

CHAPTER 13



Photo: PVTA Loop Shuttle

FUTURE FORECASTS

Air quality conformity regulations related to the latest planning assumptions require a consistent approach to estimate future population, household and employment data used in the regional transportation plan. This data is input into the regional transportation model to estimate future traffic volumes in the region which can in turn be used to analyze the effects of transportation improvement projects, identify areas where congestion could occur in the future, and perform an air quality conformity determination for the region.

The MassDOT Office of Transportation Planning (OTP) led the effort of developing forecasts for future population and employment for Massachusetts and each MPO region. This was a collaborative effort between MassDOT's Office of Transportation Planning (OTP), the Metropolitan Area Planning Commission (MAPC), and the UMass Donahue Institute (UMDI). These three entities, in consultation with the thirteen regional planning agencies, acted as the Projections Advisory Group tasked with estimating the potential for future growth and decline across the state over 30

years from 2010 to 2040. This chapter summarizes this process. A more detailed description of this process is provided in the Appendix to the RTP.

Initial municipal population and employment projection estimates were provided by MassDOT. Thereafter, PVPC staff adjusted the values by reallocating growth among each community based on current trends and local staff knowledge of the opportunity for additional growth and major development planned throughout all forecast years. The resulting forecasts for population, households and employment are shown in Tables 13-1 – 13-3. An alternate regional specific scenario for employment estimates in the 2020 forecast year was subsequently developed by the PVPC.

The regional projections presented in Tables 13-1 – 3 represent the demographic data that was included as part of the statewide model for air quality conformity. The alternate employment scenario presented in Table 13-4 was used in the PVPC regional transportation model.

A. REGIONAL EMPLOYMENT SCENARIO

PVPC developed an in-house scenario for regional employment for use in the regional transportation model and RTP. This scenario results in an additional 23,105 employees for the 2020 analysis year. It was developed based on the following assumptions:

- Employment growth out to 2020 largely mirrors that from 2010 – 2015.
- Twenty four growth communities were identified:
 - Agawam, Amherst, Belchertown, Brimfield, Chicopee, E. Longmeadow, Easthampton, Granby, Hadley, Hatfield, Holyoke, Ludlow, Monson, Northampton, Palmer, South Hadley, Southampton, Southwick, Springfield, Ware, West Springfield, Westfield, Wilbraham, Williamsburg.
- Growth communities received more growth as deemed necessary based on the actual growth in employment from 2010 – 2015.
- Non-growth communities (with the exception of Longmeadow) were allocated growth based on the actual growth rate calculated from 2010 - 2015 for that community.
- 2030 and 2040 employment estimates mirrored the projections developed by MassDOT in conjunction with UMDI.

This alternate regional employment scenario will be used in the regional transportation model but not in the statewide transportation model for air quality conformity purposes.

Table 13-1 – Population Forecast for the Pioneer Valley Region

| | Population 2010 | Population 2020 | Population 2030 | Population 2040 |
|-----------------------|--------------------|--------------------|--------------------|--------------------|
| Agawam | 28,438 | 28,577 | 29,267 | 29,707 |
| Amherst | 37,819 | 40,002 | 40,546 | 40,995 |
| Belchertown | 14,649 | 15,388 | 15,760 | 15,996 |
| Blandford | 1,233 | 1,205 | 1,234 | 1,252 |
| Brimfield | 3,609 | 3,727 | 3,817 | 3,875 |
| Chester | 1,337 | 1,313 | 1,293 | 1,273 |
| Chesterfield | 1,222 | 1,176 | 1,138 | 1,101 |
| Chicopee | 55,298 | 56,395 | 57,806 | 58,674 |
| Cummington | 872 | 841 | 828 | 816 |
| East Longmeadow | 15,720 | 16,485 | 17,320 | 17,936 |
| Easthampton | 16,053 | 16,091 | 16,480 | 16,727 |
| Goshen | 1,054 | 1,085 | 1,111 | 1,128 |
| Granby | 6,240 | 6,235 | 6,280 | 6,267 |
| Granville | 1,566 | 1,555 | 1,574 | 1,559 |
| Hadley | 5,250 | 5,773 | 6,053 | 6,308 |
| Hampden | 5,139 | 5,025 | 5,146 | 5,224 |
| Hatfield | 3,279 | 3,233 | 3,311 | 3,360 |
| Holland | 2,481 | 2,504 | 2,534 | 2,547 |
| Holyoke | 39,880 | 40,626 | 41,815 | 42,770 |
| Huntington | 2,180 | 2,112 | 2,070 | 2,029 |
| Longmeadow | 15,784 | 15,384 | 15,461 | 15,307 |
| Ludlow | 21,103 | 21,005 | 21,512 | 21,835 |
| Middlefield | 521 | 490 | 469 | 410 |
| Monson | 8,560 | 8,613 | 8,821 | 8,953 |
| Montgomery | 838 | 930 | 952 | 967 |
| Northampton | 28,549 | 28,604 | 29,295 | 29,735 |
| Palmer | 12,140 | 12,111 | 11,979 | 11,764 |
| Pelham | 1,321 | 1,257 | 1,287 | 1,306 |
| Plainfield | 648 | 652 | 668 | 678 |
| Russell | 1,775 | 1,795 | 1,839 | 1,866 |
| South hadley | 17,514 | 17,802 | 18,091 | 18,424 |
| Southampton | 5,792 | 5,941 | 6,421 | 6,482 |
| Southwick | 9,502 | 9,715 | 9,950 | 10,099 |
| Springfield | 153,060 | 155,995 | 161,277 | 165,016 |
| Tolland | 485 | 504 | 516 | 523 |
| Wales | 1,838 | 1,879 | 1,924 | 1,953 |
| Ware | 9,872 | 9,867 | 9,935 | 9,628 |
| West Springfield | 28,391 | 28,952 | 29,302 | 29,596 |
| Westfield | 41,094 | 41,665 | 42,113 | 42,493 |
| Westhampton | 1,607 | 1,629 | 1,772 | 1,828 |
| Wilbraham | 14,219 | 14,379 | 14,726 | 14,947 |
| Williamsburg | 2,482 | 2,433 | 2,496 | 2,534 |
| Worthington | 1,156 | 1,062 | 1,088 | 1,104 |
| Pioneer Valley | 621,570 | 632,012 | 647,277 | 656,992 |

Table 13-2 – Household Forecast for the Pioneer Valley Region

| | Households 2010 | Households 2020 | Households 2030 | Households 2040 |
|-----------------------|--------------------|--------------------|--------------------|--------------------|
| Agawam | 11,664 | 12,373 | 13,183 | 13,518 |
| Amherst | 9,259 | 11,409 | 11,955 | 11,980 |
| Belchertown | 5,595 | 6,370 | 6,953 | 7,185 |
| Blandford | 492 | 528 | 577 | 616 |
| Brimfield | 1,429 | 1,643 | 1,826 | 1,942 |
| Chester | 543 | 585 | 624 | 653 |
| Chesterfield | 511 | 530 | 557 | 590 |
| Chicopee | 23,739 | 24,946 | 26,048 | 26,735 |
| Cummington | 404 | 413 | 429 | 457 |
| East Longmeadow | 5,851 | 6,442 | 7,025 | 7,360 |
| Easthampton | 7,224 | 7,632 | 8,175 | 8,508 |
| Goshen | 416 | 446 | 477 | 490 |
| Granby | 2,374 | 2,478 | 2,598 | 2,644 |
| Granville | 608 | 666 | 713 | 714 |
| Hadley | 2,107 | 2,340 | 2,479 | 2,607 |
| Hampden | 1,898 | 2,002 | 2,171 | 2,248 |
| Hatfield | 1,483 | 1,555 | 1,671 | 1,731 |
| Holland | 994 | 1,101 | 1,176 | 1,202 |
| Holyoke | 15,361 | 16,481 | 17,491 | 18,202 |
| Huntington | 868 | 925 | 977 | 1,019 |
| Longmeadow | 5,741 | 5,957 | 6,333 | 6,324 |
| Ludlow | 8,080 | 8,561 | 9,239 | 9,633 |
| Middlefield | 230 | 233 | 241 | 220 |
| Monson | 3,279 | 3,527 | 3,771 | 3,886 |
| Montgomery | 330 | 389 | 406 | 411 |
| Northampton | 12,000 | 12,448 | 13,234 | 13,576 |
| Palmer | 5,099 | 5,361 | 5,516 | 5,538 |
| Pelham | 549 | 546 | 570 | 578 |
| Plainfield | 269 | 294 | 328 | 349 |
| Russell | 656 | 695 | 738 | 747 |
| South hadley | 6,793 | 7,088 | 7,504 | 7,658 |
| Southampton | 2,249 | 2,473 | 2,801 | 2,867 |
| Southwick | 3,710 | 4,145 | 4,466 | 4,669 |
| Springfield | 56,753 | 59,867 | 62,896 | 64,996 |
| Tolland | 197 | 219 | 224 | 220 |
| Wales | 736 | 819 | 870 | 869 |
| Ware | 4,120 | 4,408 | 4,722 | 4,772 |
| West Springfield | 12,124 | 12,795 | 13,228 | 13,531 |
| Westfield | 15,335 | 16,512 | 17,314 | 17,770 |
| Westhampton | 623 | 669 | 763 | 792 |
| Wilbraham | 5,309 | 5,719 | 6,116 | 6,264 |
| Williamsburg | 1,118 | 1,169 | 1,258 | 1,328 |
| Worthington | 510 | 567 | 650 | 695 |
| Pioneer Valley | 238,630 | 255,326 | 270,293 | 278,094 |

Table 13-3– Employment Forecast for the Pioneer Valley Region

| | Employment 2010 | Employment 2020 | Employment 2030 | Employment 2040 |
|-----------------------|--------------------|--------------------|--------------------|--------------------|
| Agawam | 11,668 | 10,830 | 10,777 | 10,801 |
| Amherst | 14,733 | 15,433 | 15,358 | 15,392 |
| Belchertown | 2,619 | 2,629 | 2,616 | 2,622 |
| Blandford | 223 | 184 | 183 | 184 |
| Brimfield | 540 | 471 | 468 | 469 |
| Chester | 110 | 113 | 112 | 113 |
| Chesterfield | 123 | 135 | 134 | 134 |
| Chicopee | 19,003 | 17,921 | 17,834 | 17,874 |
| Cummington | 208 | 137 | 136 | 136 |
| East Longmeadow | 7,927 | 7,365 | 7,329 | 7,346 |
| Easthampton | 4,341 | 4,469 | 4,447 | 4,457 |
| Goshen | 158 | 155 | 154 | 154 |
| Granby | 753 | 894 | 889 | 891 |
| Granville | 157 | 163 | 162 | 163 |
| Hadley | 5,307 | 6,145 | 6,115 | 6,129 |
| Hampden | 821 | 879 | 875 | 877 |
| Hatfield | 1,965 | 1,806 | 1,797 | 1,801 |
| Holland | 147 | 118 | 117 | 117 |
| Holyoke | 21,164 | 20,849 | 20,747 | 20,794 |
| Huntington | 420 | 403 | 401 | 402 |
| Longmeadow | 3,376 | 3,483 | 3,466 | 3,473 |
| Ludlow | 6,431 | 6,510 | 6,478 | 6,493 |
| Middlefield | 39 | 41 | 41 | 41 |
| Monson | 1,295 | 1,246 | 1,240 | 1,242 |
| Montgomery | 26 | 37 | 37 | 37 |
| Northampton | 18,130 | 17,782 | 17,696 | 17,735 |
| Palmer | 4,986 | 4,498 | 4,476 | 4,486 |
| Pelham | 155 | 133 | 132 | 132 |
| Plainfield | 40 | 37 | 37 | 37 |
| Russell | 182 | 151 | 150 | 150 |
| South hadley | 4,441 | 4,274 | 4,253 | 4,262 |
| Southampton | 1,085 | 1,119 | 1,114 | 1,116 |
| Southwick | 2,533 | 2,520 | 2,507 | 2,513 |
| Springfield | 74,927 | 87,255 | 86,830 | 87,025 |
| Tolland | 37 | 35 | 35 | 35 |
| Wales | 150 | 151 | 150 | 150 |
| Ware | 2,728 | 2,457 | 2,445 | 2,451 |
| West Springfield | 16,922 | 15,612 | 15,536 | 15,571 |
| Westfield | 16,736 | 17,149 | 17,065 | 17,103 |
| Westhampton | 291 | 306 | 305 | 306 |
| Wilbraham | 4,510 | 4,913 | 4,889 | 4,900 |
| Williamsburg | 555 | 555 | 552 | 553 |
| Worthington | 194 | 168 | 167 | 167 |
| Pioneer Valley | 252,156 | 261,527 | 260,253 | 260,838 |

Table 13-4 – PVPC Scenario for Projected Employment Change

| | Census Employment 2010 | Actual Employment 2015 | PV Scenario Employment 2020 | PV Scenario Employment 2030 | PV Scenario Employment 2040 |
|-----------------------|------------------------------|------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Agawam | 11,668 | 12,040 | 12,642 | 12,580 | 12,609 |
| Amherst | 14,733 | 16,725 | 18,986 | 18,894 | 18,936 |
| Belchertown | 2,619 | 2,771 | 2,979 | 2,964 | 2,971 |
| Blandford | 223 | 194 | 169 | 168 | 168 |
| Brimfield | 540 | 496 | 546 | 543 | 544 |
| Chester | 110 | 119 | 129 | 128 | 128 |
| Chesterfield | 123 | 142 | 164 | 163 | 164 |
| Chicopee | 19,003 | 19,257 | 20,220 | 20,121 | 20,167 |
| Cummington | 208 | 144 | 100 | 99 | 99 |
| East Longmeadow | 7,927 | 7,764 | 8,152 | 8,112 | 8,131 |
| Easthampton | 4,341 | 4,711 | 5,113 | 5,088 | 5,099 |
| Goshen | 158 | 163 | 168 | 167 | 168 |
| Granby | 753 | 942 | 1,178 | 1,173 | 1,175 |
| Granville | 157 | 172 | 188 | 188 | 188 |
| Hadley | 5,307 | 6,478 | 7,126 | 7,091 | 7,107 |
| Hampden | 821 | 927 | 1,047 | 1,042 | 1,044 |
| Hatfield | 1,965 | 1,904 | 1,999 | 1,989 | 1,994 |
| Holland | 147 | 124 | 105 | 104 | 104 |
| Holyoke | 21,164 | 22,237 | 23,364 | 23,251 | 23,303 |
| Huntington | 420 | 425 | 430 | 428 | 429 |
| Longmeadow | 3,376 | 3,671 | 3,708 | 3,690 | 3,698 |
| Ludlow | 6,431 | 6,862 | 7,322 | 7,286 | 7,303 |
| Middlefield | 39 | 43 | 47 | 47 | 47 |
| Monson | 1,295 | 1,313 | 1,411 | 1,405 | 1,408 |
| Montgomery | 26 | 39 | 59 | 58 | 58 |
| Northampton | 18,130 | 19,116 | 20,157 | 20,059 | 20,104 |
| Palmer | 4,986 | 4,741 | 5,097 | 5,072 | 5,083 |
| Pelham | 155 | 140 | 126 | 126 | 126 |
| Plainfield | 40 | 39 | 38 | 38 | 38 |
| Russell | 182 | 159 | 139 | 138 | 139 |
| South hadley | 4,441 | 4,505 | 4,730 | 4,707 | 4,718 |
| Southampton | 1,085 | 1,180 | 1,283 | 1,277 | 1,280 |
| Southwick | 2,533 | 2,656 | 2,785 | 2,771 | 2,778 |
| Springfield | 74,927 | 79,547 | 85,513 | 85,096 | 85,288 |
| Tolland | 37 | 37 | 37 | 37 | 37 |
| Wales | 150 | 159 | 169 | 168 | 168 |
| Ware | 2,728 | 2,590 | 2,720 | 2,706 | 2,712 |
| West Springfield | 16,922 | 16,907 | 17,752 | 17,666 | 17,706 |
| Westfield | 16,736 | 18,471 | 19,949 | 19,852 | 19,896 |
| Westhampton | 291 | 323 | 359 | 357 | 358 |
| Wilbraham | 4,510 | 5,179 | 5,593 | 5,566 | 5,579 |
| Williamsburg | 555 | 585 | 673 | 669 | 671 |
| Worthington | 194 | 177 | 161 | 161 | 161 |
| Pioneer Valley | 252,156 | 266,174 | 284,632 | 283,245 | 283,882 |

B. REGIONAL TRAVEL DEMAND MODEL

Travel demand forecasting is a major step in the transportation planning process. By simulating the current roadway conditions and travel demand, deficiencies in the transportation system are identified. This is an important tool in planning future network enhancements and analyzing proposed improvement projects as travel demand models are developed to simulate actual travel patterns and existing demand conditions. PVPC uses the TransCAD software for its regional travel demand model.

1. Regionally Significant Projects

Only “regionally significant” projects are required to be included in travel demand modeling efforts. The final federal conformity regulations define regionally significant as follows:

Regionally significant: a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sport complexes, etc., or transportation terminals as well as most terminals themselves) and would be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

“Non-Exempt” projects add capacity to the existing transportation system and must be included as part of the air quality conformity determination for the RTP.

Examples of “Non-Exempt” projects include those defined as regionally significant in addition to projects expected to widen roadways for the purpose of providing additional travel lanes.

Projects considered regionally significant were included as part of the 2010 Baseline model network and subsequent future model networks based on the project's expected construction date. These projects include non exempt system expansion projects that were financially constrained.

The 2010 base year roadway network includes the following:

- Hadley: Widening Route 9 from two lanes to four lanes from West Street to Coolidge Bridge.
- Hadley/Northampton: Rehabilitation of the Coolidge Bridge with lane addition and widening from three lanes to four lanes.
- Springfield: Reverse the direction of four existing I-91 ramps.
- Westfield: Route 10/202 Great River Bridge project.
- Holyoke: Commercial Street extension project from the I-391 ramp to Appleton Street.
- Chester: Maple Street Bridge one way northbound, connecting Route 20 to Main Street.

The 2020 model network will include the following regionally significant projects:

- Wilbraham: Boston Road reconstruction. Currently one lane in each direction, will become two lanes in each direction. Project starts at the Springfield City Line and continues east to Stony Hill Road (0.28 miles), but does not include Stony Hill Road. Expected in 2016.
- Passenger Rail Service from Hartford, CT to Greenfield, MA. (Currently in operation but not modeled.)
- Extension of the North South Passenger Rail Service from Springfield to serve stations in Holyoke, Northampton and Greenfield. (Anticipated to begin this year.)
- Reduction from 2 lanes of travel to one lane of travel in each direction along Route 116 (Chicopee Street) in the City of Chicopee from Meadow Street to Springfield Street (Davitt Bridge). This occurred in 2018.

The 2030 model network will include the following regionally significant projects:

- Hadley -Route 9 widening from Middle Street to Maple Street from one lane in each direction to two lanes in each direction. Expected in 2026.

The 2040 model network does not include any regionally significant projects:

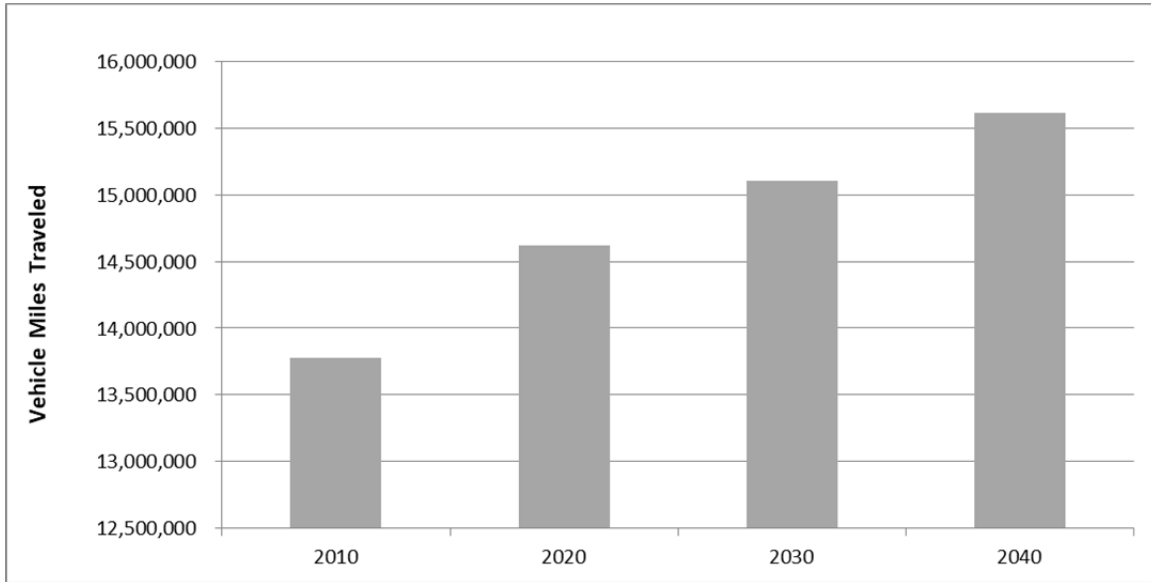
Visionary Projects are discussed in Chapter 15 of the RTP and may be included as part of the 2040 model network for analysis purposes as follows:

- MassDOT I-91 Viaduct Recommendations:
 - Interstate I-91 and South End Bridge improvements
 - The installation of collector-distributor roads alongside I-91 mainline and roundabouts at the South End Bridge and U.S. Route 5; reduction in on/off ramps; realignment of I-91; and elimination of existing lane drops in the vicinity of the South End Bridge.
 - Replacement of the Agawam Rotary with modified diamond interchange; replacement of the South End Bridge and Westfield River bridge to provide two travel lanes in each direction and a new shared-use path; new acceleration and deceleration lanes and proper left and right shoulders on both bridges; access to/from Meadow Street.
 - Replacement of the Plainfield Street bridges over I-91 and the existing railroad tracks with a third westbound travel lane.
 - Relocation of the existing left side on ramp from I-291 to I-91 SB to a more traditional right side on ramp.
- A potential new Turnpike Exit in Blandford, pending the results of a current study by MassDOT.
- East/West Passenger Rail Service to Boston pending the outcome of the current MassDOT study.

2. Estimated Regional Vehicle Miles Traveled

The total Vehicle Miles Traveled (VMT) was estimated for the model years of 2010, 2020, 2030, and 2040. The total VMT is shown in Figure 13-1. The total VMT is projected to increase by an average of 0.6% per year from 2010 to 2020 and 0.3% per year from 2020 to 2040.

Figure 13-1 – Estimated Future VMT



3. Future Traffic Volume Projections

The PVPC regional travel demand model was used to estimate the Average Daily Traffic (ADT) on key roadways throughout the region. These estimates are used to identify the potential traffic impacts of the future growth scenarios for the 2020, 2030, and 2040 analysis years. Projected changes in ADT on 5 area bridges are shown on Figure 13-2. The projected ADT along the I-91 corridor is shown on Figure 13-3. Additional projections for ADT along regional roadways are included as part of the appendix to this chapter.

Figure 13-2 – Projected Average Daily Traffic on Area Bridges

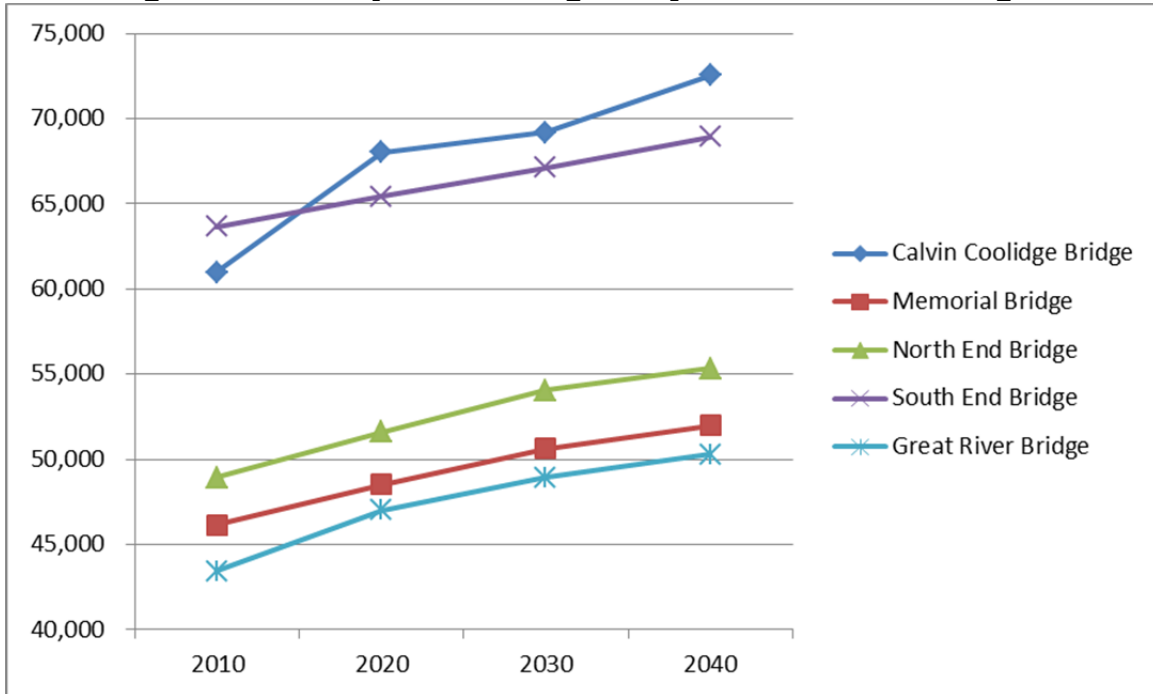


Figure 13-3 – Projected Average Daily Traffic on Interstate 91

