APPENDIX H

GEOGRAPHIC DISTRIBUTION OF UPWP FUNDED STUDIES, FFYS 2017 AND 2018

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APPENDIX D

Geographic Distribution of UPWP Funded Studies

D.1 INTRODUCTION

This appendix summarizes the Metropolitan Planning Organization (MPO)-funded work products produced by MPO staff and the staff of the Metropolitan Area Planning Council (MAPC) during federal fiscal years (FFY) 2010 through 2015, as well as those expected to be completed by the end of FFY 2016. The narrative below describes the methodology used to compile this information, as well as some of the additional factors that could be used to further analyze and use this data to inform and guide public involvement and regional equity purposes.

D.2 PURPOSE AND METHODOLOGY

Purpose

The purpose of this data collection and analysis is to better understand the geographic spread of Unified Planning Work Program (UPWP) work products (i.e., reports and technical memoranda) throughout the region. In other words, this exercise serves to illuminate which communities and areas of our metropolitan region have been the subject of transportation studies and analyses (or recipients of technical support) conducted by the MPO staff with 3C (continuing, comprehensive, and cooperative) planning funds. The data presented below covers UPWP tasks completed from FFY 2010 through FFY 2016 and includes work that resulted in benefits to specific municipalities as well as studies that had a regional focus.

This is the first FFY in which this data has been compiled, and MPO staff intends to continue to compile this information each FFY. Maintaining a database to track the geographic distribution of UPWP studies (those benefiting specific communities as well as those benefiting a wider portion of the region) can serve as one important input into the UPWP funding decisions made each FFY. When considered in combination with other data, such as the presence and size of a municipal planning department or the percentage of minority residents, this data on geographic distribution of MPO-funded UPWP studies can help guide the MPO's public outreach to help ensure that, over time, we are meeting the needs of the region with the funds allocated through the UPWP.

Methodology

As noted above, this analysis examined FFYs 2010 through 2016. In order to generate information on the number of UPWP studies produced during these FFYs that benefited specific cities and towns in the Boston region, MPO staff performed the following main steps:

- Reviewed all work products listed as complete in UPWPs from FFYs 2011 through 2017
- Excluded all agency and other client-funded studies and technical analyses in order to focus the analysis on MPO-funded work only

- Excluded all work products that had a regional focus rather than benefiting specific municipalities
- Excluded all work related to certification requirements (Chapter 5) and administration, resource management, and support activities (Chapter 8)
- Compiled a count of all reports and technical memoranda completed specifically for one municipality, or reports and technical memoranda directly benefiting multiple municipalities. In the case where multiple municipalities directly benefit from a report or technical memoranda, the work product was counted once for each municipality that benefited. Examples of studies and reports that benefited multiple municipalities include the Massachusetts Bay Transportation Authority (MBTA) Bus Route 1 Transit Signal Priority Study (both Boston and Cambridge were beneficiaries of this study) and the Route 126 Corridor Study (both Bellingham and Medway were beneficiaries of this study)
- Reviewed and discussed the status and focus of studies, technical memoranda, and reports with project managers and technical staff

D.3 PLANNING STUDIES AND TECHNICAL ANALYSES BY COMMUNITY

Table D-1 shows the number of completed MPO-funded UPWP work products from FFY 2010 through FFY 2016 that are determined to provide benefits to specific municipalities. Studies and technical analyses are grouped by the year in which they were completed, rather than the year in which they were first programmed in the UPWP. Examples of the types of studies and work in the table include:

- Evaluating Transit-Oriented Development opportunities at specific MBTA Stations
- Technical assistance on Massachusetts Environmental Policy Act (MEPA) Environmental Impact Reports
- Complete streets analyses for specific municipalities
- Operations analyses and alternative conceptual design recommendations for specific intersections

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Table D-1: Number of UPWP Tasks by Federal Fiscal Year and Community, Grouped by Subregion

Community	2010	2011	2012	2013	2014	2015	2016	Total	2010 Population	2010 Minority Population Count	2010 Median Household Income	2010 Roadway Miles	Subregion
Boston	3	4	5	2	4	4	3	25	617,594	327,282	$50,684	778	Inner Core
Everett	2	1	2	2	3	3	2	15	41,667	19,351	$49,737	57	Inner Core
Waltham	2	2	2	2	2	2	3	15	60,632	18,954	$66,346	115	Inner Core
Somerville	4	3	2	2	1	1	1	14	75,754	23,395	$61,731	88	Inner Core
Cambridge	2	2	2	1	1	1	4	13	105,162	39,903	$64,865	120	Inner Core
Newton	1	2	3	2	2	2		12	85,146	17,345	$107,696	276	Inner Core
Quincy	3	1	3	2	2			11	92,271	31,823	$59,803	185	Inner Core
Chelsea	4	1	2	1	1	1		10	35,177	26,295	$40,487	44	Inner Core
Malden	2	2	3	1	1	1		10	59,450	28,239	$56,347	93	Inner Core
Lynn	3		1	3			1	8	90,329	47,360	$43,200	153	Inner Core
Medford	2	1	1	1	1		1	7	56,173	13,384	$70,102	92	Inner Core
Revere	1		2	2	2			7	51,755	19,456	$49,759	85	Inner Core
Brookline		1	1	1	1	1	1	6	58,732	15,692	$95,448	92	Inner Core
Melrose	1		1	2	1	1		6	26,983	2,822	$82,482	71	Inner Core
Belmont	1	1			1		2	5	24,729	4,611	$95,197	72	Inner Core
Arlington	2	1					1	4	42,844	7,040	$82,771	101	Inner Core
Saugus	1		1	1				3	26,628	2,768	$71,023	77	Inner Core
Winthrop	1		1					2	17,497	2,011	$67,535	36	Inner Core
Watertown	1							1	31,915	5,850	$74,081	72	Inner Core
Nahant								0	3,410	153	$81,831	17	Inner Core
Inner Core Subtotals	**36**	**22**	**32**	**25**	**23**	**17**	**17**	**172**	**1,603,848**	**653,734**		**2624**	

Table D-1(cont.)

Community	2010	2011	2012	2013	2014	2015	2016	Total	2010 Population	2010 Minority Population Count	2010 Median Household Income	2010 Roadway Miles	Subregion
Lexington	2	1	3	1	1	2		10	31,394	8,256	$130,637	117	MAGIC
Lincoln	1	1	3	2	1	1		9	6,362	1,096	$121,104	51	MAGIC
Acton			2			4	1	7	21,924	5,369	$105,523	103	MAGIC
Bedford	3		1		1	2		7	13,320	2,136	$107,639	70	MAGIC
Hudson		2	2	1		2		7	19,063	2,118	$74,983	83	MAGIC
Maynard			2	1		4		7	10,106	996	$75,597	35	MAGIC
Sudbury	2	2	1	1		1		7	17,659	1,880	$153,295	138	MAGIC
Concord			1	1	1	3	1	7	17,668	2,266	$119,858	104	MAGIC
Littleton			2			3		5	8,924	685	$103,616	62	MAGIC
Bolton	1	1	1			1		4	4,897	320	$125,741	60	MAGIC
Boxborough			1			3		4	4,996	1,056	$102,222	33	MAGIC
Stow			2	1		1		4	6,590	511	$117,440	52	MAGIC
Carlisle			1			1		2	4,852	595	$155,000	55	MAGIC
MAGIC Subtotals	**9**	**7**	**22**	**8**	**4**	**28**	**1**	**79**	**167,755**	**27,284**		**963**	
Weston	4	2	2	2	2	2	2	16	11,261	1,868	$148,512	88	MetroWest
Framingham	3	3	3	2	2	1	1	15	68,318	23,693	$64,061	219	MetroWest
Wellesley	3	1	2	2	1	2	1	12	27,982	4,921	$139,784	109	MetroWest
Natick	3	2	2	2			1	10	33,006	4,817	$87,568	123	MetroWest
Southborough	2	2	2	1		1		8	9,767	1,362	$140,184	69	MetroWest
Marlborough	1	1	1	2	1			6	38,499	9,546	$71,617	129	MetroWest
Holliston	2			1	1			4	13,547	902	$103,600	86	MetroWest
Ashland	2			1				3	16,593	3,063	$92,974	73	MetroWest

Table D-1(cont.)

Community	2010	2011	2012	2013	2014	2015	2016	Total	2010 Population	2010 Minority Population Count	2010 Median Household Income	2010 Roadway Miles	Subregion
Wayland	1	1		1				3	12,994	1,912	$129,805	87	MetroWest
MetroWest Subtotals	**21**	**12**	**12**	**14**	**7**	**6**	**5**	**77**	**231,967**	**52,084**		**983**	
Burlington	3	2	2	2	1	1	1	12	24,498	5,106	$90,341	94	NSPC
Reading	2		1	3	2	2	1	11	24,747	1,870	$99,130	89	NSPC
Woburn	2		1	3		1	1	8	38,120	6,990	$71,060	121	NSPC
Wilmington	1		1	3			1	6	22,325	1,725	$94,900	95	NSPC
Winchester	1		1	2			2	6	21,374	3,065	$121,572	73	NSPC
Lynnfield	1			1		2	1	5	11,596	758	$87,590	66	NSPC
Stoneham	1			2		1	1	5	21,437	2,033	$76,574	65	NSPC
Wakefield	1		1	1			1	4	24,932	1,751	$89,246	85	NSPC
North Reading				1		1	1	3	14,892	901	$96,016	76	NSPC
NSPC Subtotals	**12**	**2**	**7**	**18**	**3**	**8**	**10**	**60**	**203,921**	**24,199**		**764**	
Salem	2	3				2	1	8	41,340	9,963	$56,979	88	NSTF
Danvers	1	2	2		1			6	26,493	1,654	$75,310	104	NSTF
Beverly		2		1	1	1		5	39,502	3,397	$66,671	125	NSTF
Peabody	2	2						4	51,251	6,317	$65,515	159	NSTF
Rockport		2		1				3	6,952	286	$70,625	33	NSTF
Swampscott	1		1	1				3	13,787	963	$90,763	43	NSTF
Gloucester				1	1			2	28,789	1,689	$60,506	88	NSTF
Marblehead	1			1				2	19,808	990	$97,097	66	NSTF
Hamilton		1						1	7,764	676	$99,732	45	NSTF
Ipswich		1						1	13,175	704	$80,816	73	NSTF

Table D-1(cont.)

Community	2010	2011	2012	2013	2014	2015	2016	Total	2010 Population	2010 Minority Population Count	2010 Median Household Income	2010 Roadway Miles	Subregion
Middleton							1	1	8,987	1,142	$87,728	46	NSTF
Wenham		1						1	4,875	268	$132,697	27	NSTF
Essex								0	3,504	135	$76,989	24	NSTF
Manchester								0	5,136	184	$105,000	24	NSTF
Topsfield								0	6,085	283	$115,015	50	NSTF
NSTF Subtotals	**7**	**14**	**3**	**5**	**3**	**3**	**2**	**37**	**277,448**	**28,651**		**995**	
Braintree	5		1	2		1	1	10	35,744	5,273	$81,146	104	SSC
Weymouth	3			1	1	1		6	53,743	6,379	$65,849	141	SSC
Cohasset				2		1		3	7,542	288	$114,214	32	SSC
Holbrook	1			2				3	10,791	2,070	$62,623	34	SSC
Scituate				2		1		3	18,133	856	$86,723	101	SSC
Hingham	1			1				2	22,157	1,022	$98,890	110	SSC
Marshfield			1	1				2	25,132	1,005	$86,486	131	SSC
Norwell				2				2	10,506	495	$108,944	69	SSC
Duxbury				1				1	15,059	560	$114,565	103	SSC
Hanover				1				1	13,879	579	$100,233	85	SSC
Hull				1				1	10,293	591	$72,166	50	SSC
Pembroke				1				1	17,837	699	$80,694	91	SSC
Rockland	1							1	17,489	1,610	$64,512	48	SSC
SSC Subtotals	**11**	**0**	**2**	**17**	**1**	**4**	**1**	**36**	**258,305**	**21,427**		**1099**	
Milford	1			3	3	1		8	27,999	4,895	$66,636	109	SWAP
Hopkinton	2	1		3		1		7	14,925	1,238	$120,240	106	SWAP
Medway	1		1	2				4	12,752	828	$102,002	70	SWAP

Table D-1(cont.)

Community	2010	2011	2012	2013	2014	2015	2016	Total	2010 Population	2010 Minority Population Count	2010 Median Household Income	2010 Roadway Miles	Subregion
Sherborn	1			3				4	4,119	274	$145,250	56	SWAP
Bellingham	1			2				3	16,332	1,347	$78,290	83	SWAP
Franklin				2	1			3	31,635	2,709	$89,330	132	SWAP
Millis	1			2				3	7,891	576	$85,472	52	SWAP
Wrentham	1			2				3	10,955	414	$94,406	67	SWAP
Norfolk				2				2	11,227	1,734	$113,266	70	SWAP
SWAP Subtotals	**8**	**1**	**1**	**21**	**4**	**2**	**0**	**37**	**137,835**	**14,015**		**745**	
Needham	2		1	2	1	1	1	8	28,886	3,156	$114,365	119	TRIC
Dedham	1		1	2		1	1	6	24,729	3,682	$80,865	82	TRIC
Westwood	1		1	2	1	1		6	14,618	1,237	$114,250	80	TRIC
Foxborough				2	1	1		4	16,865	1,400	$93,397	82	TRIC
Randolph	4							4	32,112	19,559	$64,607	93	TRIC
Walpole	2			1		1		4	24,070	2,222	$89,697	117	TRIC
Stoughton	1	1			1			3	26,962	5,822	$67,175	108	TRIC
Canton	1				1			2	21,561	3,610	$89,705	92	TRIC
Norwood	1			1				2	28,602	4,960	$72,472	93	TRIC
Medfield						1		1	12,024	731	$126,048	72	TRIC
Sharon								0	17,612	3,341	$115,172	106	TRIC
Milton	2	3						5	27,003	6,514	$97,421	94	TRIC/Inner Core
Dover	1			3				4	5,589	490	$164,583	59	TRIC/SWAP
TRIC Subtotals	**16**	**4**	**3**	**13**	**5**	**6**	**2**	**49**	**280,633**	**56,724**		**1197**	
Grand Total	**120**	**62**	**82**	**121**	**50**	**74**	**38**	**547**	**3,161,712**	**878,118**		**9370**	

MAGIC = Minuteman Advisory Group on Interlocal Coordination. NSPC = North Suburban Planning Council. NSTF = North Shore Task Force. SSC = South Shore Coalition. SWAP = South West Advisory Planning Committee. TRIC = Three Rivers Interlocal Council.

D.4 REGIONWIDE PLANNING STUDIES AND TECHNICAL ANALYSES

In addition to work that benefits specific municipalities, many of the projects funded by the MPO through the UPWP have a regional focus. Table D-2 lists MPO-funded UPWP studies completed from 2010 through 2016 that were regional in focus.

More information on these studies and other work can be found on the MPO's website (http://bosmpo.ctps.org/recent_studies) or by contacting Alexandra Kleyman, UPWP Manager, at akleyman@ctps.org.

Table D-2: Regionally-Focused MPO Funded UPWP Studies

FFY 2016	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Modeling Capacity Constraints • Identifying Opportunities to Alleviate Bus Delay • Research Topics Generated by MPO Staff (FFY 2016): Transit dependence scoring system using driver license data • Title VI Service Equity Analyses: Methodology Development • Exploring the 2011 Massachusetts Travel Survey: MPO Travel Profiles • Exploring the 2011 Massachusetts Travel Survey: Barriers and Opportunities Influencing Mode Shift • Core Capacity Constraints • EJ and Title VI Analysis Methodology Review • Transportation Investments for Economic Development	• Right-Size Parking Report • Transportation Demand Management— Case Studies and Regulations • Hybrid Electric Vehicle Retrofit Procurement • Autonomous Vehicles and Connected Cars research • MetroFuture Implementation technical memorandums
FFY 2015	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Barriers and Opportunities Influencing Mode Shift • Bicycle Network Gaps: Feasibility Evaluations • Greenhouse Gas Reduction Strategy Alternatives: Cost-Effectiveness Analysis • Roadway Network for Emergency Needs • 2012 Inventory of Bicycle Parking Spaces and Number of Parked Bicycles at MBTA stations • 2012-2013 Inventory of Park-and-Ride Lots at MBTA Facilities • Title VI Service Equity Analyses: Methodology Development	• Population and Housing Projections for Metro Boston • Regional Employment Projections for Metro Boston • Right-size parking calculator

FFY 2014	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Bicycle Network Evaluation • Household Survey-Based Travel Profiles and Trends • Exploring the 2011 Massachusetts Travel Survey: Focus on Journeys to Work • Methodology for Evaluating the Potential for Limited-Stop Service on Transit Routes	• Transportation Demand Management Best Practices and Model Municipal Bylaw • Land Use Baseline for Bus Rapid Transit • MetroFuture community engagement
FFY 2013	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Regional HOV-Lane Systems Planning Study, Phase II • Roadway Network Inventory for Emergency Needs: A Pilot Study • Carbon Dioxide, Climate Change, and the Boston Region MPO: 2012 Update • Massachusetts Regional Bus Study • Boston Region MPO Freight Program	• Regional Trail Network Map and Greenway Planning • MetroFuture engagement at the local level, updates to the Regional Indicators Reports, and Smart Growth Profiles
FFY 2012	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Analysis of JARC and New Freedom Projects • Safety and Security Planning • Emergency Mitigation and Hazard Mapping, Phase II • Impacts of Walking Radius, Transit Frequency, and Reliability • MBTA Systemwide Passenger Survey: Comparison of Results • Pavement Management System Development • Roundabout Installation Screening Tool • TIP Project Impacts Before/After Evaluation • Regional HOV System Planning Study • Freight Survey	• Snow Removal Policy Toolkit • MetroFuture implementation strategies—updated implementation strategies including focus on equity indicators

FFY 2011	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Charlie Card Trip Paths Pilot Study • Early Morning Transit Service • Maintenance Cost of Municipally Controlled Roadways • Analysis of Responses to the MBTA Systemwide Onboard Passenger Survey by Respondents in Environmental-Justice Areas • MBTA Core Services Evaluation • MPO Freight Study, Phase I and Phase II • MPO Freight/Rail Study	• MPO Pedestrian Plan • MPO Regional Bike Parking Program • Toolkit for Sustainable Mobility— focusing on local parking issues
FFY 2010	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• An Assessment of Regional Equity Outreach 2008–2009 • Coordinated Human Services Transportation Plan Update • Greenbush Commuter Rail Before and After Study • Mobility Assistance Program and Section 5310 Review • Safety Evaluation of TIP Projects • Red Line-Blue Line Connector Study Support	• Creation of a GIS coverage and related database of MAPC-reviewed projects and their mitigation commitments • Implementation of the regional and statewide bicycle and pedestrian plans, and work on bicycle/pedestrian-related issues, including coordination with relevant national, state, and regional organizations

EJ = environmental justice. FFY = federal fiscal year. GIS = geographic information systems. HOV = high-occupancy vehicle. JARC = job access reverse commute program. MAPC = Metropolitan Area Planning Council. MBTA = Massachusetts Bay Transportation Authority. MPO = Metropolitan Planning Organization. TIP = Transportation Improvement Program.

D.5 NEXT STEPS

As mentioned previously, this is the first year that this type of data has been comprehensively compiled for the MPO staff's work as programmed through the UPWP. Going forward, MPO staff intends to collect this data on an annual basis and to continue to use it as one input that can inform UPWP funding decisions. The data summarized in this appendix and future UPWP funding data that is added to it could be used in a number of different ways to help guide the spending decisions made in future UPWPs. Some analyses that the MPO could complete in the future include:

- Compare the number of tasks per community to the presence and size of a municipal planning department in each city and town
- Examine the use of different measures to understand the geographic distribution of benefits derived from funding programmed through the UPWP. For example, in addition to analyzing the number of tasks per community, the MPO could consider the number of dollars spent per community or the magnitude of benefits that could be derived from UPWP studies (e.g., congestion reduction, air quality improvement, etc.)
- Examine in more detail the geographic distribution of UPWP studies and technical analyses per subregion or per MAPC community type to understand the type of tasks being completed and how these compare to municipally identified needs
- Examine the number of tasks per community and compare the data to the number of road miles, the median household income, or the minority population in each community
- Compare the number of tasks directly benefiting each municipality with the geographic distribution of transportation needs identified in the Long-Range Transportation Plan (LRTP), *Charting Progress to 2040*. The transportation needs of the region for the next 25 years are identified and organized in the LRTP according to the MPO's goal areas, which include safety, system preservation, capacity management and mobility, clean air and clean communities, transportation equity, and economic vitality.

Making these comparisons with the data will provide the MPO with a clearer understanding of the impacts of the work that is programmed through the UPWP. Additionally, the MPO will be able to make more informed decisions about how we choose to distribute funding for transportation studies and technical analyses throughout the region.

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APPENDIX D

Geographic Distribution of UPWP Funded Studies

[Under Development]

APPENDIX D: GEOGRAPHIC DISTRIBUTION OF UPWP STUDIES AND TECHNICAL ANALYSES

D.1 INTRODUCTION

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D.2 PURPOSE AND METHODOLOGY

Purpose

The purpose of this data collection is to better understand the geographic spread of Unified Planning Work Program (UPWP) work products (i.e., reports and technical memoranda) throughout the region. In other words, this exercise serves to illuminate which communities and areas of our metropolitan region have been the subject of transportation studies and analyses (or recipients of technical support) conducted by the MPO staff with 3C (continuing, comprehensive, and cooperative) planning funds. The data presented in Table D-1 below covers UPWP tasks completed from FFY 2010 through FFY 2017 and includes work that resulted in benefits to specific municipalities. Studies that had a regional focus are presented in Table D-2.

Maintaining a database to track the geographic distribution of UPWP studies (those benefiting specific communities as well as those benefiting a wider portion of the region) can serve as one important input into the UPWP funding decisions made each FFY. When considered in combination with other information this data on geographic distribution of MPO-funded UPWP studies can help guide the MPO's public outreach to help ensure that, over time, we are meeting the needs of the region with the funds allocated through the UPWP.

Methodology

As noted above, this analysis examined FFYs 2010 through 2017. In order to generate information on the number of UPWP studies produced during these FFYs that benefited specific cities and towns in the Boston region, MPO staff performed the following main steps:

- Reviewed all work products listed as complete in UPWPs from FFYs 2010 through 2017
- Excluded all agency and other client-funded studies and technical analyses in order to focus the analysis on MPO-funded work only
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- Excluded all work related to certification requirements (Chapter 5) and administration, resource management, and support activities (Chapter 8)
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D.3 PLANNING STUDIES AND TECHNICAL ANALYSES BY COMMUNITY

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- Technical assistance on Massachusetts Environmental Policy Act (MEPA) Environmental Impact Reports
- Complete streets analyses for specific municipalities
- Operations analyses and alternative conceptual design recommendations for specific intersections

Table D-1: Number of UPWP Tasks by Federal Fiscal Year and Community, Grouped by Subregion

Community	2010-2014 Total	2015	2016	2017	2010-2017 Total	Population	Minority %	Low-Income %
Boston	18	4	3	1	26	617,599	53.0%	44.1%
Everett	10	3	2	1	16	41,667	46.4%	45.1%
Waltham	10	2	3	1	16	60,632	31.3%	32.2%
Somerville	12	1	1	1	15	75,754	30.9%	33.3%
Cambridge	8	1	4	5	18	105,163	37.9%	33.1%
Newton	10	2			12	85,145	20.4%	20.8%
Quincy	11				11	92,272	34.5%	36.3%
Chelsea	9	1		2	12	35,178	74.7%	47.3%
Malden	9	1		2	12	59,451	47.5%	41.8%
Lynn	7		1		8	90,330	52.4%	48.4%
Medford	6		1		7	56,173	23.8%	29.9%
Revere	7				7	51,755	37.6%	44.3%
Brookline	4	1	1	2	8	58,732	26.7%	27.8%
Melrose	5	1		1	7	26,983	10.5%	25.1%
Belmont	3		2	1	6	24,729	18.6%	21.3%
Arlington	3		1	3	7	42,845	16.4%	24.7%
Saugus	3				3	42,845	16.4%	24.7%
Winthrop	2				2	17,497	11.5%	35.7%
Watertown	1				1	31,915	18.3%	23.5%
Nahant	0				0	3,410	4.5%	33.2%
Inner Core Subtotals	**138**	**17**	**19**	**20**	**194**			
Lexington	8	2			10	31,393	26.3%	18.1%
Lincoln	8	1			9	6,362	17.2%	16.4%
Acton	2	4	1		7	21,924	24.5%	19.1%
Bedford	5	2			7	13,320	16.0%	16.8%
Hudson	5	2			7	19,063	11.1%	30.7%
Maynard	3	4		1	8	10,106	9.9%	30.8%
Sudbury	6	1			7	17,659	10.6%	10.8%
Concord	3	3	1	3	10	17,668	12.8%	18.2%
Littleton	2	3			5	8,925	7.7%	23.2%
Bolton	3	1		1	5	4,897	6.5%	18.7%
Boxborough	1	3			4	4,996	21.1%	23.1%
Stow	3	1			4	6,590	7.8%	19.5%
Carlisle	1	1			2	4,852	12.3%	15.6%
MAGIC Subtotals	**50**	**28**	**2**	**5**	**85**			
Weston	12	2	2	2	18	11,261	16.6%	14.8%
Framingham	13	1	1	2	17	68,321	34.7%	36.3%
Wellesley	9	2	1	1	13	27,984	17.6%	13.8%
Natick	9		1	1	11	33,005	14.6%	24.5%

Southborough	7	1		1	9	9,766	13.9%	13.2%
Marlborough	6			2	8	38,498	24.8%	31.5%
Holliston	4			1	5	13,547	6.7%	25.8%
Ashland	3			1	4	16,593	18.5%	22.0%
Wayland	3			1	4	12,994	14.7%	20.2%
MetroWest Subtotals	**66**	**6**	**5**	**12**	**89**			
Burlington	10	1	1	1	13	24,498	20.8%	22.4%
Reading	8	2	1	1	12	24,746	7.6%	20.7%
Woburn	6	1	1	2	10	38,120	18.3%	28.8%
Wilmington	5		1	1	7	22,324	7.7%	16.4%
Winchester	4		2	1	7	21,374	14.3%	14.9%
Lynnfield	2	2	1	1	6	11,595	6.5%	18.7%
Stoneham	3	1	1	1	6	21,437	9.5%	31.5%
Wakefield	3		1	1	5	24,931	7.0%	24.4%
North Reading	1	1	1	1	4	14,892	6.1%	17.7%
NSPC Subtotals	**42**	**8**	**10**	**10**	**70**			
Salem	5	2	1	3	11	41,340	24.1%	40.6%
Danvers	6			1	7	26,493	6.2%	27.5%
Beverly	4	1		1	6	39,502	8.6%	32.8%
Peabody	4			2	6	51,252	12.3%	36.6%
Rockport	3			1	4	6,952	4.1%	31.4%
Swampscott	3			2	5	13,787	7.0%	22.3%
Gloucester	2			1	3	28,789	5.9%	40.1%
Marblehead	2			2	4	19,809	5.0%	22.3%
Hamilton	1			1	2	7,764	8.7%	25.5%
Ipswich	1			1	2	13,175	5.3%	30.6%
Middleton	0		1	2	3	8,988	12.7%	21.1%
Wenham	1			1	2	4,875	5.5%	22.5%
Essex	0			1	1	3,504	3.9%	25.5%
Manchester	0			2	2	5,136	3.6%	25.9%
Topsfield	0			1	1	6,085	4.7%	15.8%
NSTF Subtotals	**32**	**3**	**2**	**22**	**59**			
Braintree	8	1	1		10	35,745	14.7%	26.2%
Weymouth	5	1			6	53,744	11.9%	32.7%
Cohasset	2	1			3	7,542	3.8%	17.9%
Holbrook	3				3	10,792	19.2%	32.3%
Scituate	2	1			3	18,133	4.7%	22.3%
Hingham	2				2	21,962	4.6%	24.0%
Marshfield	2				2	25,132	4.0%	26.2%
Norwell	2				2	10,506	4.7%	18.0%
Duxbury	1				1	15,059	3.7%	18.7%
Hanover	1				1	13,879	4.2%	20.1%
Hull	1				1	10,293	5.7%	32.4%
Pembroke	1				1	17,837	3.9%	22.1%
Rockland	1				1	17,489	9.2%	35.8%
SSC Subtotals	**31**	**4**	**1**	**0**	**36**			

Milford	7	1			8	28,000	17.5%	31.4%
Hopkinton	6	1			7	14,925	8.3%	14.1%
Medway	4				4	12,752	6.5%	20.5%
Sherborn	4				4	4,119	6.7%	13.1%
Bellingham	3				3	16,333	8.2%	22.8%
Franklin	3				3	31,635	8.6%	19.9%
Millis	3				3	7,891	7.3%	20.8%
Wrentham	3				3	10,955	3.8%	20.9%
Norfolk	2				2	11,227	15.4%	13.7%
SWAP Subtotals	**35**	**2**	**0**	**0**	**37**			
Needham	6	1	1		8	28,886	10.9%	15.2%
Dedham	4	1	1		6	24,729	14.9%	25.1%
Westwood	5	1			6	14,618	8.5%	19.2%
Foxborough	3	1			4	16,865	8.3%	25.2%
Randolph	4				4	32,111	60.9%	36.6%
Walpole	3	1			4	24,071	9.2%	21.6%
Stoughton	3			1	3	26,963	21.6%	31.9%
Canton	2				2	21,561	16.7%	24.3%
Norwood	2				2	28,603	17.3%	30.1%
Medfield	0	1			1	12,024	6.1%	12.7%
Sharon	0				0	17,612	19.0%	16.2%
Milton	5				5	27,002	24.1%	22.3%
Dover	4				4	5,589	8.8%	10.7%
TRIC Subtotals	**41**	**6**	**2**	**1**	**50**			
Grand Total	**435**	**74**	**41**	**70**	**620**			

MAGIC = Minuteman Advisory Group on Interlocal Coordination. NSPC = North Suburban Planning Council. NSTF = North Shore Task Force. SSC = South Shore Coalition. SWAP = South West Advisory Planning Committee.
TRIC = Three Rivers Interlocal Council.

D.4 REGIONWIDE PLANNING STUDIES AND TECHNICAL ANALYSES

In addition to work that benefits specific municipalities, many of the projects funded by the MPO through the UPWP have a regional focus. Table D-2 lists MPO-funded UPWP studies completed from 2010 through 2017 that were regional in focus. Some regionally focused studies may have work products that overlap with those analyzed in table D-1 above.

More information on these studies and other work can be found on the MPO's website (http://bosmpo.ctps.org/recent_studies) or by contacting Sandy Johnston, UPWP Manager, at sjohnston@ctps.org.

Table D-2: Regionally-Focused MPO Funded UPWP Studies

FFY 2017	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Planning for Autonomous and Connected Vehicles • Study of Promising GHG-Reduction Strategies • Using GTFS Data to Find Shared Bus Route Segments with Excessively Irregular Headways • Pedestrian Level-of-Service Metric Development • Exploring the 2011 Massachusetts Travel Survey: MPO Travel Profiles • Exploring the 2011 Massachusetts Travel Survey: Barriers and Opportunities Influencing Mode Shift • Core Capacity Constraints • Barriers and Opportunities Influencing Mode Shift • Bicycle Network Gaps: Feasibility Evaluations	• North Suburban Mobility Study • North Shore Mobility Study • Perfect Fit Parking Report and Website • Hubway Bikeshare Coordination • MetroWest LandLine Gaps Analyses
FFY 2016	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Modeling Capacity Constraints • Identifying Opportunities to Alleviate Bus Delay • Research Topics Generated by MPO Staff (FFY 2016): Transit dependence scoring system using driver license data	• Right-Size Parking Report • Transportation Demand Management—Case Studies and Regulations • Hybrid Electric Vehicle Retrofit Procurement • Autonomous Vehicles and Connected Cars research

• Title VI Service Equity Analyses: Methodology Development • EJ and Title VI Analysis Methodology Review • Transportation Investments for Economic Development	• MetroFuture Implementation technical memorandums
FFY 2015	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Greenhouse Gas Reduction Strategy Alternatives: Cost-Effectiveness Analysis • Roadway Network for Emergency Needs • 2012 Inventory of Bicycle Parking Spaces and Number of Parked Bicycles at MBTA stations • 2012-2013 Inventory of Park-and-Ride Lots at MBTA Facilities • Title VI Service Equity Analyses: Methodology Development	• Population and Housing Projections for Metro Boston • Regional Employment Projections for Metro Boston • Right-size parking calculator
FFY 2014	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Bicycle Network Evaluation • Household Survey-Based Travel Profiles and Trends • Exploring the 2011 Massachusetts Travel Survey: Focus on Journeys to Work • Methodology for Evaluating the Potential for Limited-Stop Service on Transit Routes	• Transportation Demand Management Best Practices and Model Municipal Bylaw • Land Use Baseline for Bus Rapid Transit • MetroFuture community engagement
FFY 2013	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Regional HOV-Lane Systems Planning Study, Phase II • Roadway Network Inventory for Emergency Needs: A Pilot Study • Carbon Dioxide, Climate Change, and the Boston Region MPO: 2012 Update • Massachusetts Regional Bus Study • Boston Region MPO Freight Program	• Regional Trail Network Map and Greenway Planning • MetroFuture engagement at the local level, updates to the Regional Indicators Reports, and Smart Growth Profiles
FFY 2012	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Analysis of JARC and New Freedom Projects	• Snow Removal Policy Toolkit

• Safety and Security Planning • Emergency Mitigation and Hazard Mapping, Phase II • Impacts of Walking Radius, Transit Frequency, and Reliability • MBTA Systemwide Passenger Survey: Comparison of Results • Pavement Management System Development • Roundabout Installation Screening Tool • TIP Project Impacts Before/After Evaluation • Regional HOV System Planning Study • Freight Survey	• MetroFuture implementation strategies—updated implementation strategies including focus on equity indicators
FFY 2011	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Charlie Card Trip Paths Pilot Study • Early Morning Transit Service • Maintenance Cost of Municipally Controlled Roadways • Analysis of Responses to the MBTA Systemwide Onboard Passenger Survey by Respondents in Environmental-Justice Areas • MBTA Core Services Evaluation • MPO Freight Study, Phase I and Phase II • MPO Freight/Rail Study	• MPO Pedestrian Plan • MPO Regional Bike Parking Program • Toolkit for Sustainable Mobility— focusing on local parking issues
FFY 2010	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• An Assessment of Regional Equity Outreach 2008–2009 • Coordinated Human Services Transportation Plan Update • Greenbush Commuter Rail Before and After Study • Mobility Assistance Program and Section 5310 Review • Safety Evaluation of TIP Projects • Red Line-Blue Line Connector Study Support	• Creation of a GIS coverage and related database of MAPC-reviewed projects and their mitigation commitments • Implementation of the regional and statewide bicycle and pedestrian plans, and work on bicycle/pedestrian-related issues, including coordination with relevant national, state, and regional organizations

EJ = environmental justice. FFY = federal fiscal year. GIS = geographic information systems. HOV = high-occupancy vehicle. JARC = job access reverse commute program. MAPC = Metropolitan Area Planning Council. MBTA = Massachusetts Bay Transportation Authority. MPO = Metropolitan Planning Organization. TIP = Transportation Improvement Program.

D.5 NEXT STEPS

MPO staff intends to continue to collect this data on an annual basis and develop a process for using it it as one input that can inform UPWP funding decisions. The data summarized in this appendix and future UPWP funding data that is added to it could potentially be used in a number of different ways to help guide the spending decisions made in future UPWPs. Depending on the direction the development of this process takes, some analyses that the MPO could complete in the future include:

- Compare the number of tasks per community to the presence and size of a municipal planning department in each city and town
- Examine the use of different measures to understand the geographic distribution of benefits derived from funding programmed through the UPWP. For example, in addition to analyzing the number of tasks per community, the MPO could consider the number of dollars spent per community or the magnitude of benefits that could be derived from UPWP studies (e.g., congestion reduction, air quality improvement, etc.)
- Examine in more detail the geographic distribution of UPWP studies and technical analyses per subregion or per MAPC community type to understand the type of tasks being completed and how these compare to municipally identified needs
- Examine the number of tasks per community and compare the data to the number of road miles, the median household income, or the minority population in each community
- Develop graphics illustrating the geographic distribution of UPWP studies and spending and mapping that distribution relative to Environmental Justice and Transportation Equity concern areas.
- Compare the number of tasks directly benefiting each municipality with the geographic distribution of transportation needs identified in the Long-Range Transportation Plan (LRTP), *Charting Progress to 2040.* The transportation needs of the region for the next 25 years are identified and organized in the LRTP according to the MPO's goal areas, which include safety, system preservation, capacity management and mobility, clean air and clean communities, transportation equity, and economic vitality.

Making these comparisons with the data will provide the MPO with a clearer understanding of the impacts of the work that is programmed through the UPWP. Additionally, the MPO will be able to make more informed decisions about how we choose to distribute funding for transportation studies and technical analyses throughout the region.