

I-91 VIADUCT STUDY

Springfield, Massachusetts



Working Group Meeting #3

UMass Center at Springfield
Tower Square
1500 Main Street
Springfield, Massachusetts



- Welcome & Introductions
- Overview of Working Group Meeting #2
- Review of Existing Conditions
- Review of Issues and Constraints
- Health Impact Assessment Update
- Existing Viaduct 3-D Simulation
- Alternatives Development Discussion
- Next Steps



Welcome & Introductions



Working Group Meeting #3

- Ethan Britland – Project Manager (*MassDOT*)
- Michael Clark – Transportation Planner (*MassDOT*)
- Margaret Round – (*Mass Public Health*)
- Ben Wood – (*Mass Public Health*)
- Mark Arigoni, L.A. – Principal-in-Charge (*MMI*)
- Van Kacoyannakis, P.E. – Traffic (*MMI*)
- John Hoey – Facilitator (*MMI*)
- Rebecca Augur, AICP – Planning (*MMI*)
- John Hammer, L.A. (*MMI*)
- Rod Motamedi – Economics (*UMass Donahue Institute*)
- Nancy Farrell – Public Involvement (*Regina Villa*)
- Sarah Paritsky – Public Involvement (*Regina Villa*)



Overview of Task 2 Efforts



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■ Completed Data Collection

- Environmental
- Planning
- Traffic/Transportation

■ TransCAD Modeling Underway

■ Update on Public Health Data



- Reconfiguration of the I-91 Viaduct and Longmeadow curve may facilitate safety and circulation improvements for all modes
- Link Riverwalks in Agawam and Springfield
- Link Forest Park to the Riverwalk
- Create Stronger Link to the New Union Station
- Create a Regional Draw to an expanded Riverfront
- Transit Oriented Developments
- Economic Development Areas

- 5 Pedestrian Fatalities between 2010 - 2014
- Lack of Designated Provisions for Bicycles
- Number of On & Off Ramps in a Short Distance
- No connection to Memorial Bridge from I-291
- Location of N-S Rail Line, Riverfront Barrier
 - Only 3 connections between the Riverfront & the Bikeway with Downtown Core
 - At-grade crossing @ Riverfront Park is a Passive Crossing

Economic & Land Use

- Shift in Local Market to Live/Work Areas
- Cohesive Redevelopment
- Physical Barriers



Natural Resources

- Connecticut, Mill & Westfield Rivers



Public Health

- Water, Air & Noise Quality
- Recreation, Parks & Open Space
- Business & Residential

Cultural Resources

- Historic Properties

- Traffic / Safety

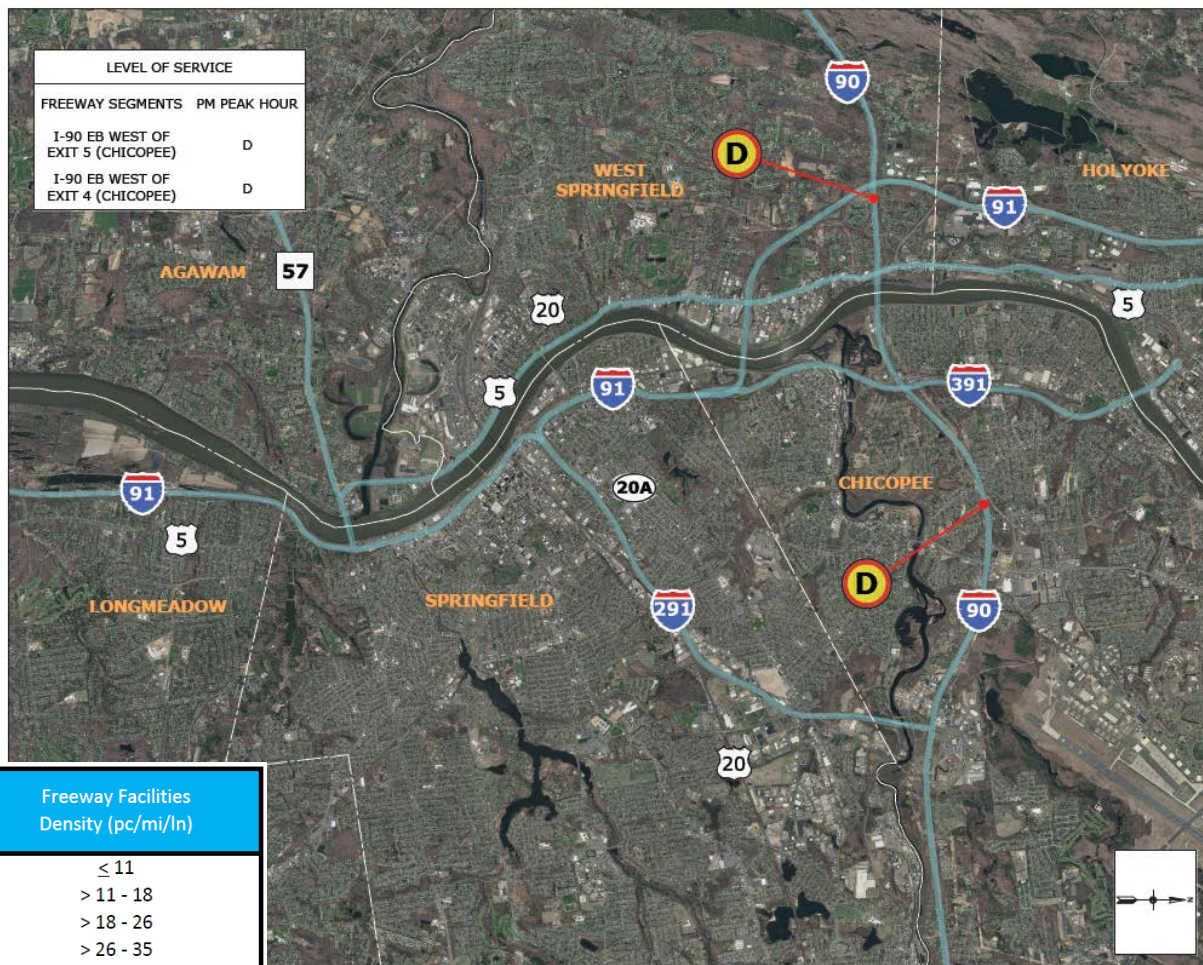
- Planning



Freeway Segments



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Level of Service	Freeway Facilities Density (pc/mi/ln)
A	≤ 11
B	> 11 - 18
C	> 18 - 26
D	> 26 - 35
E	> 35 - 45
F	> 45 or v/c > 1

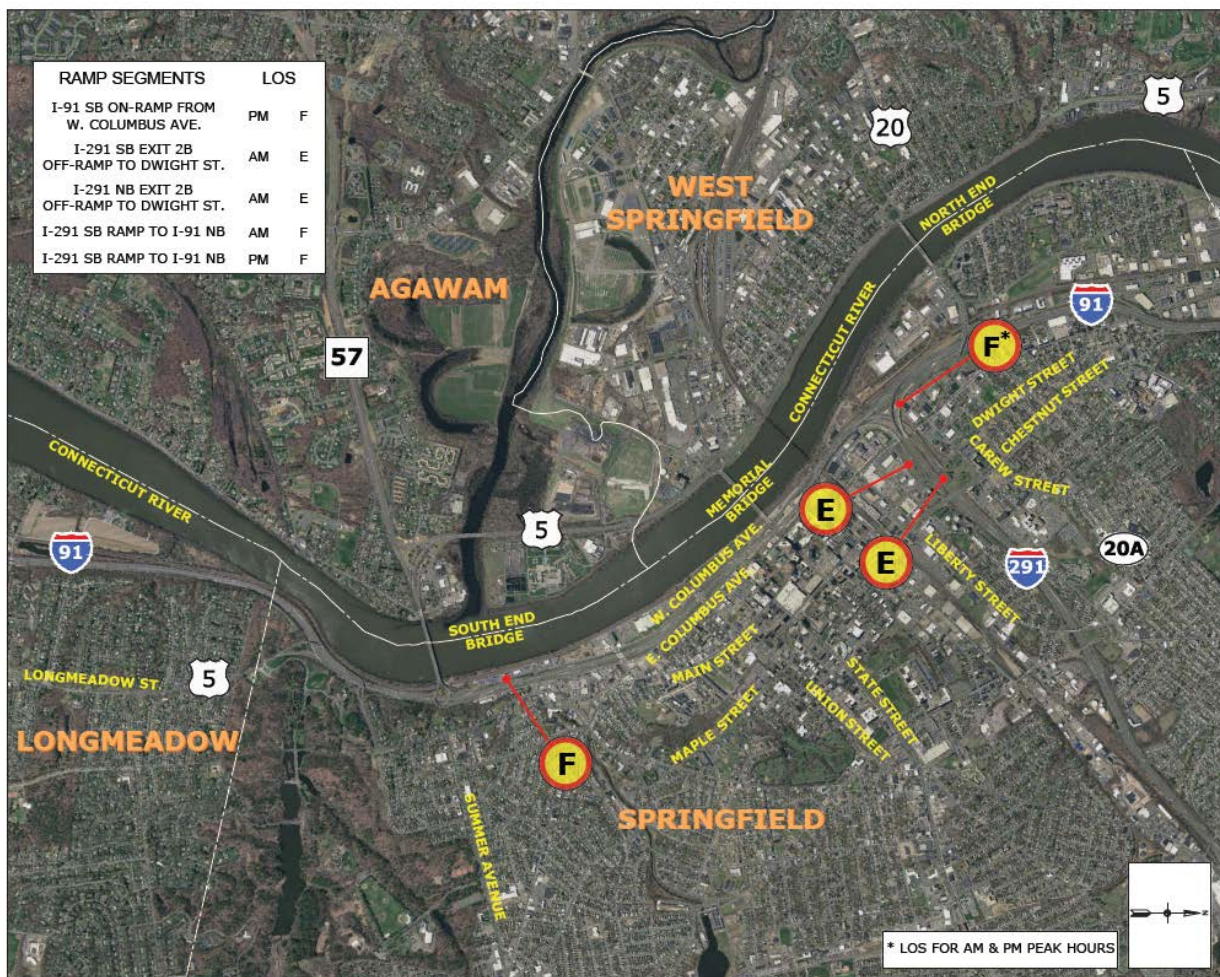
Source: Highway Capacity Manual, Fifth Edition, Transportation Research Board, National Research Council, Washington, D.C. 2010.



Ramps



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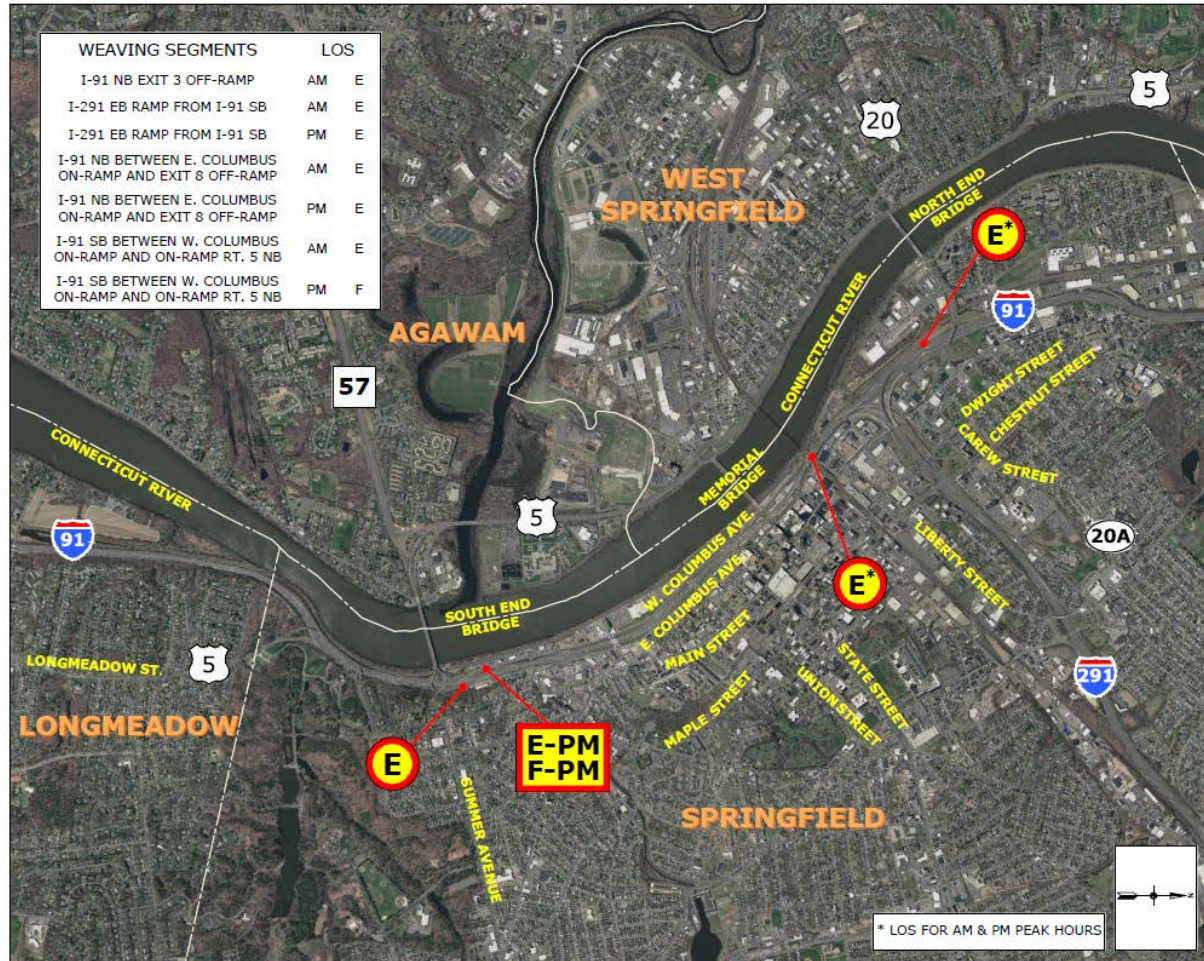
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Weaving



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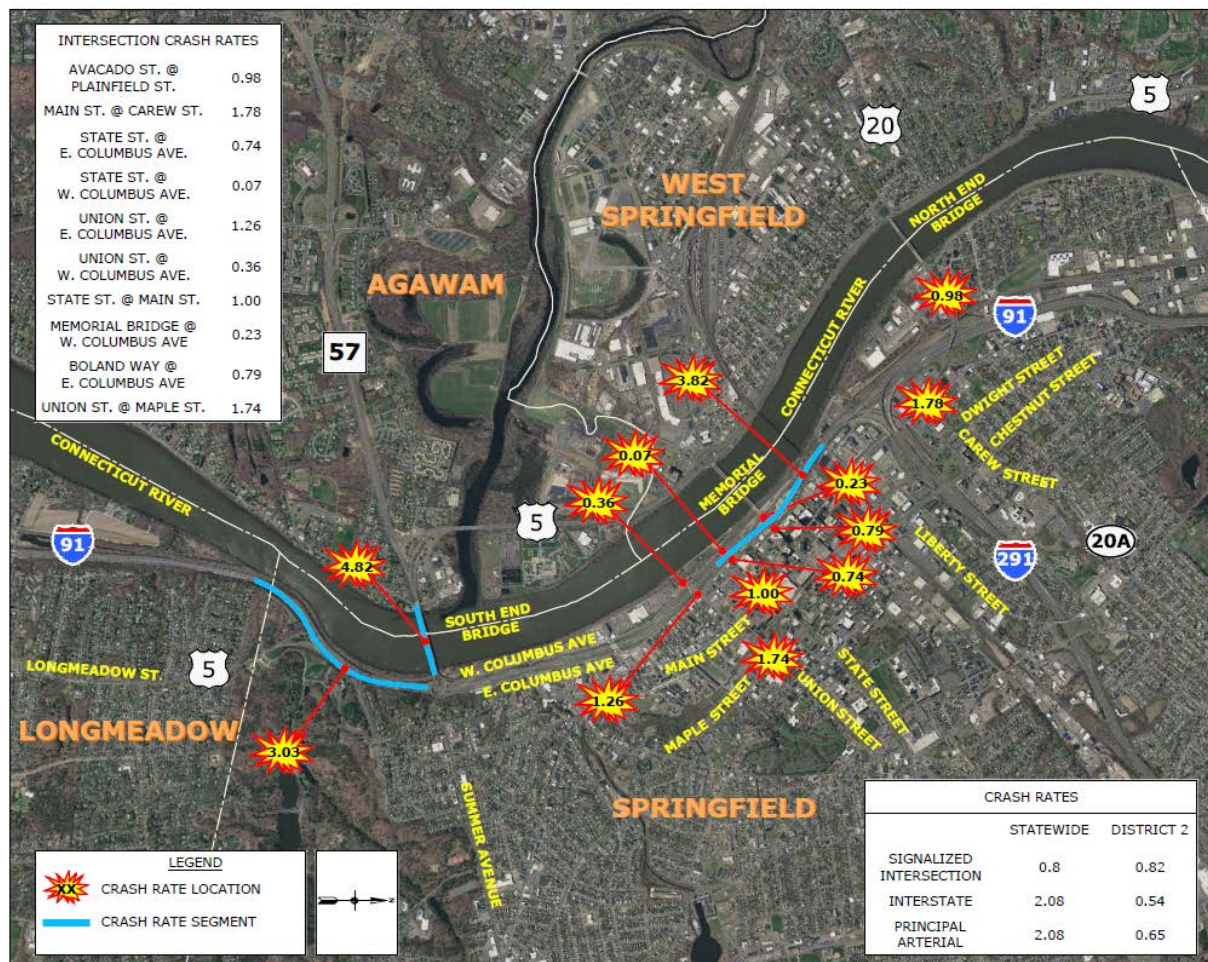
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Additional Crash Data



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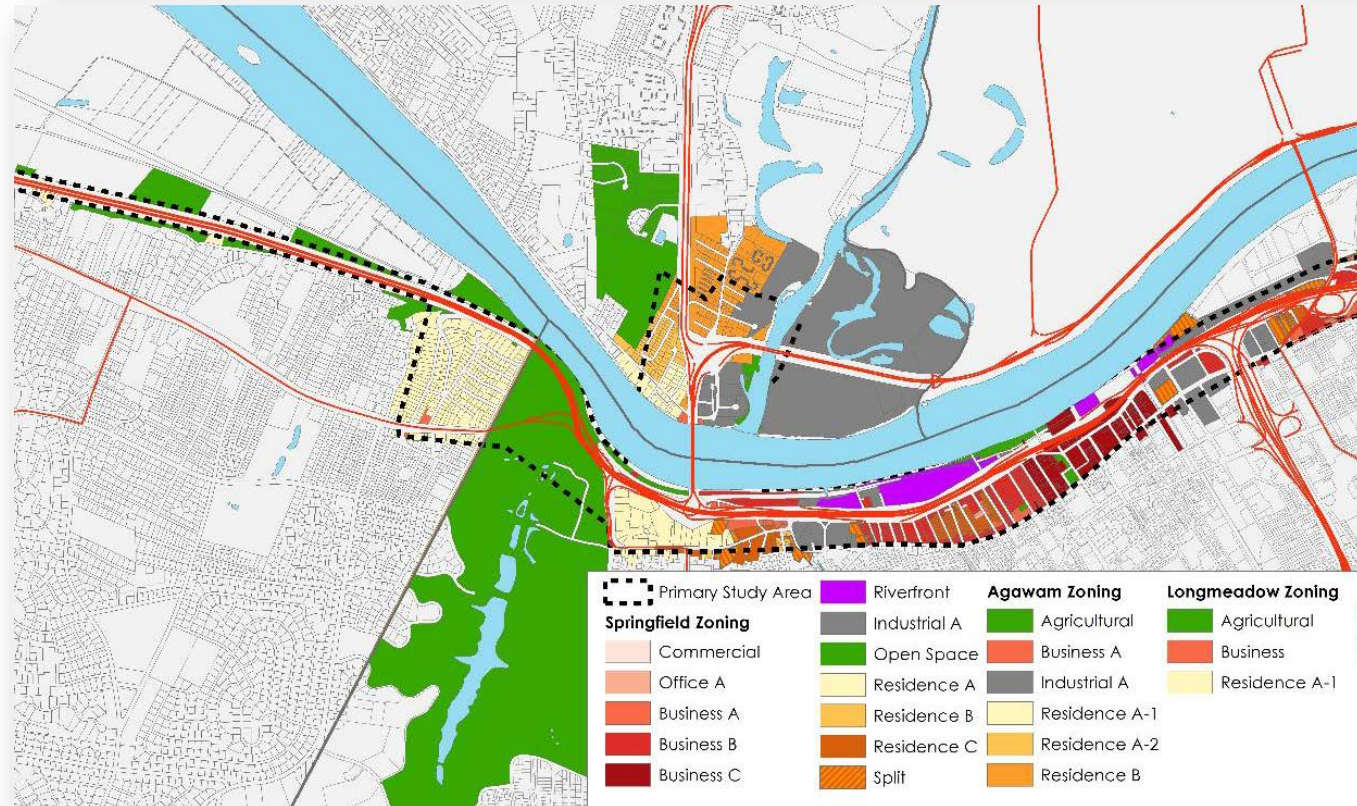
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Existing Zoning



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Existing Zoning



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Springfield Zone	Approx. FAR	Approx. Res. Density	Height Limit	Typical Uses
Business A	3.00	32 DU/ac	60 ft	Shopping district, residential allowed
Business B	3.20	150 DU/ac	60 ft	General business
Business C	25.33	150 DU/ac	400 ft	Downtown business, residential allowed
Commercial A	1.10	N/A	30 ft	Neighborhood retail and services
Riverfront	Not specified			Mixed use, medium density residential, recreation & entertainment
Industrial A	6.33	N/A	100 ft	Business/industrial uses
Office A	1.10	N/A	35 ft	Offices (residential conversions)
Open Space	N/A	N/A		Active/passive recreation
Residential A	N/A	6 DU/ac	35 ft	Low density residential (single family)
Residential B	N/A	11 DU/ac	35 ft	Moderate density residential (one-two family)
Residential C	N/A	17.5DU/ac	35 ft	High density residential (one, two, and multi-family)
West Columbus	As per underlying zoning			Retail, commercial, recreation & entertainment

- Most of the Primary Study Area lies within the City of Springfield, cutting through a variety of Business, Commercial, Industrial, Office, Open Space, Residential, and Multi-use zones
- West Columbus Overlay Zone and Riverfront Zone intend to encourage redevelopment along River with additional design standards.

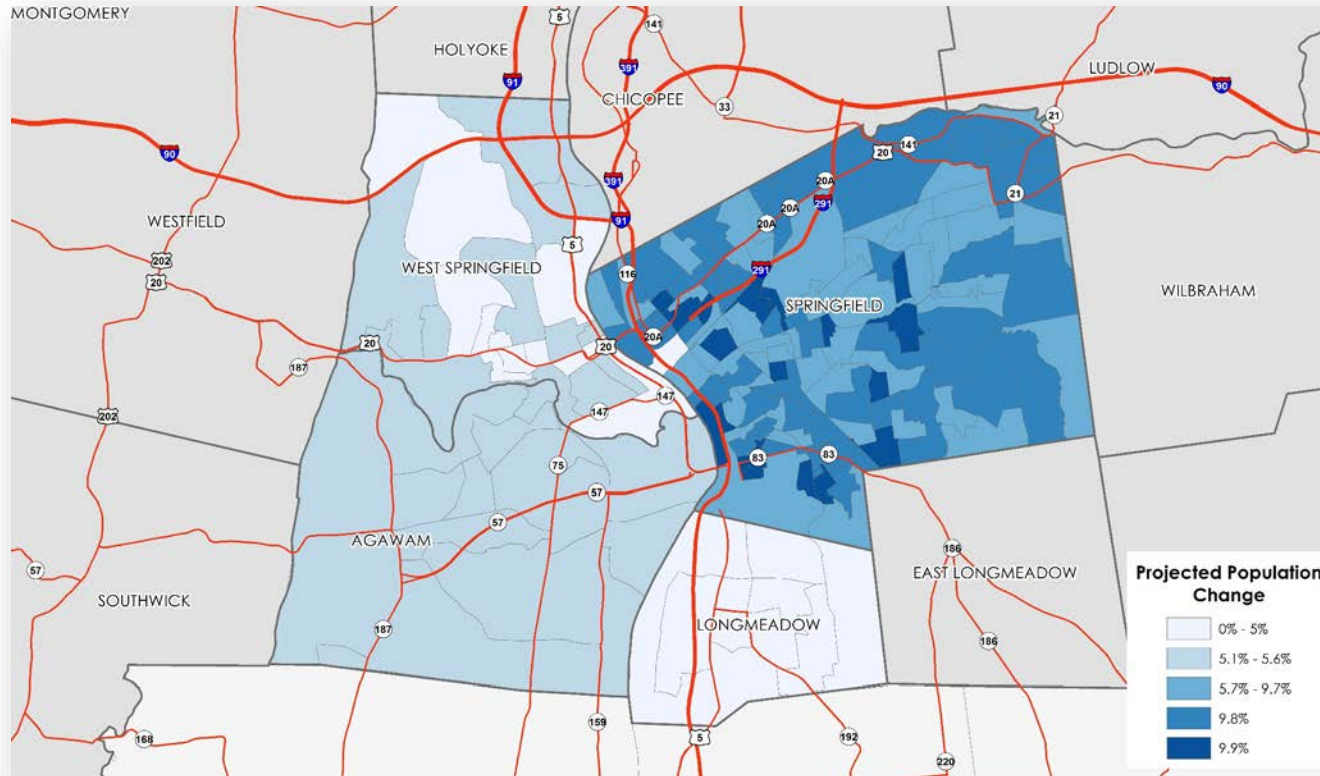


August 6, 2015

Socioeconomic Projections 2010-2040 Population Growth



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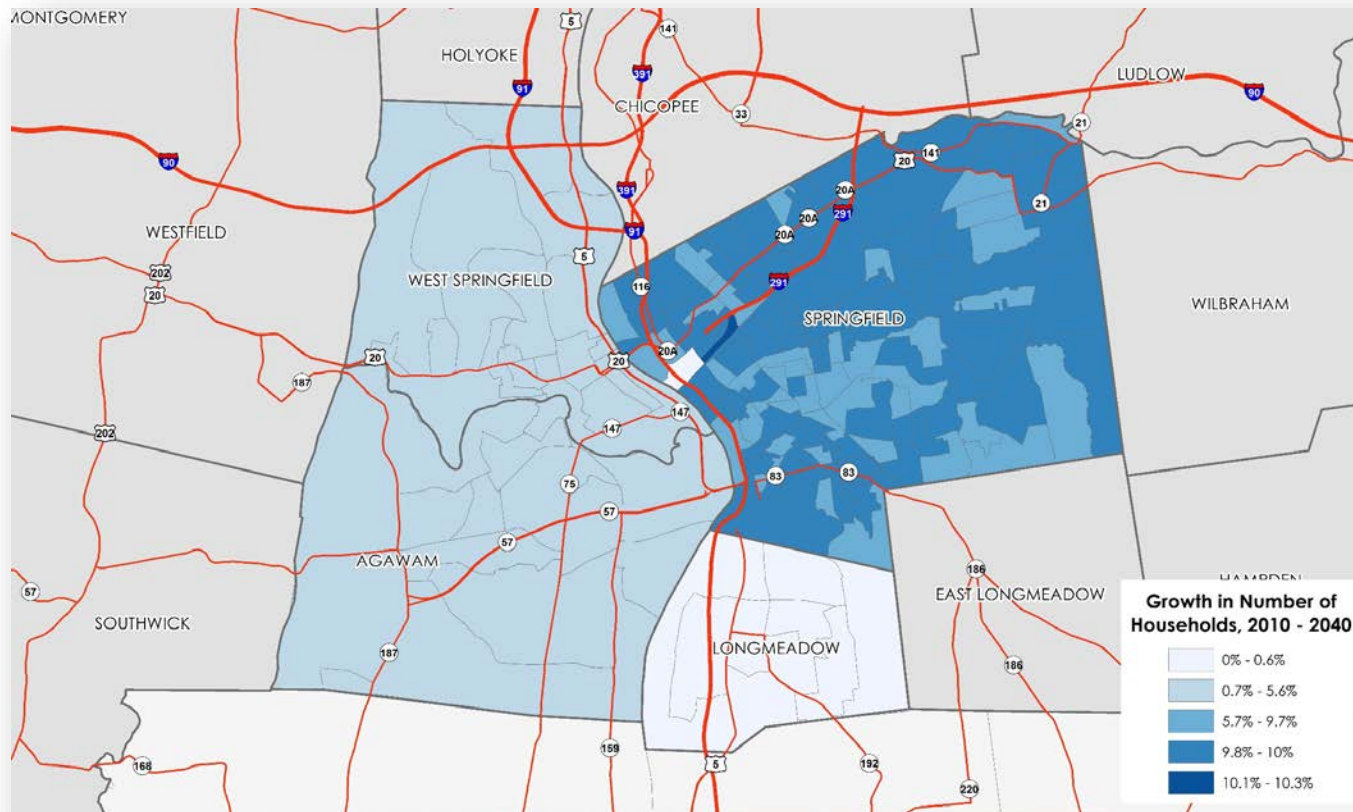
- Much of Primary Study Area projected to grow by approximately 9-10%
- Areas of highest growth concentrated in western Springfield



Socioeconomic Projections 2010-2040 Household Growth



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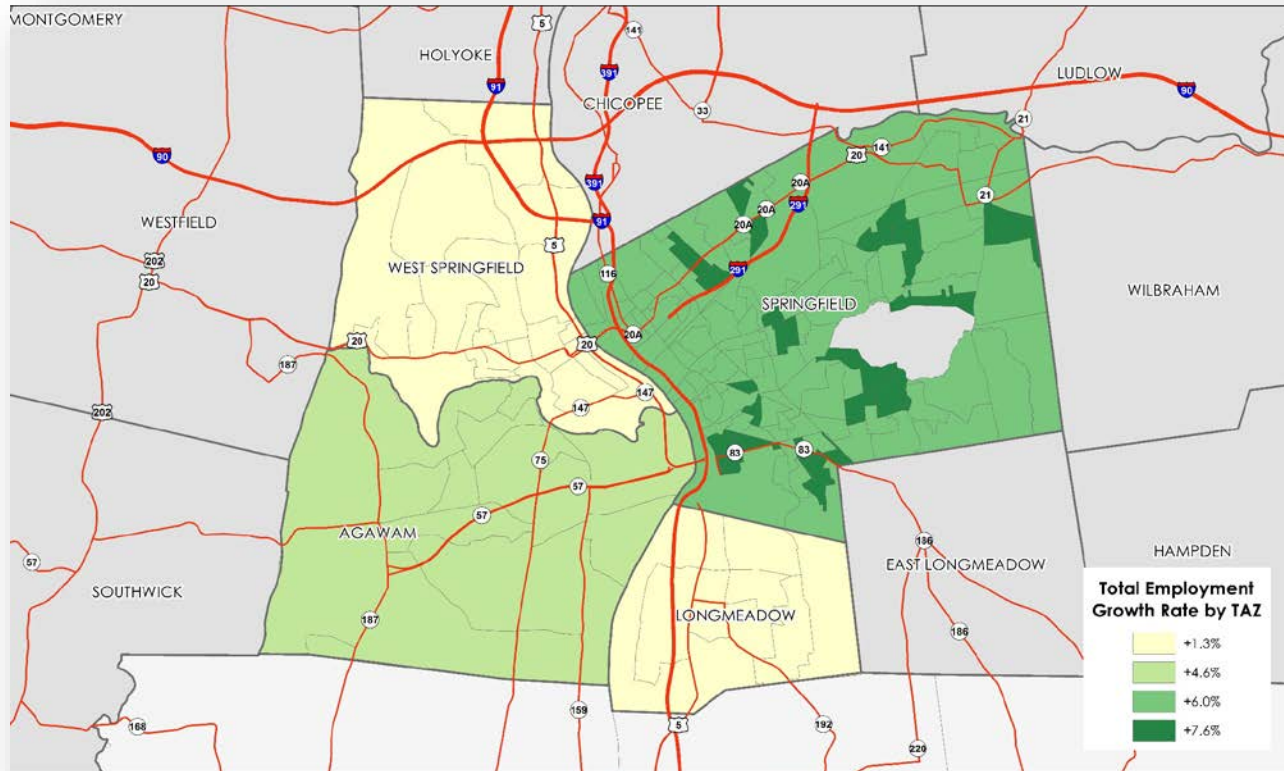
- One-person households the most common household type in much of Primary Study Area



Socioeconomic Projections 2010-2040 Employment Growth



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- Minimal growth expected in basic, retail sectors throughout region
- Strong growth projected (30-200%) in service sector employment within Springfield Primary Study Area



Baseline Health Data For I-91 Viaduct Study

Presented by

Ben Wood

Department of Public Health
Bureau of Community Health and Prevention

Margaret Round

Department of Public Health
Bureau of Environmental Health



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Outline

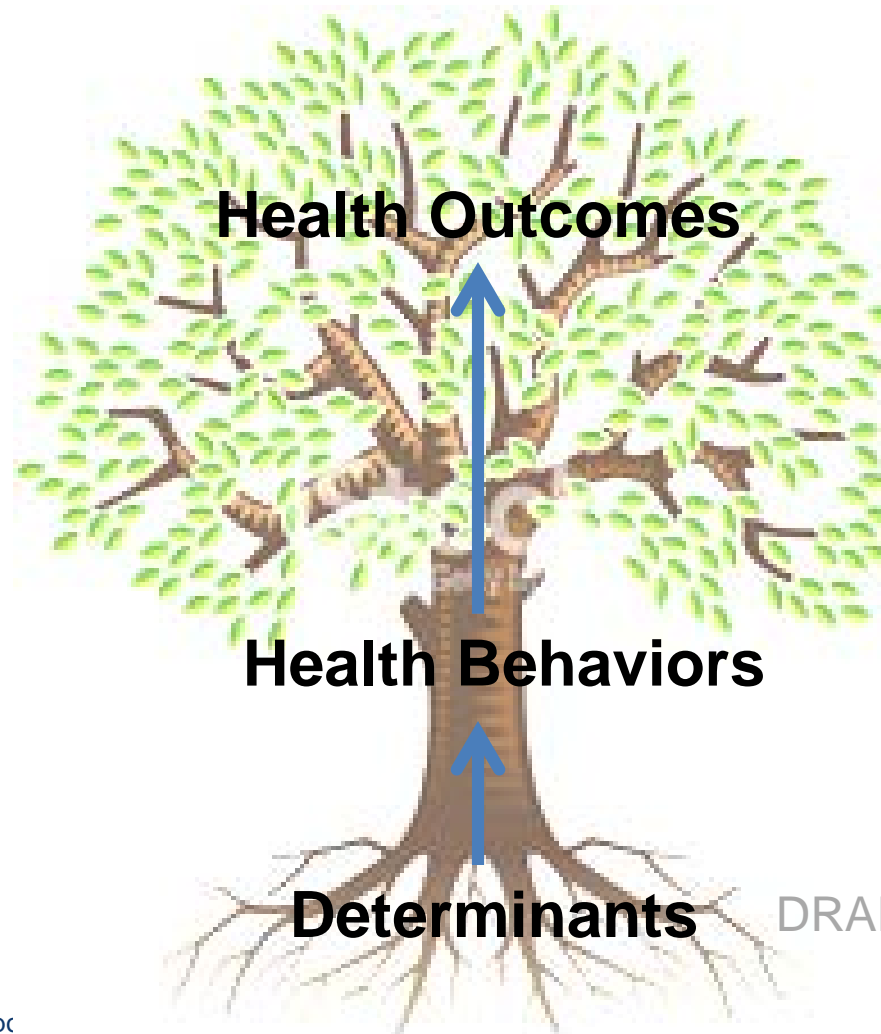
- I. Introduction to Health Impact Assessments
- II. Steps of HIA
- III. Health Determinants
- IV. Scoping
- V. Baseline health data
- VI. Next steps: Break out and Establishing HIA Subcommittee



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What impacts health?



- Identify and illustrate the relationships between, and consequences of, a proposed plan, project and policy and the health of a population;
- Support more informed and transparent decision making regarding the potential effects and impacts of a proposal on health;
- Help engage community stakeholders in the decision making process and contribute to public and stakeholder awareness of the health implications of plan, project and policy decisions;
- Identify options to maximize the positive and minimize the negative impacts of the proposed plan, project and policy.



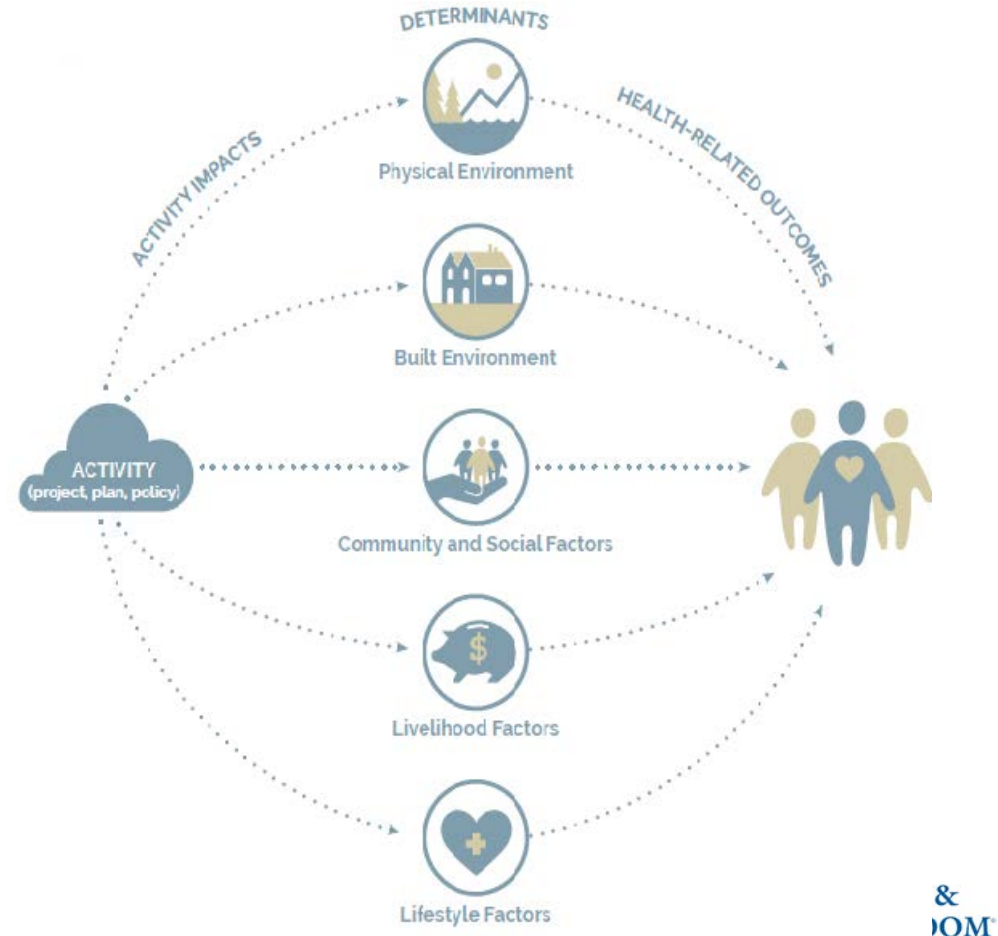
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- **Screening:** Determines the need and value of a HIA
- **Scoping:** Determines which health impacts to evaluate, methods for analysis and a work plan
- **Assessment:** Provides (1) describes baseline health conditions and (2) predicts potential health impacts
- **Recommendations:** Provides strategies to manage identified adverse health impacts
- **Reporting:** Includes the development of the HIA report and communication of findings and recommendations
- **Monitoring:** Tracks the impact on decision-making processes and the decision and the impacts of the decision on health determinants

Health Determinants

- Physical environment factors (e.g., air quality, water quality, hazards)
- Built environment factors (e.g., buildings, public spaces, roads, sidewalks, bike lanes)
- Social and community factors (e.g., social support, family structure, access to services)
- Livelihood factors (e.g., income, employment)
- Lifestyle factors (e.g., diet, exercise, alcohol and tobacco use)



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Transportation Related Health Determinants

	Walkability/ Active Transport		Safety from Crime		Economic Opportunity		Displacement/ Gentrification
	Affordable Housing		Green Housing		Social Cohesion		Green Space
	Access to Healthy Affordable Food		Safety from Traffic		Air Quality		Environmental Contamination

Scoping

The HIA was structured to be conducted in tandem with an active MassDOT study to provide supplemental health data to better inform optimal transportation design alternatives

MassDOT's existing study protocol lends uniquely to the HIA process by establishing a stakeholder working group composed of community representatives to evaluate alternatives

Approach

- Consider I-91 Viaduct Study Evaluation Criteria and other data
- Establish a HIA Subcommittee
- Conduct extensive literature review
- Work closely with MassDOT Project Manager and consultants
- Develop a workplan for assessing baseline health conditions, and evaluated the health outcomes for each of the alternatives



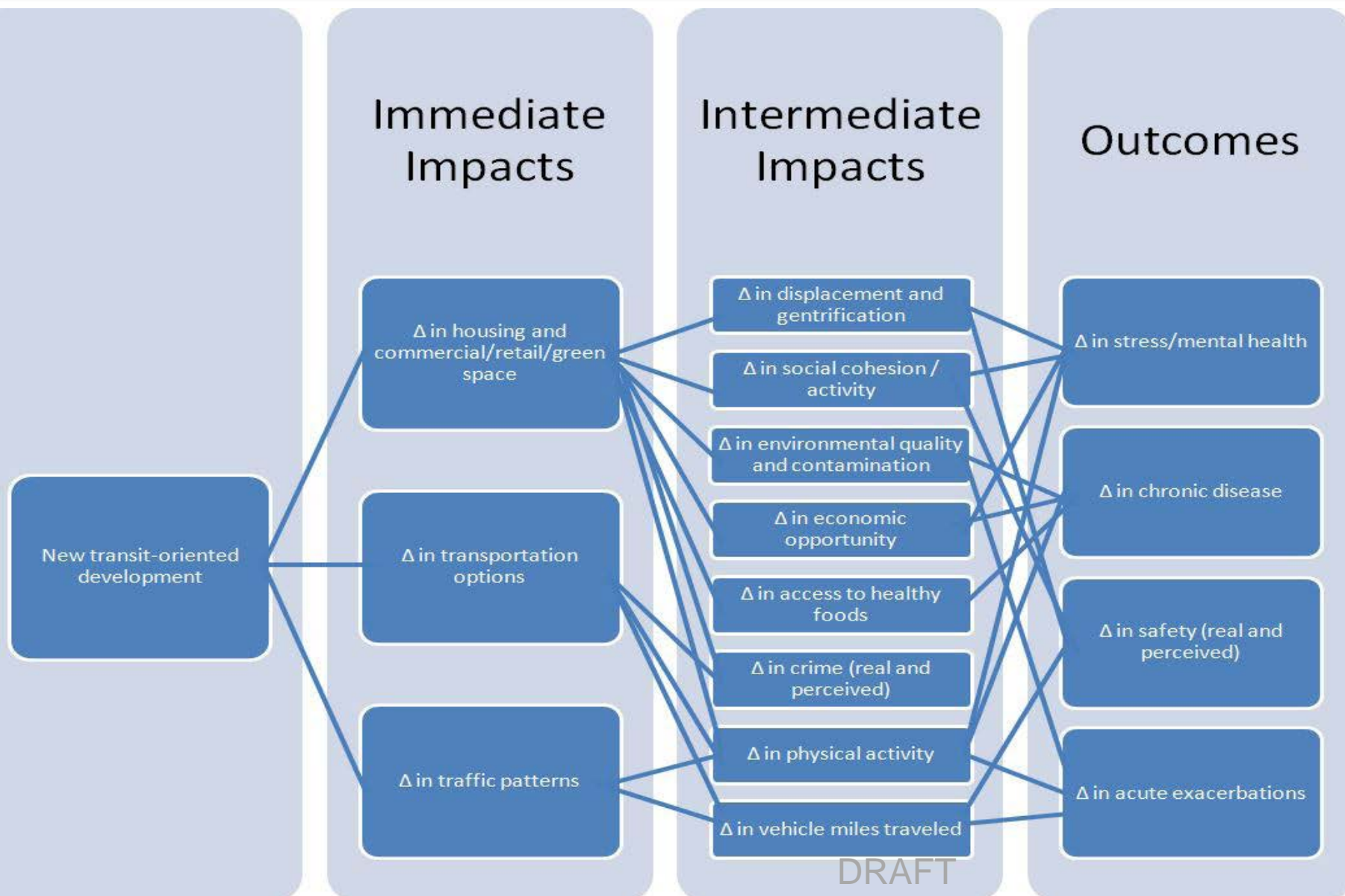
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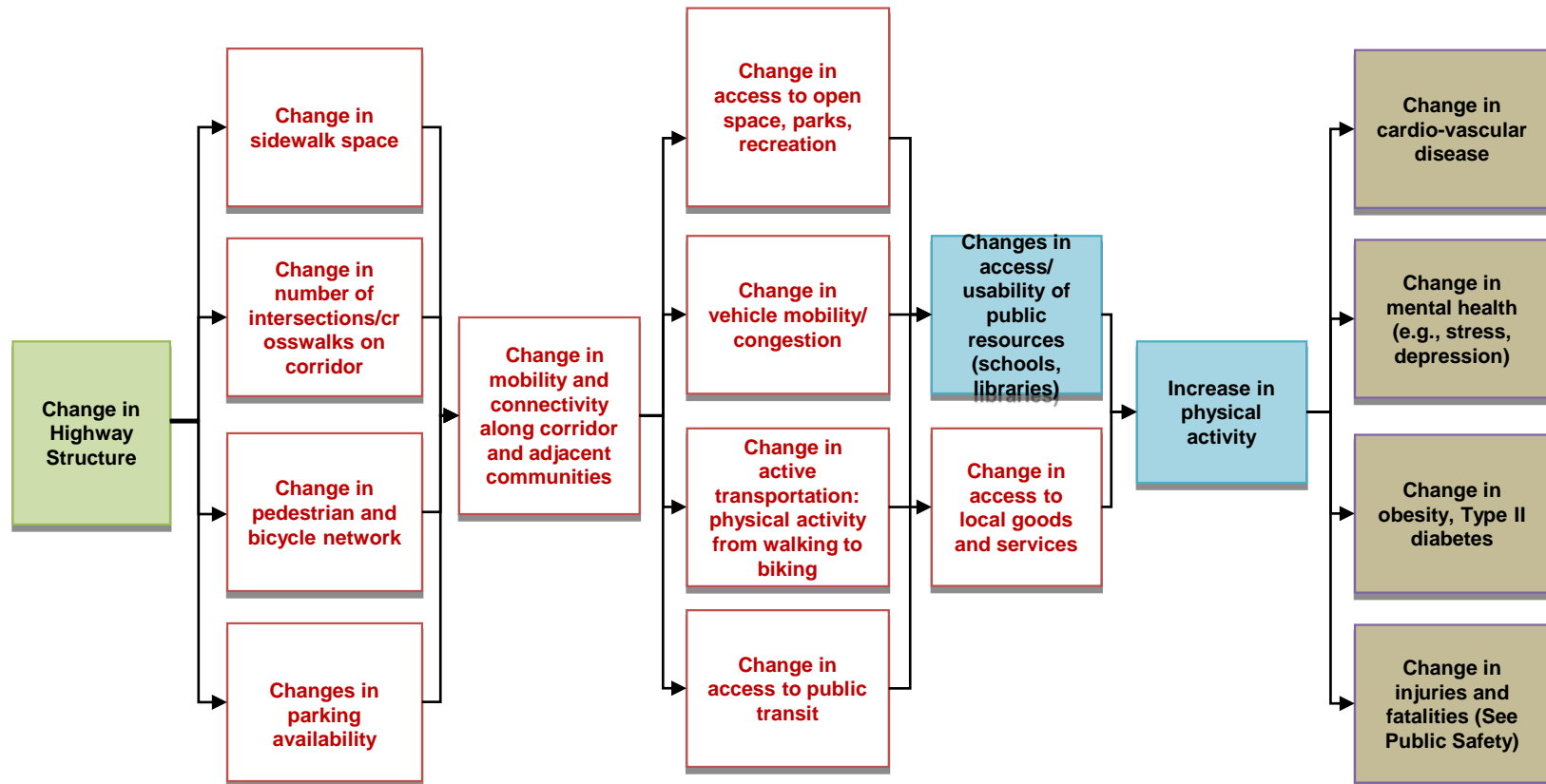
Health Impact Assessment



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Mobility & Connectivity



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Assessment

■ Assessment of Existing Conditions

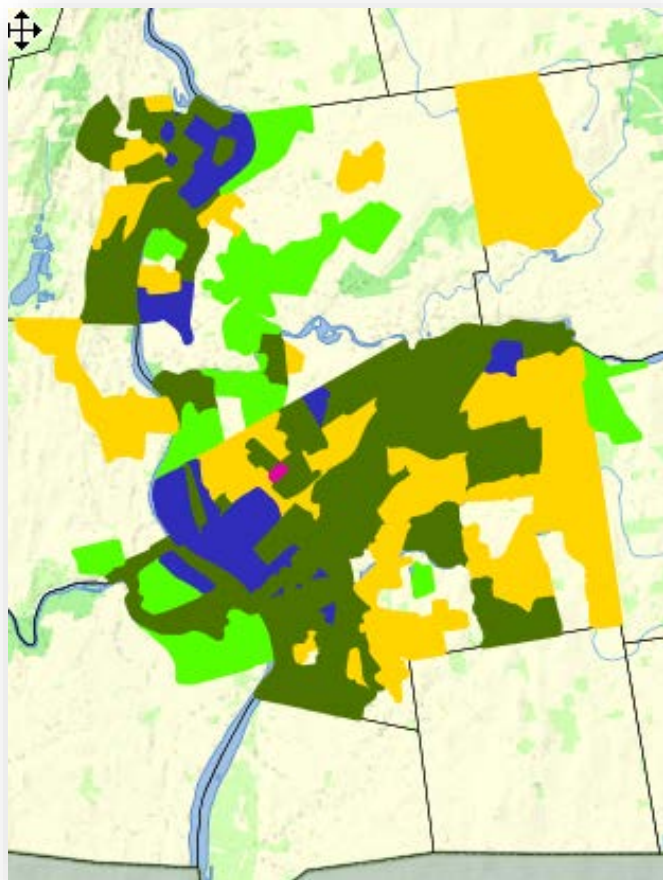
- Characterizing baseline health information that are directly related to transportation and land-use decisions
 - BRFSS data:
 - We collected information from the BRFSS for the following zip codes: 01101, 01106, 01103, 01104, 01105, 01107, 01108 (comprising the core study area) and for the towns of Holyoke, W. Springfield and Chicopee
 - 5 Indicators: Hypertension, Obesity, Diabetes, F/V consumption, Physical Activity rates
 - Hospitalizations for Asthma and Heart Attack and Pediatric Asthma data:
 - Data from Environmental Public Health Tracking Portal for Agawam, Chicopee, Holyoke, Longmeadow, Springfield and West Springfield
 - Determine if rates are statistically significantly higher compared to statewide rate

■ Assessment of Alternatives

Demographic Characteristics of Agawam, Chicopee, Holyoke, Longmeadow, Springfield, and West Springfield

Demographic Characteristics	Agawam	Chicopee	Holyoke	Longmeadow	Springfield	West Springfield
Population Total	28,555	55,478	40,029	15,835	153,428	28,498
Percent White	93.1%	85.8%	82.3%	90.7%	52.5%	86.4%
Black or African American	1.6%	3.5%	4.2%	0.8%	21.7%	3.9%
Hispanic or Latino (of any race)	4.8%	15.3%	48.3%	4.0%	40.5%	8.4%
Median Household Income	\$63,609	\$46,709	\$31,628	\$106,173	\$34,311	\$54,126
Per Capita Personal Income	\$29,857	\$24,810	\$19,968	\$53,767	\$18,133	\$27,853

Environmental Justice Populations



Census 2010 Environmental Justice Populations

- Minority
- Income
- English Isolation
- Minority and Income
- Minority and English Isolation
- Income and English Isolation
- Minority, Income and English Isolation

Baseline Health Data and Data Sources

Health Determinants	Baseline Health Data	Available Data Sources
Physical Environment Built Environment Livelihood Factors	Hospitalizations for: <ul style="list-style-type: none"> •Asthma •Myocardial infarction •Congestive Heart Failure •Stroke •Hypertension 	Hospitalization Data from the Center for Health Information and Analysis, CHIA (1)
	Childhood Lead Poisoning	MA DPH BEH EPHT Portal
	Pediatric Asthma (Grades K-8)	MA DPH BEH EPHT Portal
	Cancer	MA DPH EPHT Portal
Lifestyle Factors	<ul style="list-style-type: none"> • Adult Obesity • Adults Reporting No Exercise • Adults Eating 5 Fruits And Vegetables/Day 	MA DPH BCHAP Behavioral Risk Factor Surveillance Survey (BRFSS)
Built Environment	Connectivity Vehicular, Pedestrian and Bicycle Safety	Supplement I-91 Viaduct Study
Community and Social Factors	Access to medical and social services Social support services	DRAFT Community input
Livelihood Factors	Income, Race, Employment Socio-economic impacts	Supplement I-91 Viaduct Study

Example of Findings from BRFSS

01105

- Over 1/3 of adults are considered obese.*
- Almost 1/3 of adults report they have been told they have hypertension.
- 13.2% of adults report they have been told they have diabetes.
- 63.5% do not engage in regular physical activity.
- 21.2% of adults report consuming at least 5 fruits or vegetables per day

01107

- 29.6% of adults are considered obese.*
- 1/3 of adults report they have been told they have hypertension.
- 15.2% of adults report they have been told they have diabetes.
- 62.7 of adults do not engage in regular physical activity.
- 18.3% of adults report consuming at least 5 fruits or vegetables per day.

01106

- 14.5% of adults are considered obese.*
- 1/4 of adults report they have been told they have hypertension.
- Diabetes estimates were suppressed due to instable values.
- Almost half of adults do not engage in regular physical activity.
- 1/3 of adults report consuming at least 5 fruits or vegetables per day

* BMI was calculated from reported height and weight

Statistical Significance of Rates of Hospitalizations for Asthma, Heart Attack, and Prevalence of Pediatric Asthma Compared to the Statewide Rates in 2012

	Hospitalizations for Asthma	Emergency Department Visits for Asthma	Hospitalization for Heart Attack	Pediatric Asthma Prevalence
Agawam	LOWER	LOWER	NO DIFFERENCE	HIGHER
Chicopee	HIGHER	HIGHER	NO DIFFERENCE	HIGHER
Holyoke	HIGHER	HIGHER	HIGHER	HIGHER
Longmeadow	NS	LOWER	NO DIFFERENCE	LOWER
Springfield	HIGHER	HIGHER	HIGHER	HIGHER
West Springfield	NO DIFFERENCE	HIGHER	NO DIFFERENCE	NO DIFFERENCE

NS = indicates number or prevalence is not shown due to small numbers. These small numbers are suppressed to protect privacy

Statistical Significance - The likelihood that the difference found between groups was not due to chance alone. Statistical significance can be based on the use of statistical tests and comparison of confidence intervals. Overlapping confidence intervals indicate that any difference in the screening or prevalence observed may be due to chance. Confidence intervals that do not overlap are considered statistically significant and indicate a small likelihood that the difference is due to chance

Baseline Health Data

Take Home Message

There are regional differences in health behaviors and outcomes in the study area that are meaningful for understanding the impacts of transportation-related projects

Next Steps

- In breakout session we will discuss prioritizing the most important health issues considered by stakeholders
- Establish HIA Subcommittee and convene a meeting in September to complete the Scoping phase of the HIA
 - Help refine pathways for the HIA
 - Identify/Prioritize research questions
 - Identify additional baseline data for the HIA from stakeholders

Existing Viaduct 3-D Simulation



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Alternatives Development Discussion



Working Group Meeting #3

- Transportation
- Planning/Economics
- Public Health
- Connectivity



Vollmer Associates 1998 Study/ Pioneer Valley Planning Commission 2014 Study

Concept 1.0 (Figure 3)	Concept 1.1 (Figure 4)	Concept 3.0 (Figure 5)	Concept 6.0 (Figure 6)
<ul style="list-style-type: none"> close Exit 3 Northbound on-ramp construct a new on-ramp north of Main Street (reverse of Exit 4 off-ramp) close Exit 3 Southbound off-ramp Close Exit 5 Southbound off-ramp and on-ramp at Broad Street 	<ul style="list-style-type: none"> extend East Columbus Avenue to south of Exit 1 (Route 5) reconstruct East Columbus Avenue east of Exit 3 loop ramps, eliminating Longhill Street on ramp to I-91 Southbound close Exit 3 inner loop ramp to I-91 Northbound reconstruct West Columbus Avenue connection at Longhill Street (Exit 2) construct an overpass (braided ramp) for the Southbound on-ramp at Exit 4 Main Street with the Southbound off-ramp to the South End Bridge maintain the Exit 5 ramp configuration from concept 1.0 	<ul style="list-style-type: none"> extend East Columbus Avenue to the south of Exit 1 (Route 5) reconstruct Exit 2 as a diamond interchange with East Columbus Avenue and Longhill Street, reconstruct West Columbus Avenue from Exit 1 to 3 and provide access at the new diamond interchange reconstruct East Columbus Avenue east of Exit 3 loop ramps eliminate the Southbound on-ramp from West Columbus Avenue (Main Street Exit) eliminate the Northbound on-ramp and off-ramp from and to Broad Street eliminate the Southbound off-ramp to Broad Street. 	<ul style="list-style-type: none"> construct a new interchange 600 feet south of Exit 1 construct a new bridge over the Connecticut River that reconnects Route 5 and Route 57 construct an interchange of Route 5/57 on the west side of river extend East and West Columbus Avenues to the south of Exit 1 construct a diamond interchange at Longhill Street and Columbus Avenue eliminate the Longhill Street connection to I-91 remove the South End Bridge, eliminating Exit 3 (South End Bridge Interchange) improve I-91 geometry
1998 Cost Estimate = \$4.5	1998 Cost Estimate = \$8.5-28.5	1998 Cost Estimate = \$27	1998 Cost Estimate = \$64
2013 Cost Estimate = \$7	2013 Cost Estimate = \$13.2-44.4	2013 Cost Estimate = \$42	2013 Cost Estimate = \$99.7

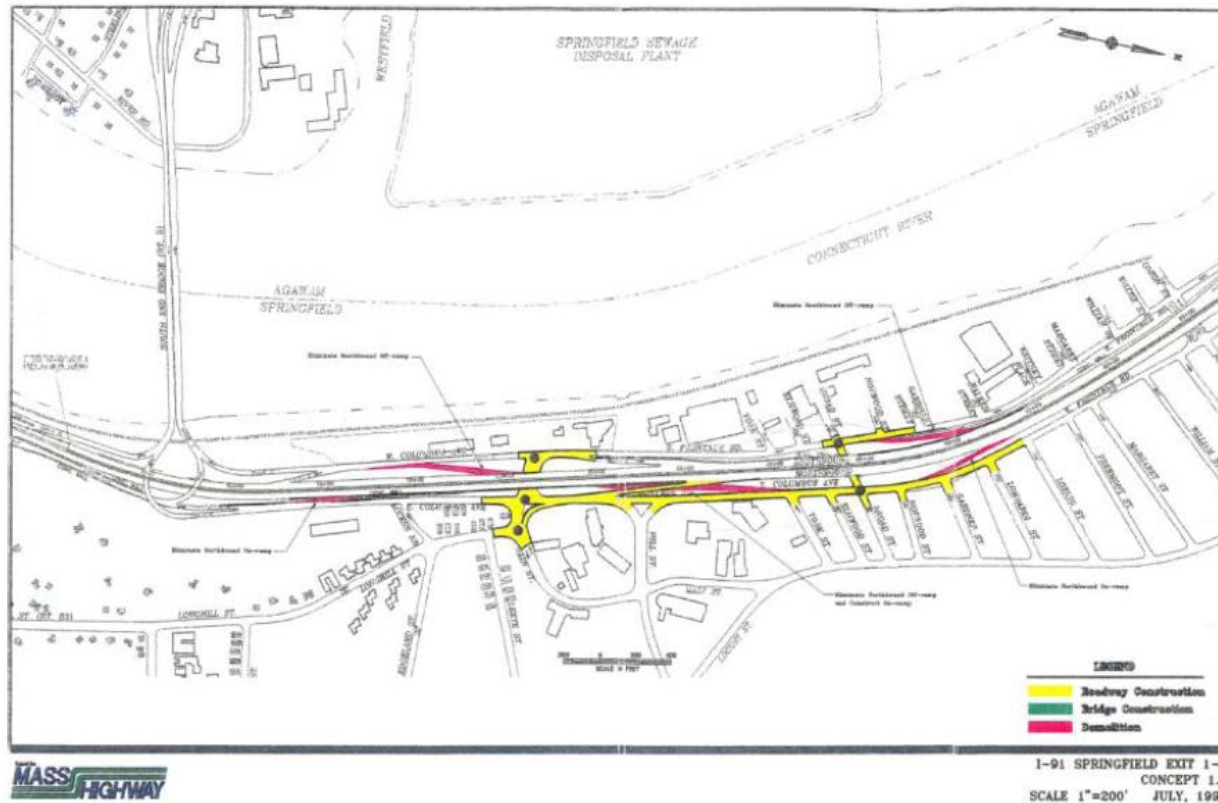
*Cost Estimates in Million Dollars. 2013 Project Cost Adjustment Factor for Inflation (3%/year) = 1.56.

Concept 1.0



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Previous Concepts – Vollmer Associates 1998 Study/Pioneer Valley Planning Commission 2014 Study



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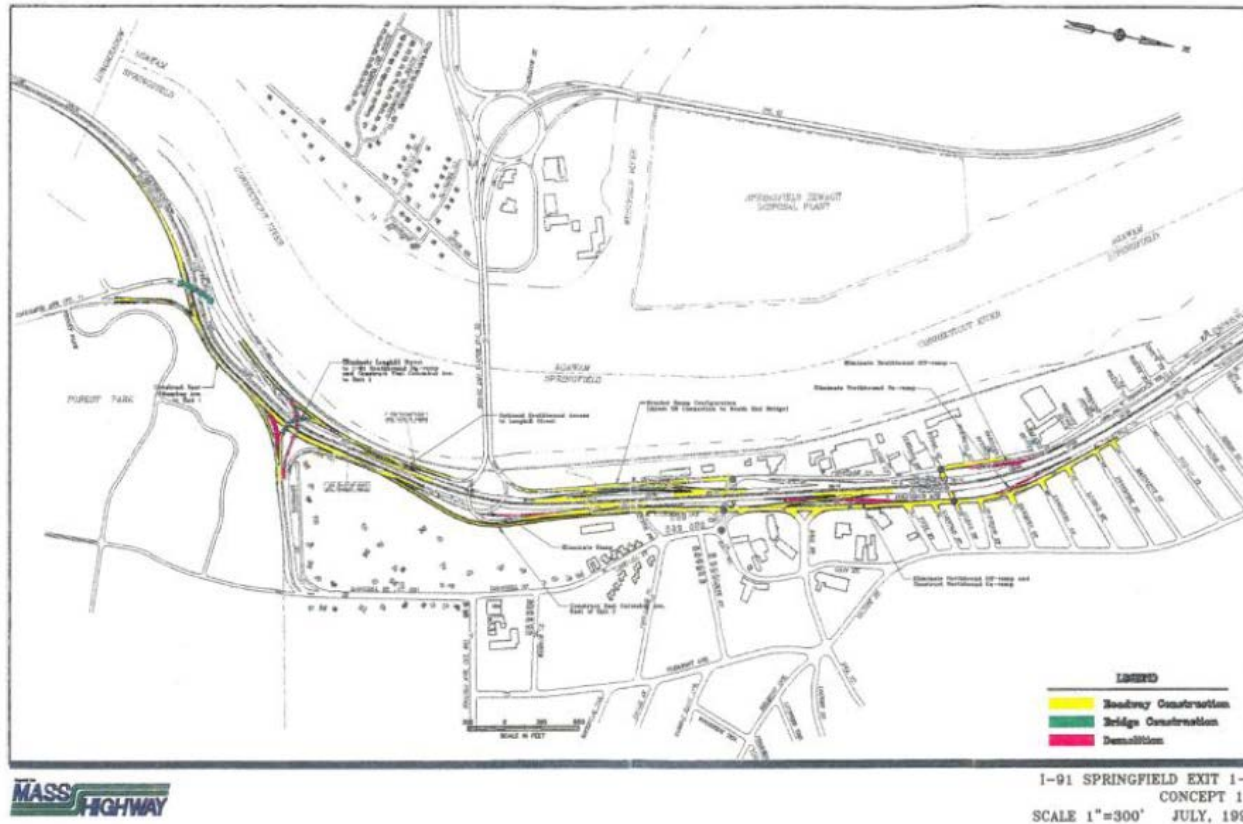


Concept 1.1

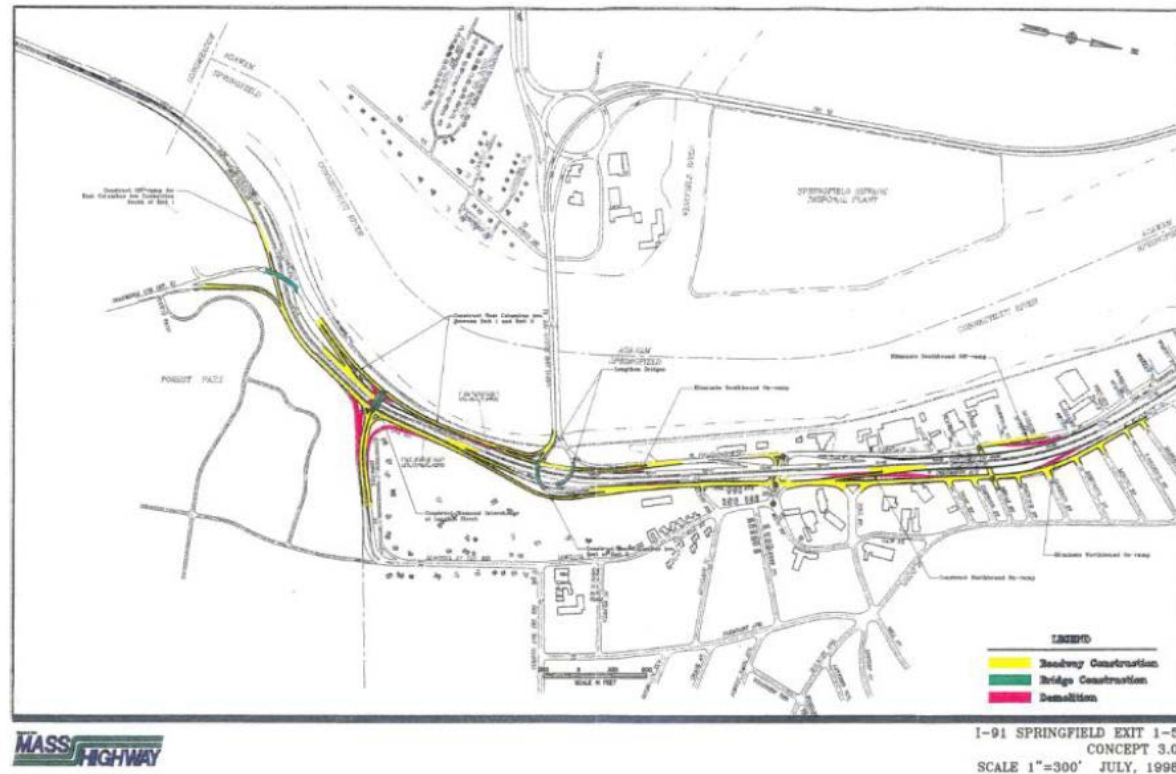


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Previous Concepts – Vollmer Associates 1998 Study/Pioneer Valley Planning Commission 2014 Study



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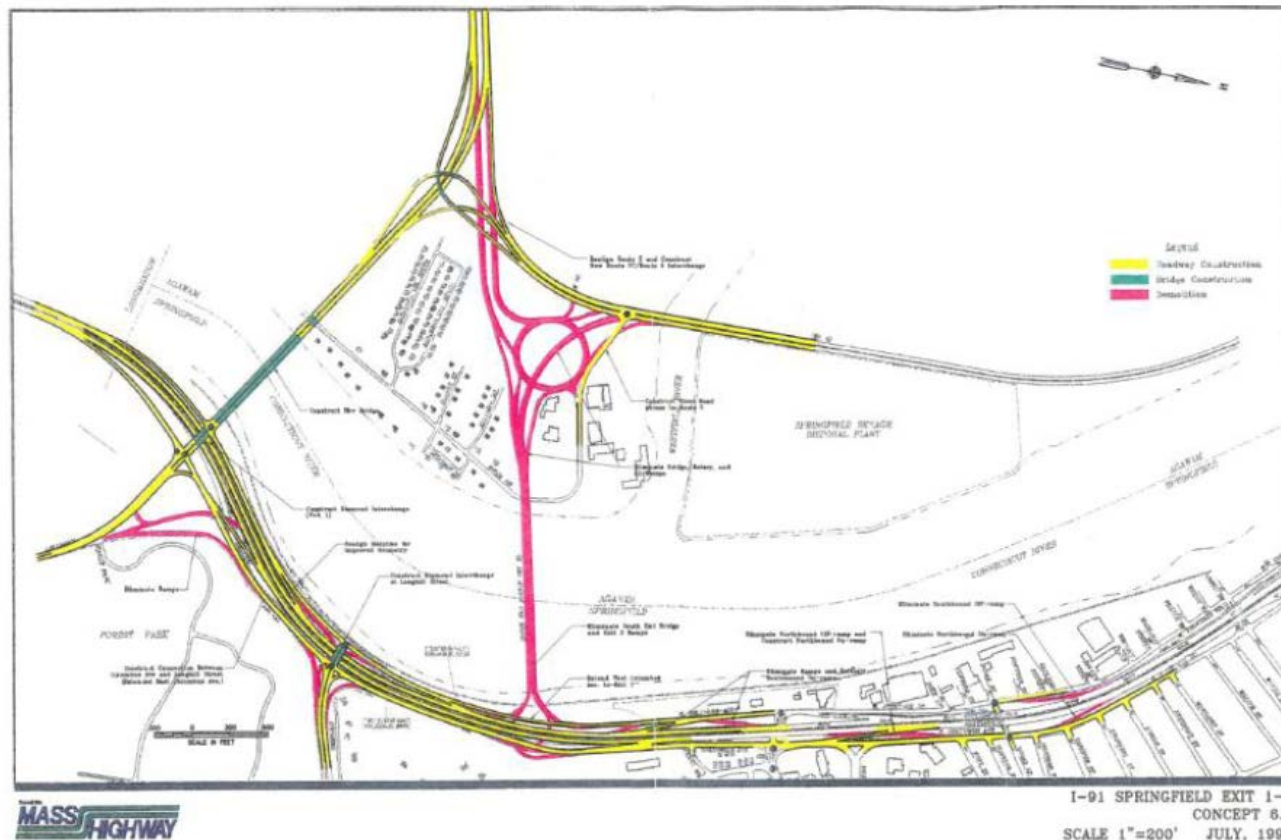


Concept 6.0



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Previous Concepts – Vollmer Associates 1998 Study/Pioneer Valley Planning Commission 2014 Study



- Complete the Regional Transportation Demand Model for:
 - Existing Conditions 2010
 - Future No Build 2040
- Apply 2040 No-Build Conditions to Micro Simulations
- Working Group Meeting #4/Public Meeting #1
- Continue Alternatives Development

Contact:

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Study Website Link:

www.massdot.state.ma.us/i91viaductstudy

