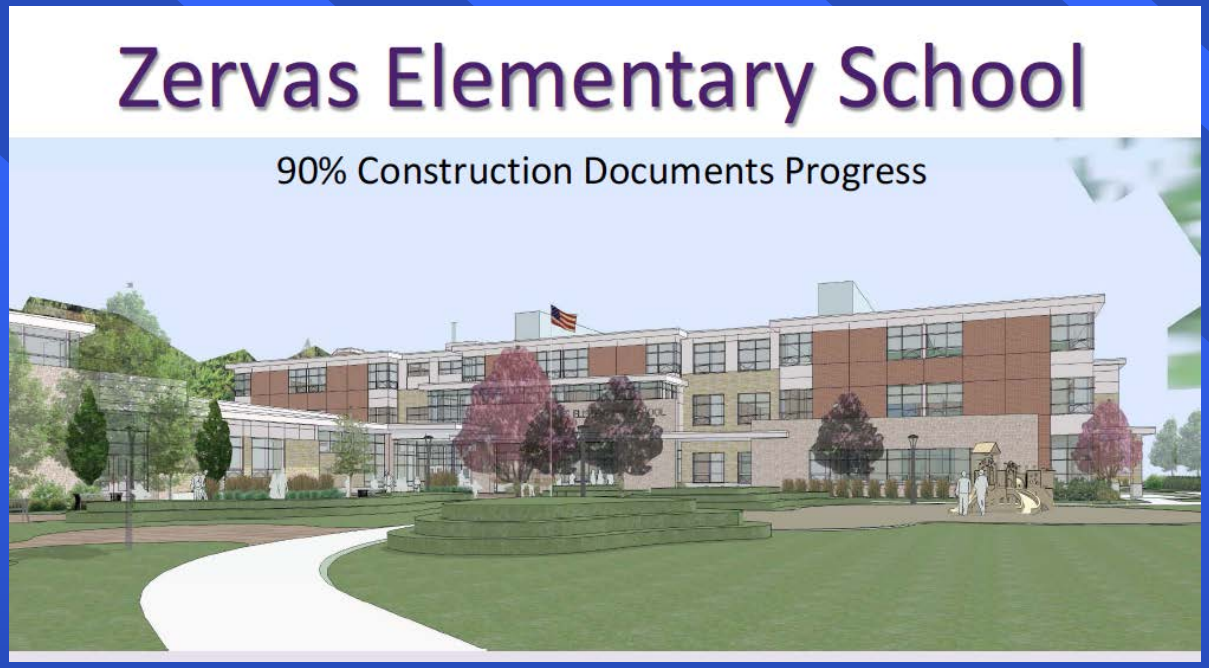
Best Options for Safety and Mobility

Traffic
Walking
Bicycling

Transportation Planning
for the new Zervas School

NHNAC and WAC Combined Meeting
April 14, 2016



Future Capacity
450 students

Traffic studies modeled to project for 490 students

Where will they be coming from?

Zervas School

- 2015: 309 students
- 2020: 314 students
- 2010: 349 students

STUDENT ASSIGNMENT WORKING GROUP

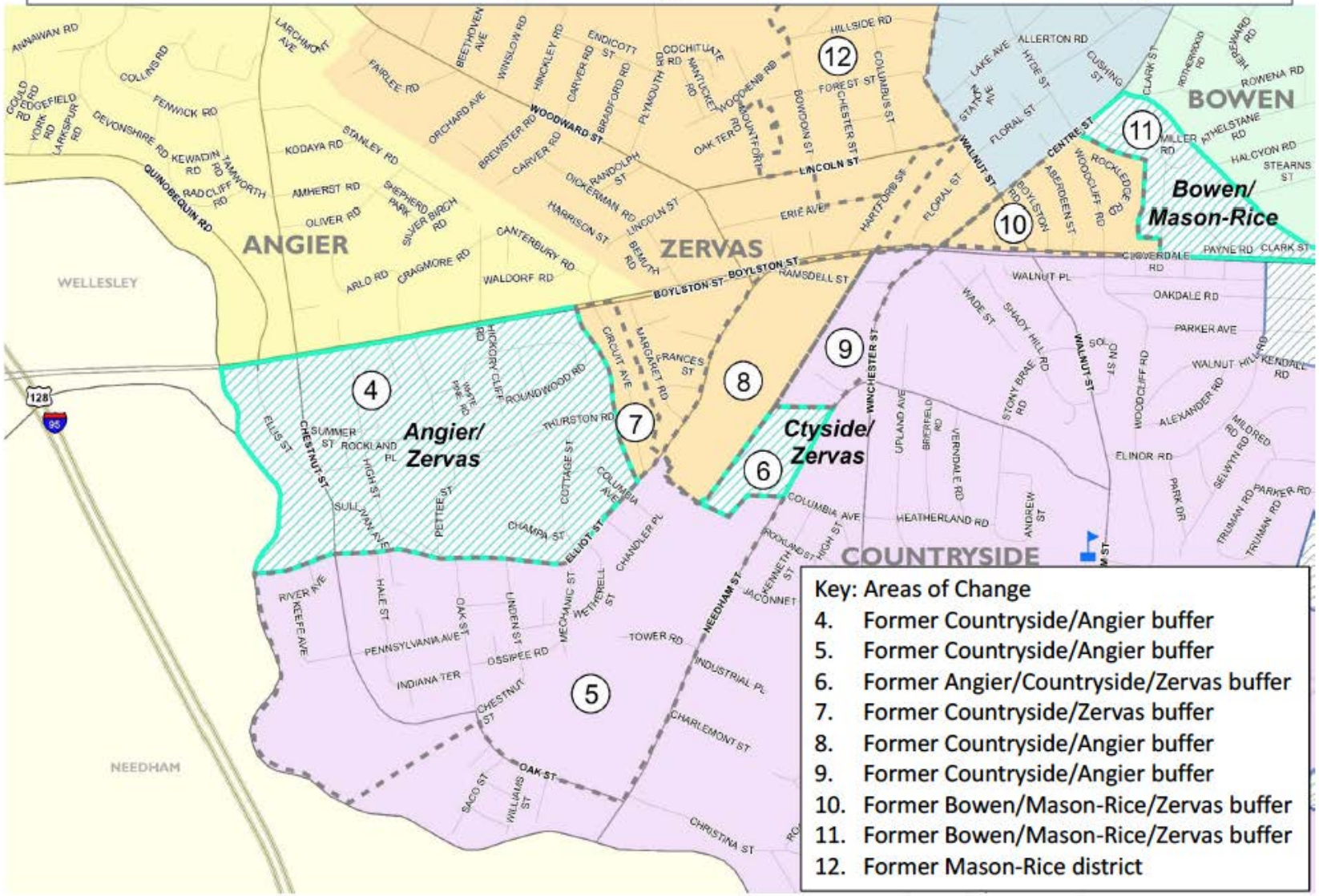
RECOMMENDED SOLUTION SCENARIO G3

Newton Public Schools

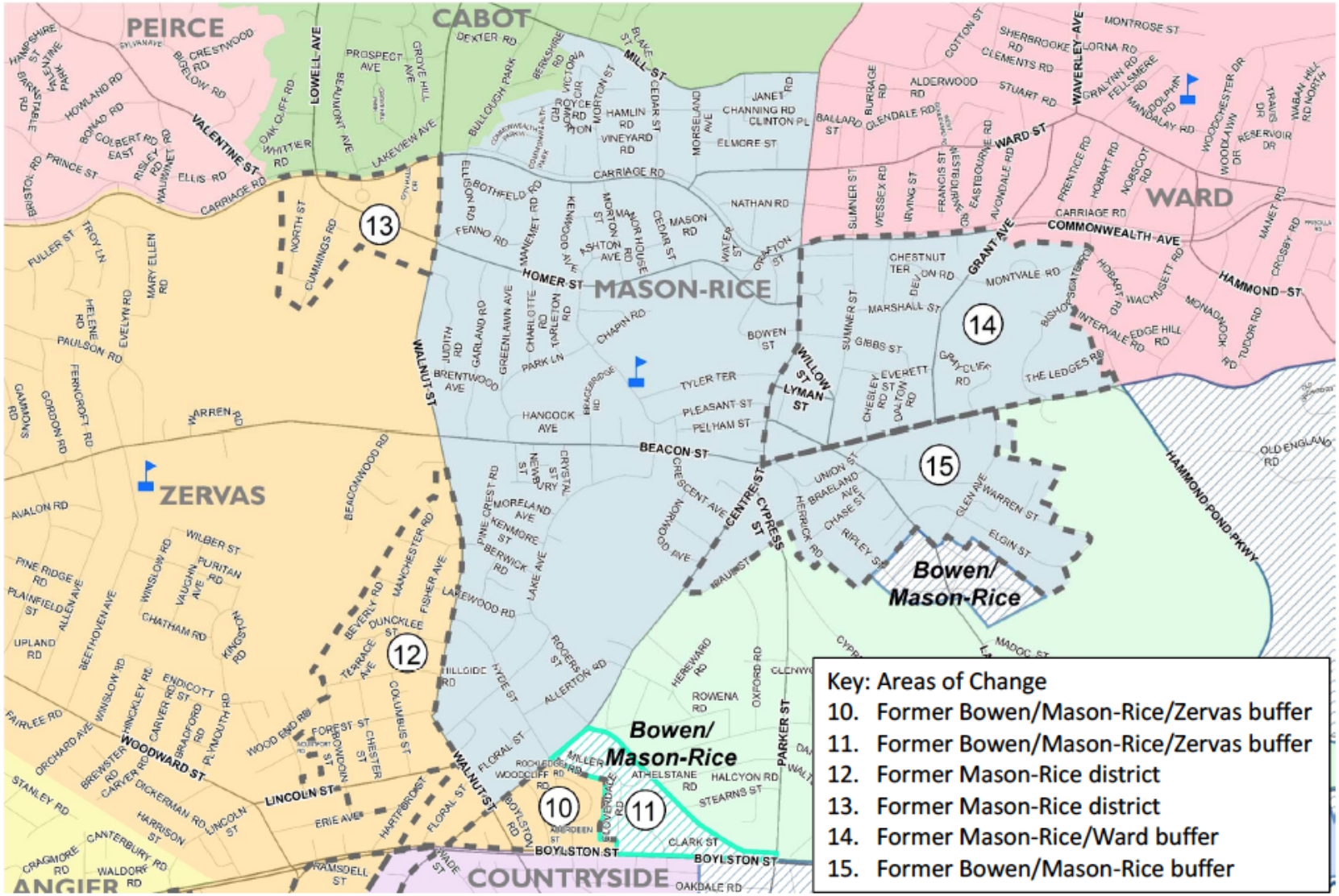
School Committee

June 15, 2015

G.3 Areas of Change: Angier, Zervas, Countryside



G.3 Areas of Change: Zervas, Mason-Rice, Ward, Bowen



ELEMENTARY – Summary of Changes

2014-15 ENROLLMENT AND PROJECTION					NEW ENROLLMENT PROJECTION*			
Elementary School	OCT 2014	OCT 2014 # Classes/ % Enrolled Capacity		OCT 2024 PROJECTION	NEW OCT 2024 PROJECTION	CHANGE FROM 2014	OCT 2024 # Classes/ % Enrolled Capacity	
North Feeding								
Burr	424	19	108%	437	404	-20	18-20	103%
Ward	304	16	94%	316	300	-4	14-16	93%
South Feeding								
Angier	**402**	**19**	**103%**	**439**	**451**	**49**	**22**	**97%**
Bowen	475	24	98%	499	446	-29	21-23	92%
Countryside	466	22	101%	447	430	-36	19-20	93%
Mason-Rice	478	22	104%	497	440	-38	21-22	96%
Williams	292	14	106%	298	285	-7	14-15	103%
Zervas	**309**	**16**	**103%**	**318**	**495**	**186**	**24**	**100%**

- Bowen & Mason-Rice avoid growing to 500 students
- Countryside enrollment reduced to 430 students
- Burr grows to 404 vs. 437 students
- Ward stabilizes at current size

*Ten Year Enrollment Projections through October 2024, as of November 2014 Enrollment Analysis

Zervas: Traffic – current conditions:

Zervas Traffic Impact Study (2014)

- 84 cars were using the Blue Zone between 7:45 am and 8:30 am (45 minutes)
- 174 cars travelling north on Beethoven during morning peak (7:45 to 8:45 am)
- 111 cars pass by in peak half hour (remaining 63 cars pass in other half hour)

Zervas: Traffic – future conditions:

Future Conditions (2024): Beethoven peak AM

- No build: 193 cars on Beethoven (compared to 174, increase of 0.5% per year)
- One third north on Evelyn, one third will turn east and west on Beacon
- Note: VMT has dropped most years, no reason to believe in automatic increase of 0.5%/year

Zervas: Traffic – future conditions:

Future Conditions (2024): Beethoven peak AM

- Build scenario: 363 cars on Beethoven (compared to 174, increase of >100%)
- 128 will travel north on Evelyn, 118 will turn east and 117 will turn west on Beacon

Zervas: Traffic – future conditions:

Future Conditions (2024): Beacon Street

- No build: Peak AM traffic 497/507 east-west
- Build: Peak AM traffic 531/512 east-west
- Turns into Zervas: 41 eastbound and 42 westbound (83 total)
- Turns out of Zervas: 4 eastbound and 5 westbound (9 total)

Zervas: Traffic – Summary:

Traffic projections

- Will increase >100% northbound on Beethoven
- Will increase only about 6% on Beacon

Based on current travel choices and behaviors with enrollment increasing 309 to 490 students

Zervas: Beethoven – Beacon Street Crossing:

Westbound on Beacon Street

Northbound on Beethoven Ave

Zervas: Traffic – Turning to Beacon

Level of Service

- LOS calculated on “ideal” traffic volumes of 1900 vehicles per lane
- Anything that causes a driver to wait at an intersection is considered a “delay”
- Intersections are ranked on a letter scale based on amount of wait time driver may anticipate

Zervas: Traffic – Turning to Beacon

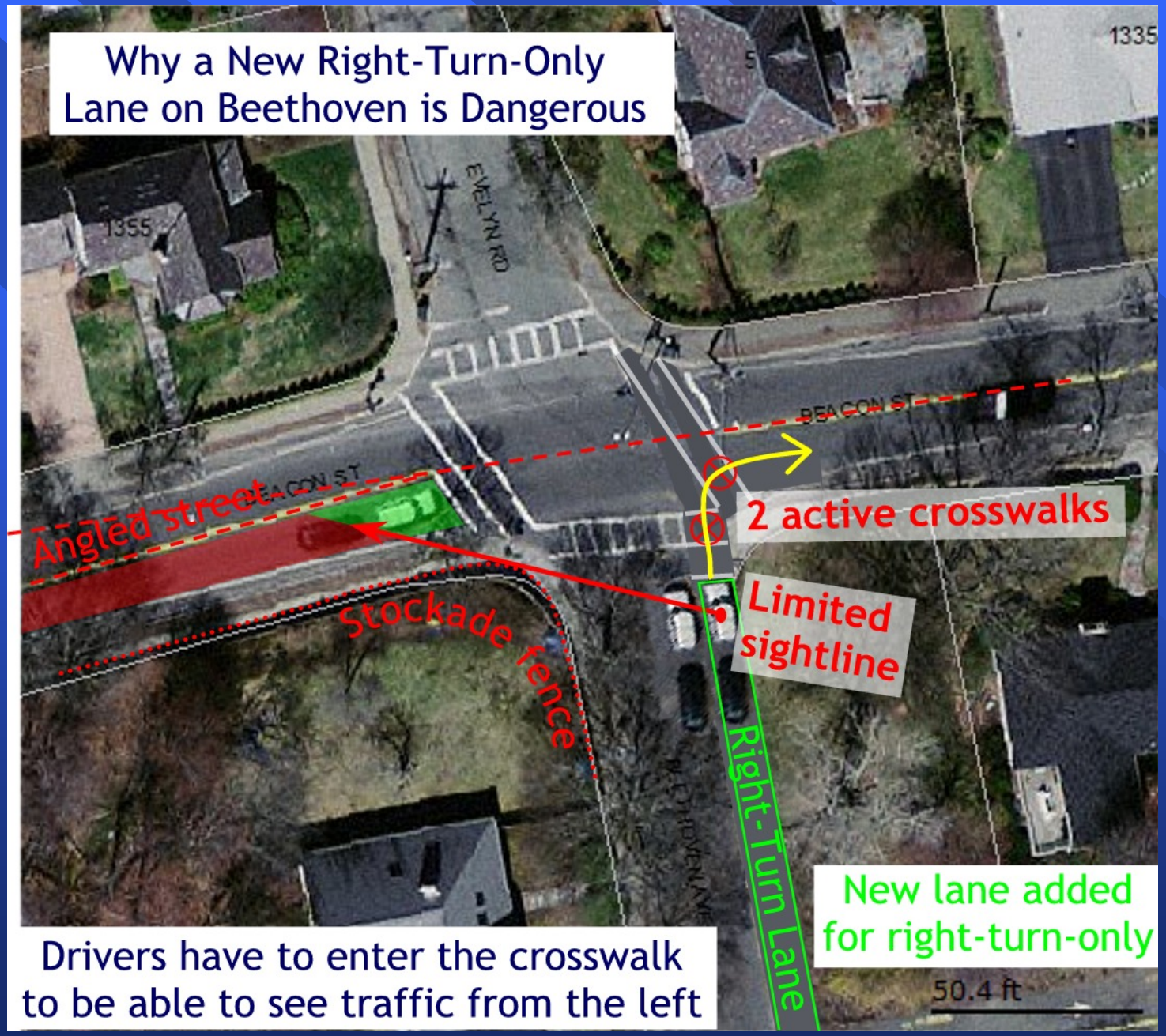
Level of Service – Projections for 2024

- Wait times at Beacon Street will be greater than 60 seconds
- A pedestrian or bicyclist at the intersection is considered to add to the delay.
- To allow for greater speed of vehicle travel and to reduce “delay” for drivers, new right turn lane is being considered

Zervas: Traffic – Turning to Beacon

Level of Service - Caveats

- During school crossing times, a “free” right turn will not be possible
- Turning lane will have negligible effect on traffic flow during peak times
- Turning lane will increase speed of traffic at times when school is not in session


Why a New Right-Turn-Only Lane on Beethoven is Dangerous
1335
1355
EVELYN RD
BEACON ST
BEACON ST
Angled street
2 active crosswalks
Limited sightline
Stockade fence
Right-Turn Lane
New lane added for right-turn-only
50.4 ft
Drivers have to enter the crosswalk to be able to see traffic from the left

Zervas: Walking, Driving, School Bus use

Projections for driving, walking, and bus

- Currently: 105 vehicle trips for 312 students
- Projected: 179 vehicle trips for 490 students
- For 178 new students: 37 will walk, 40 will take the bus, 101 will be driven
- Of 101 who will be driven, 25% of families have 2 students = 74 new auto trips

Zervas: Walking, Driving, School Bus use

Mode	Current (230 Families)		Future (360 Families)	
	Percentage (%)	No. Students	Percentage (%)	No. Students
Walk/Bike	43	134	35	171
Bus	11	34	15	74
Vehicle	46	144*	50	245**
Total	100	312	100	490

* Equates to 105 vehicles with 25% families with more than one student enrolled, 2% car pool, 27% vehicles transporting at least 2 students.

** Equates to 179 vehicles with 25% families with more than one student enrolled, 2% car pool, 27% vehicles transporting at least 2 students.

Zervas: Walking, Driving, School Bus use

Summary of mode share:

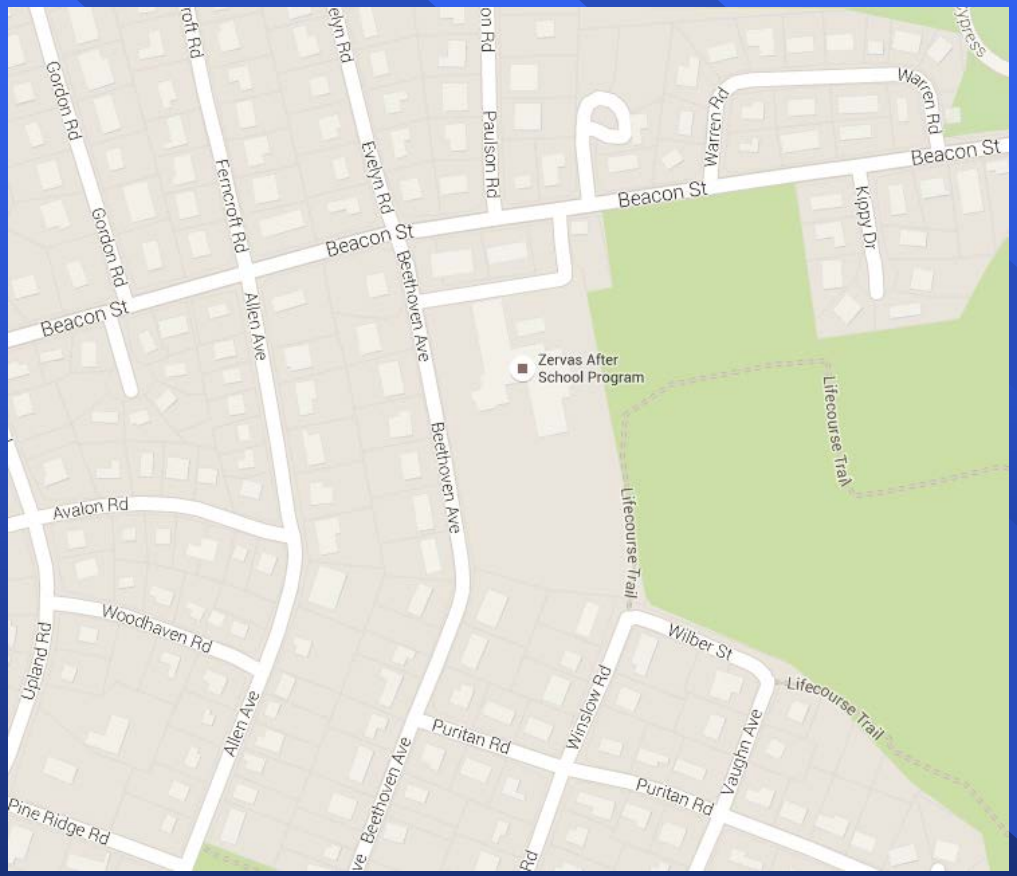
- Of the 189 new trips on Beethoven, 74 will be for the purpose of driving children to school
- Projected: 115 vehicles “cut through” traffic on Beethoven during peak hour
- Blue Zone: will have space for 25 cars
- Fewer than 20% of children take the bus

Zervas: Walking, Driving, School Bus use

Higher range of Projections

- Majority of new children live > half mile from school – may lead to more driving
- Projected: 120 new trips (rather than 74)
- Poor pedestrian environment: another 30 car trips
- Total: 330 peak hour trips, or 220 in peak half hour (7 cars/minute, 1 car every 8 seconds)

Zervas: Walking, Driving, School Bus use



Projections

Whether there are 330 peak hour trips, or 363 (per traffic analysis)…

A significant increase in traffic is projected on this short street segment

Zervas: Design Considerations

Priorities

- Improve access so students can come and go in a safe and efficient manner
- Minimize adverse effects of traffic on the neighborhood
- Reduce adverse effects of congestion on traffic on Beacon Street (major east-west route)

Zervas: Design Considerations

Goals:

- Excellent **access** for students and parents
- **Safety** for students, parents, teachers, others
- **Reduce adverse effects** on neighborhood
- **Minimize delays** for Beacon Street commuters

Zervas: Design Considerations

Consistency with Comprehensive Plan policies:

- Encourage walking to school
- Improve bicycle accessibility and safety
- Improve the pedestrian environment
- Minimize reliance on single occupant car trips
- Reduce cut-through traffic in school zone

Zervas: Design Considerations

Design A:

- Limited traffic on Beethoven at peak times
- Substantial improvement in pedestrian-bicycle-bus access

Design B:

- Substantial increase in traffic capacity at school
- Widened Beethoven + new turning lane

Zervas: Design Considerations

Design A: Features (Limited traffic proposal)

- No vehicular access Beethoven 8-8:30 am
- No parking on Beethoven 8-8:30 am
- No roadway widening, no turning lane
- Expand sidewalks to 8 ft on Beethoven
- Protected bike lane instead of “blue zone”

Zervas: Design Considerations

Design A: Features

- Pedestrian and bicycle access from Cold Spring Park and Walnut Street neighborhood
- Improved school bus access within 0.5 miles of school (three bus routes)
- No fee for bus, regardless of distance
- Pedestrian walking routes established

Zervas: Walking, Bicycling in Cold Spring Park

Lifecourse Trail (1/2 mile)

Walk = 10 minutes
Bike = 5 minutes

Map shows ¼ and ½ mile radius

Beaconwood = ¼ mile
Beverly Road = ½ mile

Zervas: Design Considerations

Design B: Features (Increased auto capacity)

- Widen Beethoven to add new lane for parked cars – keep Blue Zone at 25 cars
- Turning lane to Beacon to facilitate faster traffic throughput on Beethoven
- No expansion of sidewalk, no bicycle lane
- No new access Cold Spring Park
- No changes in school bus structure or fees

Zervas: Design Considerations

Design B: Advantages

- Highest vehicular amounts
- Highest vehicular speeds
- Fastest turn Beethoven to Beacon Street
- Incentivize parents to drive to school
- Enable cut-though traffic

Zervas: Issue of Reduced Sight Lines

Beethoven near Puritan Hill obscures view

Beethoven at Cold Spring Curve obscures view

Zervas: Design Considerations

Design B: Disadvantages

- Worse in terms of safety for pedestrians, bicyclists, and auto drivers
- Congestion on Beethoven Avenue
- Adverse effect on traffic on Beacon Street
- No improvement in pedestrian or bicycle access

Zervas: Design Considerations for Safety

Beethoven congestion

Increased number of cars

Double parking

Cars passing others in multiple lanes

Safety concerns

Zervas: Design Considerations

Design A: Advantages

- Highest pedestrian access
- Highest bicycle access
- Highest bus utilization
- Safest for pedestrians, bicyclists, vehicles
- No congestion on Beethoven Avenue

Zervas: Design Considerations for Safety

Beethoven and Beacon intersection

Goal: Improve safety

To accomplish this goal:

Reduce speeds of cars
Minimize crosswalk distance
Decrease number of vehicles
Increase pedestrian volume

Zervas: Design Considerations

Design A: Advantages

- Best incentive not to use single occupancy car
- Minimal effects on travelers on Beacon Street
- Excellent access, mobility of neighbors
- Time and monetary saving for parents, children
- Reduce noise and fumes due to cars

Zervas: Design Considerations

Design A: Possible Disadvantages

- Inconvenience for cut-through drivers, who may use Walnut, Chestnut, Allen, or Upland Road
- No southbound Beethoven traffic during peak
- Parents may not drop off at school front door
- May see increased parking on Puritan, Evelyn, Allen, or south on Beethoven

Zervas: Transportation Planning

Summary and Conclusions

- Enrollment increasing from 309 to 490
- If no changes in options, peak hour traffic will increase from 174 vehicles to 330-363 vehicles
- Traffic congestion: 220 vehicles in peak half hour, or about 7 cars per minute
- No appreciable change in overall pattern of bus use or in pedestrian walkability overall

Zervas: Summary and Conclusions

We should adopt a transportation plan that:

- Prioritizes pedestrian access, optimizes school bus availability, increases bicycle safety, and provides new ways to walk and bike to school
- This will change travel behavior for the better, give parents more time, and promote safe access
- Unlikely that more than 25 cars will be parked on local streets at any time

Best Options for Safety and Mobility

Traffic
Walking
Bicycling

Planning for a Better Community

Transportation Planning for Zervas School
We will get the solution we plan for!