stations	0	25 (2.5 mi)



# Clinton (Depot Sq)

- Historic station location
- Potential for local service to Worcester via PAR line to SW
- Old depot buildings with potential for redevelopment
- Dense (4800/mi<sup>2</sup>) residential area within walking distance





# Clinton: Demographics

	Within walking distance	Within 2 miles	Within 5 miles
Residents	3,800	17,700	33,000
Residents in poverty	600	1,700	2,200
Residents employed	2,150	9,600	21,500
Household median income	\$51,500	\$69,900	\$87,300
Median house value	\$223,000	\$260,000	\$322,000



# Clinton: Commuting

	Within walking distance	Within 2 miles	Within 5 miles
Single-occupancy car commuters	1,600	7,850	14,450
Transit commuters	nd	nd	nd
Households w/o access to car	250	550	650
Work within walking distance of inner stations	150	750 (2.5 mi)	1,350



# Clinton: Employment

	Within walking distance	Within 2 miles	Within 5 miles
Jobs	2,850	4,750	10,200
Work here, live within walking distance of inner stations	30	50 (2.5 mi)	nd



# Simulated schedule (phases 1 and 2)

Station	Departure
Northborough/290	0
Northborough Center	2
Marlborough/495	6
Southborough	10
Tech Park	13
FSU/Salem End Rd	15
South Framingham	18
West Natick	20
Natick Center	23
***	***
West Station	44
Yawkey	46
Back Bay	49
South Station	50



# Construction required

- Upgrade 25 miles of track and trackbed, double-track where feasible (target speed 79 mph), including PTC, signal and grade crossing upgrades
- 25 miles of catenary and one substation (Tech Park would be sufficient and has a substation adjacent to the tracks)
- Layover facility for 12 EMUs at Tech Park
- Relocate yard leads at South Framingham
- Bridge rehabilitation



# Cost of Phase 1

- 5 miles of track upgrades and catenary: \$50m
- Franklin St. Yard track relocation: \$10m
- Bridge over Sudbury River: \$10m
- Layover facility for 12 EMUs: \$5m
- 4 grade crossings: \$5m
- 3 stations: \$8–10m
- Park & Ride at Tech Park: \$20m (or much less by doing PPP with owner of office park)



# Cost of Phase 2

- 12 miles of track upgrades and catenary: \$120m
- Bridges over Sudbury Reservoir, Willow St: \$30m
- 15 grade crossings: \$15m
- 4 stations: \$20–25m
- Electrical substation: \$10m
- Park & Rides at Simarano Dr, I-290: \$20–40m
- Additional EMUs: TBD



# Cost of Phase 3

- 8 miles of track upgrades and catenary: \$80m  
(possibly more depending on environmental issues in North Brook, Nashua River flood plains)
- 5 grade crossings: \$5m
- Rehabilitate 1 mile of viaduct: \$10m
- Rehab 1 underpass: \$5m
- Terminal station and layover facility for 12 EMUs: \$15m



# Cost of Phase 4

- Berlin/Boylston station: \$5m
- Marlborough Jct. multimodal station: \$10m  
(possible PPP with developer if Marlborough rezones)
- Mt. Wayte station: \$10m (possible PPP with developer)



# Total construction cost

- Phase 1: \$110m
- Phase 2: \$240m
- Phase 3: \$115m
- Phase 4: \$25m
- Full build: \$490m
- Biggest transportation benefit: phases 1+2 = \$350m