2012 Regional Transportation Plan

Chapter IV
Regional Issues

Berkshire
Regional
Planning
Commission

Chapter IV- Regional Issues

The regional transportation planning process considers Impacts to the natural and built environment. This chapter looks at issues and initiatives that extend beyond the strict confines of transportation planning. These issues are broader regional planning activities for BRPC, MassDOT, FHWA, and local communities in the Berkshires.

A. LIVABILITY

In 2009, the U. S. Department of Transportation (DOT), the U.S. Department of Housing and Urban Development (HUD) and the U.S. Environmental Protection Agency (EPA) announced an interagency partnership for sustainable and livable communities. The goals of the new Livability partnership include improved access to affordable housing, increased transportation options, and lower transportation costs. This partnership coordinates federal housing, transportation, and other infrastructure investments in a manner that protects the environment, promotes equitable development, and addresses the challenges of climate change. DOT indicated that livability is among the top priorities for future transportation funding.

Livable, sustainable communities offer residents a variety of different modes of transportation, without almost complete reliance on using automobiles. Some of the alternate modes include rail, bus, bike, vanpools, carpools, and walkways. Livable communities reduce the need to frequently travel far by including housing, jobs, shopping, education, and recreation.

The American Association of State and Highway Transportation Officials (AASHTO) released "The Road to Livability" report summarizes best practices- including improvements to roadways, transit, walking, and biking. The report also stresses the importance of revitalizing urban centers, building local economies, and preserving historic sites and scenic country roads.

Livable and sustainable communities consider the connection between land use and transportation. Ideally, they balance jobs and housing opportunities and include mixed use neighborhoods, public transportation, and a connective street system. Every community should determine its own standards and vision for livability through a comprehensive planning effort.

One significant example of regional planning is the BRPC's Brownfields program. Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. The goal of BRPC's program is to uncover the uncertainties, reduce fears, and reverse years of stagnation toward cleaning up and reinvesting in these properties. Ultimately this effort will protect the environment, reduce blight, and ease development pressure.

SUSTAINABLE BERKSHIRES

The BRPC received a grant from the Sustainable Community Partnership to develop a liviable, sustanable land-use, tranportation, and environmental plan for the Berkshires. This process will conclude in 2013 with an implementable vision-based policy grounded in context for each of the Berkshire communities. Feedback from the initial visioning sessions may be found in the Public Involvement Appendix A

SUSTAINABLE BERKSHIRES
Community Strategies For A Sustainable Future

B. CLIMATE CHANGE & AIR QUALITY CONFORMITY

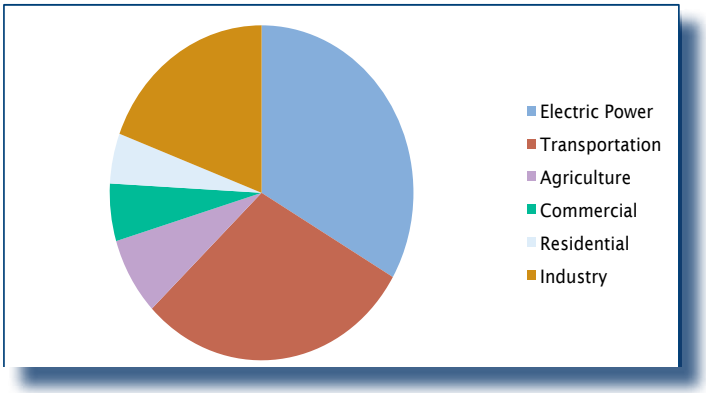
Climate change means a shift in long-term global weather patterns influenced by greenhouse gases created by human activity. Common greenhouse gas (GHG) components include carbon dioxide (CO2), methane, nitrous oxide, ozone, water vapor and chlorofluorocarbons. These greenhouse gases form a "blanket" of pollution that traps heat in the atmosphere and causes climate instability characterized by severe weather events such as storms, droughts, floods, heat waves, and rising sea levels. Unlike some atmospheric contaminants, which create local or drifting plumes, such as acid rain, GHGs are global, mixing easily and broadly. In addition they are long-lived component, taking years or decade to dissemble or leave the atmosphere. CO2, which makes up approximately 95% of the GHG emissions from transportation, has an estimated lifetime of 50-200 years.

The Berkshires are expected to experience warmer temperatures, less snow pack / ice retention and cycles of subsequent drought and flooding impacts, changes in weather patterns and its resulting increase in storm severities, an increase in frequency and severity of heat waves, and shifts and alterations in the distribution of natural plant and animal assemblages.

According to the USDOT (2010), the U.S. accounts for 5% of the world population and contributes more than 20% of global CO2 emissions. The U.S. transportation sector is responsible for 33% of global transportation CO2 emissions. On-road vehicles accounted for 70% of US emissions. These include "tailpipe" emissions from burning fossil fuels, not the life cycle emissions involved in manufacturing vehicles, extraction of fossil fuels, maintenance of transportation infrastructure or other related processes or activities.

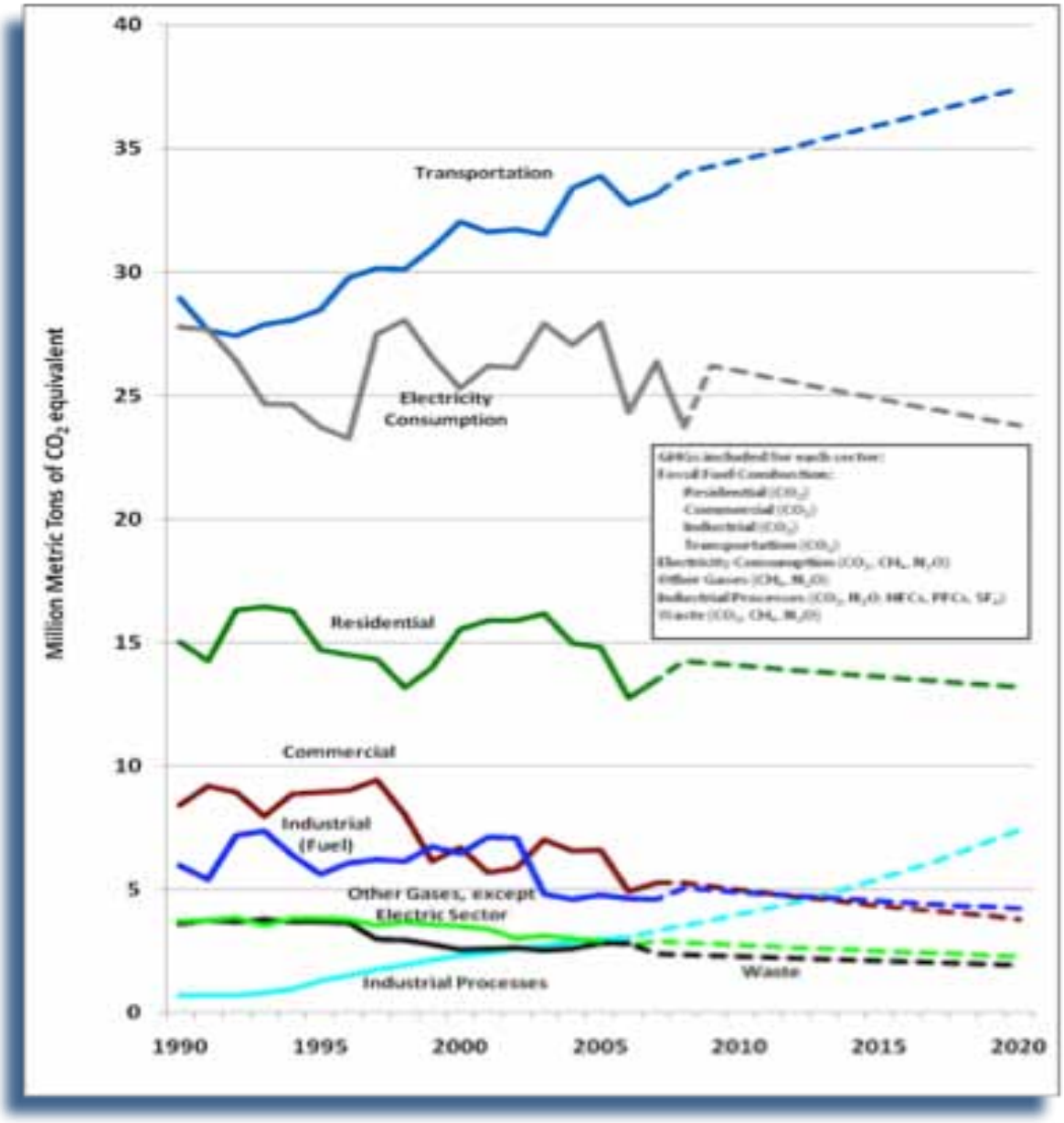
A greater number of vehicle miles traveled (VMT), along with an increase in the number of light-duty vehicles (pickups and SUVs) on the roads (from 20% of vehicles sold in the 1970s to more than 50% sold by 2004) increase overall emissions. Since 1990 GHG emissions from medium and heavy-duty trucks increased three times the rate of lighter vehicles. Freight trucking increased dramatically while fuel efficiency per ton carried decreased.

Figure IV-1 US Greenhouse Gas Emissions by Sector



Source: USDOT 2006

Figure IV-2 Massachusetts GHG Emissions, 1990-2020



Source: MassDEP, 2009

The DEP's 2009 Statewide Greenhouse Gas Emissions Level: 1990 Baseline and 2020 Business As Usual Projection stated transportation accounted for 35% of the total in 2005. Unlike most other sectors in Massachusetts, transportation GHG emissions are expected to continue to increase, reaching 40% of the total by 2020. A preliminary study of GHG emissions in Berkshire County suggests that the transportation sector here accounts for 39% of GHG emissions.

Reduction

The transportation sector can reduce CO and other GHG's. In 2008, Massachusetts enacted the Global Warming Solutions Act, hoping to reduce statewide GHG emissions between 10-25% below 1990 levels by 2020 and 80% below 1990 levels by 2050. According to a draft report developed for EOEEA, statewide GHG emissions could be reduced by almost 19% from 1990 levels if all existing and proposed fuel reduction measures are implemented. Measures to reduce transportation GHG emissions are categorized four ways:

Vehicle fuel efficiency
- Support efficiency standards similar to those proposed by California or EPA
- Incentivize fuel efficient vehicles to replace gas guzzlers
- Educate drivers about ways to improve mileage (vehicle and tire maintenance, drive the speed limit, etc.)

Reduce VMT
- Encourage Smart Growth and Sustainable Development Practices, particularly redevelopment/infill in existing urban areas.
- Work with employers to reduce commuting miles through travel demand management techniques like car/vanpooling, flexible hours and four day workweeks, and telecommuting.
- Establish parent car and van pools for after school activities

Promote low-carbon fuels

Transportation system efficiency
- Require heavy industry to locate adjacent to rail lines.
- Provide technical assistance for anti-idling programs that enforce state laws limiting idling to 5 minutes.
- Monitor VMT and other GHG emissions trends for regional planning initiatives.

MASSACHUSETTS GLOBAL WARMING SOLUTIONS ACT (GWSA) COMPLIANCE

MassDOT, using its statewide travel demand model, provided the Berkshuires MPO with statewide estimates of CO2 emissions based on all the recommended projects in the Massachusetts RTPs. Emissions are estimated in the same way as other pollutants (volatile organic compounds, nitrogen oxides, and carbon monoxide) are estimated for air quality conformity determination. However, the CO2 emissions shown here are part of an effort separate from the conformity analysis and are not part of those federal standards and reporting requirements.

The GWSA requires some reductions by 2020 and further reductions by 2050, relative to a 1990 baseline. The state's collective projectes are modeled for both 2020 and 2035 Action (Build) vs. Baseline (No-Build) scenarios. This analysis determines the CO2 emissions attributed to the combined transportation improvements and smart-growth land use assumptions.

TABLE IV-1 Massachusetts Statewide CO2 Emissions Estimates
(all emissions in tons per summer day)

YEAR	CO2 ACTION EMISSIONS	CO2 BASE EMISSIONS	DIFFERENCE
2010	101,514.4	101,514.4	n/a
2020	105,747.5	105,856.4	-108.9
2035	115,034.1	115,028.0	6.1

The RTPs' projects in the 2020 Action scenario provide a statewide reduction of 109 tons of CO2 per summer day compared to the baseline. However, the 2035 Action scenario estimates an increase of about 6 tons of CO2 emissions compared to the baseline. This current analysis measures only projects that are included in the travel demand model. Many other types of projects that the model is not sensitive to (bicycle and pedestrian facilities, shuttle services, intersection improvements, etc.) will be further analyzed and documented for CO2 reductions in the future.

The Berkshire MPO makes every attempt to comply with the GWSA by meeting the GHG reductions targets and informing the public on how they can help.

BERKSHIRE MPO DETERMINATION OF AIR QUALITY CONFORMITY

The 1990 Clean Air Act Amendments (CAAA) require MPO's within ozone non-attainment areas to perform air quality conformity determinations prior to the approval of RTP's and TIP's. Conformity helps ensure that Federal funding and approval goes to those transportation activities that are consistent with air quality goals. This section presents information and analyses for the air quality conformity determination for the 2012 Berkshire RTP, as required by Federal Regulations 40 CFR Parts 51 and 93, and the Massachusetts Conformity Regulations (310 CMR 60.03). This information and analyses include: regulatory framework, conformity requirements, planning assumptions, emissions budgets, and conformity consultation procedures.

The Commonwealth is classified as serious non-attainment for ozone, and is divided into two non-attainment areas. Berkshire County is in the Western Massachusetts ozone non-attainment area. With these classifications, the 1990 Clean Air Act Amendments (CAAA) required the Commonwealth to reduce its emissions of volatile organic compounds (VOCs) and nitrogen oxides (NOx), the two major precursors to ozone formation to achieve attainment of the ozone standard.

A prior conformity determination for all RTPs occurred in 2007, when FHWA, the Environmental Protection Agency and the Massachusetts Department of Environmental Protection confirmed that all Massachusetts RTPs were in conformity with the Massachusetts State Implementation Plan (SIP). Major conformity milestones in recent years include:

Between 2003 and 2006, several new conformity determinations were made that were triggered by various events, including the 2003 RTPs, a change in designation from the one-hour ozone standard to an eight-hour ozone standard, and various changes to regional TIPs that involved reprogramming transportation projects across analysis years.

In 2007, air quality analyses were conducted on behalf of all the 2007 RTPs, the purposes of which were to evaluate the RTPs' air quality impacts on the SIP. Conformity determinations were performed to ensure that all regionally significant projects were included in the RTPs. MassDOT found the emission levels from the 2007 RTPs in conformance with the SIP.

On April 2, 2008, EPA found that the 2008 and 2009 motor vehicle emissions budgets (MVEBs) in the January 31, 2008 Massachusetts 8-hour ozone SIP revision were adequate for transportation conformity purposes. The submittal included 2008 and 2009 MVEBs for the Eastern and Western Massachusetts 8-hour ozone non-attainment areas. Massachusetts submitted these budgets as part of the 8-hour ozone attainment demonstration and reasonable further progress plan for both non-attainment areas, and as a result of EPA's adequacy finding, these budgets were used for conformity determinations. EPA later determined (in 2010) that only the most recent MVEBs – 2009 – be used for future conformity determinations.

In 2010, air quality analysis was conducted on behalf of all the 2011-2014 TIPs, the purpose of which were to evaluate the TIPs' air quality impacts on the SIP. Conformity determinations ensured that all regionally significant projects were included in the TIPs. MassDOT found the emission levels from the 2011-2014 TIPs to be in conformance with the SIP. On November 15, 2010, EPA confirmed that both the Eastern and Western Massachusetts Non-Attainment areas collectively demonstrated transportation conformity, with concurrence from Massachusetts DEP on 11/23/10. On December 22, 2010, FHWA and FTA determined that the TIPs were in conformity with the Clean Air Act and the EPA conformity regulations (40 CFR Part 51).

Conformity Regulations

The CAAA revised the requirements for designated MPOs to perform conformity determinations by ozone non-attainment area for their RTPs and TIPs. Section 176 of the CAAA defines conformity to a State Implementation Plan to mean conformity to the plan's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) and achieving expeditious attainment of the standards. The Berkshire MPO must certify that all activities outlined in the 2012 Berkshire RTP:

- will not cause or contribute to any new violation of any standard in any area;
- will not increase the frequency or severity of any existing violation of any standard in any area; and
- will not delay the timely attainment of any standard or any required interim emission reductions or other milestones in any area.

Conformity regulations from EPA set forth requirements for determining conformity of RTPs, TIPs, and individual projects. The requirements of the conformity analysis are summarized below and will be explained in detail in this conformity determination:

Conformity Criteria

- Horizon Years
- Latest planning assumptions
- Latest emission model used
- Timely implementation of transportation control measures (TCMs)
- Conformity in accordance with the consultation procedures and SIP revisions
- Public Participation Procedures
- Financially Constrained Document
- Procedures for Determining Regional Transportation Emissions

The Conformity Test

- Consistent with emission budgets set forth in SIP
- Contribute to reductions in CO non-attainment areas

In addition, the regulations set specific requirements for different time periods depending on the time frame of the Commonwealth's SIP submittals to EPA. These periods are defined as follows:

Control Strategy Period: Once a control strategy SIP has been submitted to EPA, EPA has to make a positive adequacy determination of the mobile source emission budget before such budget can be used for conformity purposes. The conformity test in this period is consistency with the mobile source emission budget.

Maintenance Period is the period of time beginning when the Commonwealth submits and EPA approves a request for redesignation to an attainment area, and lasting for 20 years. The conformity test in this period is consistency with the mobile source emission budget.

Horizon Year Requirements

Horizon years for regional and state model analyses have been established following 40 CFR 93.106(a) of the Federal Conformity Regulations. The years for which the regional and state transportation models were run for ozone precursor emission estimates are shown below:

- 2010: Milestone Year – This year is now being used by the statewide travel demand model as the new base year for calculation of emission reductions of VOCs and NOx.
- 2016: Milestone Year and Analysis Year: This year is used to show conformity with the existing emission budgets for ozone precursors in Western Massachusetts.
- 2020: Analysis Year
- 2025: Analysis Year
- 2035: Horizon Year – last forecast year of the regional transportation plan

Latest Planning Assumptions

Section 93.110 of the Federal Conformity Regulations outlines the requirements for the most recent planning assumptions that must be in place at the time of the conformity determination. Assumptions must be derived from the estimates of current and future population, households, employment, travel, and congestion most recently developed by the MPO. For the 2012 Berkshire RTP and other regional plans, MassDOT developed a series of forecasts – in cooperation with all the MPOs – that represent the most recent planning assumptions for all of Massachusetts.
(optional – add more detail here as to sources, etc.)

Transit Operating Policy Assumptions

For the Berkshire MPO, transit operating policies are the primary responsibility of the BRTA, and estimates of present and future ridership are developed by BRTA, using similar methods in place at the time of the last conformity determination.

Latest Emissions Model

Emission factors used for calculating emission changes were determined using MOBILE 6.2, the model used by DEP in determining motor vehicle emission budgets. Emission factors for motor vehicles are specific to each model year, pollutant type, temperature, and travel speed. MOBILE 6.2 requires a wide range of input parameters including inspection and maintenance program information and other data such as anti-tampering rates, hot/cold start mix, emission failure rates, vehicle fleet mix, fleet age distribution, etc. The input variables used in this conformity determination were received from DEP and approved by EPA.

Timely Implementation of Transportation Control Measures

Transportation Control Measures (TCMs) have been required in the SIP in revisions submitted to EPA in 1979 and 1982. All SIP TCMs have been accomplished through construction or through implementation of ongoing programs.

DEP submitted to EPA its strategy of programs to show Reasonable Further Progress of a 15% reduction of VOCs in 1996 and the further 9% reduction of NOx toward attainment of the NAAQS for ozone in 1999. Within that strategy there are no specific TCM projects. The strategy does call for traffic flow improvements to reduce congestion and, therefore, improve air quality. Other transportation-related projects that included in the SIP control strategy are listed below:

- Enhanced Inspection and Maintenance Program
- California Low Emission Vehicle Program
- Reformulated Gasoline for On- and Off-Road Vehicles
- Stage II Vapor Recovery at Gasoline Refueling Stations
- Tier I Federal Vehicle Standards

Consultation Procedures

The final conformity regulations require that the MPO make a conformity determination according to consultation procedures set out in the federal and state regulations, and the MPO must also follow public involvement procedures established under Federal metropolitan transportation planning regulations. The consultation requirements of both the state and federal regulations require that the Berkshire MPO (and all other MPOs), MassDOT, Mass. DEP, US EPA - Region 1 and FHWA - Massachusetts Division, consult one another to address:

- Selection of regional emissions analysis models including model development and assessment of project design factors for modeling
- Selection of inputs to the most recent EPA-approved emissions factor model
- Selection of CO hotspot modeling procedures, as necessary
- Identification of regionally significant projects to be included in the regional emissions analysis
- Identification of projects which have changed in design and scope
- Identification of exempt projects
- Identification of exempt projects that should be treated as non-exempt because of adverse air quality impacts
- Identification of the latest planning assumptions and determination of consistency with SIP assumptions

Public Participation

Title 23 CFR Section 450.322 and 310 CMR 60.03(6)(h) require that the development of the Regional Transportation Plan, TIP, and related certification documents provide an adequate opportunity for public review and comment. Section 450.316(b) also establishes the outline for MPO public participation programs.

Appendix A documents the public participation process for the 2012 Berkshire RTP.

Financial Consistency

Title 23 CFR Section 450.322 and 40 CFR 93.108 require the 2012 (Region) Regional Transportation Plan to "be financially constrained by year and include a financial plan that demonstrates which projects can be implemented using current revenue sources and which projects are to be implemented using proposed revenue sources."

The 2012 Plan is financially constrained to projections of federal and state resources reasonably expected to be available during the appropriate time frame. Projections of federal resources are based upon the estimated apportionment of the most recent federal authorizations, as allocated to the region by the state or as allocated among the various MPOs according to federal formulae or MPO agreement. Projections of state resources are based upon the allocations contained in the current Transportation Bond Bill and historic trends. Therefore, the 2012 Plan substantially complies with the federal requirements relating to financial planning.

Model Specific Information

40 CFR Part 93.111 of the federal regulations outlines requirements to be used in the network-based transportation demand models. These requirements include modeling methods and functional relationships to be used in accordance with acceptable professional practice and reasonable for purposes of emission estimation. MassDOT, on behalf of the (Region) MPO, has used the methods described in the conformity regulations in the analysis of this 2012 Regional Transportation Plan.

Highway Performance Monitoring System Adjustments

As stated in EPA guidance, all areas of serious ozone and carbon monoxide non-attainment must use FHWA's Performance Monitoring System (HPMS) to track daily vehicle-miles of travel (VMT) prior to attainment to ensure that the state is in line with commitments made in reaching attainment of the ambient air quality standards by the required attainment dates. MassDOT provided HPMS information to DEP. DEP used this information in setting mobile-source budgets for VOC, NOx, and CO in all SIP revisions prior to 1997. DEP has since revised its VOC and NOx budgets using transportation-demand model runs. However, the models must still be compared to HPMS data since HPMS remains the accepted tracking procedure as outlined in the regulations.

The conformity regulations require that all model-based VMT be compared with the HPMS VMT to ensure that the region is in line with VMT and emission projections made by DEP. An adjustment factor that compares the 2010 HPMS VMT to the 2010 transportation model VMT has been developed. This adjustment factor is then applied to all modeled VOC and NOx emissions for the years 2016 through 2035 to ensure consistency with EPA-accepted procedures.

$$\frac{\text{2010 HPMS VMT}}{\text{2010 Modeled VMT}} = \text{Adjustment factor for VOC and NOx} = 2.403$$

HPMS adjustment factors, calculated on a regional basis, are applied to the model output of future scenarios, and they change as base-year models are updated or improved, or as HPMS data is revised or updated.

Table IV-2 Western Mass HPMS Adjustment Factors

REGION	2010 HPMS VMT (miles)	Travel Demand Model VMT (miles)	HPMS/Model Conversion Factor
Berkshire	5,168,000	2,150,783	2.403
Franklin	3,541,000	1,454,902	2.434
Pioneer Valley	15,229,000	10,085,310	1.510
Western MA	23,938,000	13,690,995	1.749
State Total	149,481,000	142,159,733	1.052

Changes in Project Design since the Last Conformity Determination Analysis

The Commonwealth requires that any change in project design from the previous conformity determination for the region is identified. Changes that have occurred since the last conformity determination in 2010 are as follows:

- The modeled base year has changed from 2007 to 2010.
- A new analysis year has been included in the conformity determination. An air quality analysis has been completed for 2016. This complies with EPA's Transportation Conformity Rule Restructuring Amendments (40 CFR Part 93.118, expected to become effective August 2011) which states that "if the attainment date has not yet been established, the first analysis year must be no more than five years beyond the year in which the conformity determination is being made." (2011 base to 2016 analysis year).
- Emission factors have been developed for 2010, 2016, 2020, 2025, and 2035 using Mobile 6.2 with inputs approved by MassDEP and US EPA.
- New HPMS adjustment factors were developed for the new 2010 base year.

Procedures for Determining Regional Transportation Emissions

The Federal conformity regulations set specific requirements for determining transportation emissions, which are estimated from a combination of emission rates, HPMS volume data, and travel demand model projections. Travel demand models use estimates of population, households, and employment to project future travel volumes and patterns. Chapter II of the Plan presents these estimates as part of the existing and future regional transportation system.

Only "regionally significant" projects are required to be included in the travel demand modeling efforts. The final federal conformity regulations define regionally significant as 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.

In addition, specific classes of projects have been exempted from regional modeling emissions analysis. The categories of exempt projects include:

- Intersection channelization projects
- Intersection signalization projects at individual intersections
- Interchange reconfiguration projects
- Changes in vertical and horizontal alignment
- Truck size and weight inspection stations
- Bus terminals and transfer points

Previous conformity amendments now allow traffic signal synchronization projects to be exempt from conformity determinations prior to their funding, approval or implementation. However, once they are implemented, they must be included in conformity determinations for future plans and TIPs

The milestone and analysis year transportation model networks are composed of projects proposed in this RTP. Projects in these networks consist of all in-place regionally significant projects that can reasonably be expected to be completed by a given analysis/horizon year with consideration of available funding commitments. This project group would include, but not be limited to, regionally significant projects where at least one of the following steps has occurred within the past three years:

- Comes from the first year of a previously conforming TIP,
- Completed the NEPA process, or
- Currently under construction or are undergoing right-of-way acquisition

Table IV-3 Regionally Significant Projects Included in the Transportation Models for the Western Massachusetts Ozone Non-Attainment Area

Analysis Year	Community	Project Description - Pioneer Valley Region
2016	Chicopee	Deady Bridge signal coordination: Broadway/Montgomery, Main, and Belcher Streets
2016	Hadley	Route 9 widening Home Depot to Lowes.
2016	Holyoke, W.Springfield	Route 5 signal coordination from Ashley Ave. to Main St.
2016	Springfield,Wilbraham	Boston Rd. signal coordination Pasco Rd. to Stony Hill Rd.
2016	Westfield	Route 10/202 Great River Bridge - two bridges acting as one-way pairs.
2016	West Springfield	Improve the Union Street Railroad Underpass. Construct a truck bypass road.
2016	Through Region	Additional "Vermonter" passenger rail service
Analysis Year	Community	Project Description - Pioneer Valley Region
2020	Chicopee/South Hadley	Route 33 signal coordination and upgrades from Abbey St. to Fuller Rd.
2020	Hadley	Route 9 widening Middle Street to Lowes.
2020	Ludlow	Route 21 Center Street reconstruction and widening with center turn lane
2020	Northampton	Damon Rd. widening, improvements from Rte 9 to King St.
2020	Through Region	New Commuter Rail Service: Hartford, CT to Greenfield, MA
2025	Agawam	Connector, Route 5 to Route 57, eliminate rotary.
2025	Holyoke	Linden St. signal coordination and improvements at 5 intersections.
2025	Longmeadow	Route 5 signal coordination, improvements Converse St to Springfield city line.
2025	Westfield	Route 10/202 Elm Street, North Elm Street signal coordination.
2035	Agawam, Longmeadow, Springfield	South End Bridge improvements, including related work on I-91 between Exits 1-3.
2035	Agawam, West Springfield	Improvement to Route 5 access ramps for truck routing, route into CSX rail yard.
Analysis Year	Community	Project Description - Berkshire Region
2016	Great Barrington	Main St .intersection improvements, signalization upgrades and add turning lanes
2020	Pittsfield	Intersection widening, turning lane improvements First/Tyler & Tyler/ Stoddard Ave
2025	Great Barrington	Realign & widen State Rd., including new bridge to replace the current Brown Bridge
2025	Lanesboro/Cheshire	Construct passing lanes on Route 8 between Mall Road and truck weighing station
2025	Pittsfield	Safety and capacity improvements on East St. between Elm St. and Merrill Road
2035	Pittsfield	Construct connector street from W. Housatonic St. to West St. parallel to Housatonic Railroad
Analysis Year	Community	Project Description - Franklin Region
2016	Through Region	Additional "Vermonter" passenger rail service
2020	Greenfield, Deerfield, Whately	New Commuter Rail Service: Hartford, CT to Greenfield, MA

Air Quality Conformity Analysis

The emissions from the following MPOs have been combined to show conformity with the SIP for the Western Massachusetts Non-attainment Area:

- Berkshire Region MPO
- Franklin Regional Council of Governments*
- Pioneer Valley MPO

* This region does not contain any official urbanized areas, but is considered to be an MPO for planning purposes.

Using the latest planning assumptions, MassDOT estimated the emissions for VOC and NOx for all areas and all MPOs through a combination of the statewide and selected regional travel demand models (and with assistance from MPO staff). The VOC mobile source emission budget for 2009 for the Western Massachusetts Non-attainment Area is 10.73 tons per summer day and the 2009 mobile source budget for NOx is 27.73 tons per summer day. The results of the air quality analysis demonstrate that the VOC and NOx emissions from all Action scenarios are less than the VOC and NOx emissions budgets for the Western Massachusetts Non-attainment Area:

Table IV- 4 VOC Emissions Estimates for the Western Massachusetts Ozone Non-attainment Area
(all emissions in tons per summer day)

Year	Berkshire	Action Emissions	Western MA Action Emissions Budget	Difference Action - Budget
2010	n/a	10.947	n/a	n/a
2016	1.4613	6.832	10.73	-3.898
2020	1.2664	5.979	10.73	-4.751
2025	1.1687	5.534	10.73	-5.196
2035	1.1680	5.602	10.73	-5.128

TABLE IV-5 NOx Emissions Estimates for the Western Massachusetts Ozone Non-attainment Area
(all emissions in tons per summer day)

Year	Berkshire	Action Emissions	Western MA Action Emissions Budget	Difference Action - Budget
2010	n/a	27.736	n/a	n/a
2016	2.3931	11.751	27.73	-15.979
2020	1.5348	7.732	27.73	-19.998
2025	1.1501	5.774	27.73	-21.956
2035	0.9743	5.018	27.73	-22.712

Conclusion

The Berkshire MPO conducted an air quality analysis of the 2012 RTP and its latest conformity determination. The purpose of the analysis is to evaluate the air quality impacts of the Plan on the SIP. The analysis evaluates the change in ozone precursor emissions (VOCs, and NOx) due to the implementation of the 2012 Berkshire RTP. The modeling procedures and assumptions used in this air quality analysis follow guidance from EPA and the Commonwealth and are consistent with all present and past procedures used by the Massachusetts DEP to develop and amend the SIP.

MassDOT determined the emission levels from all MPOs in Western Massachusetts – including from the 2012 Berkshire RTP – to be in conformance with the SIP according to conformity criteria. Specifically:

- The VOC emissions for the Action (build) scenarios are less than the 2009 VOC motor vehicle emission budget for analysis years 2016 through 2035.
- The NOx emissions for the Action (build) scenario are less than the 2009 NOx motor vehicle emission budget for analysis years 2016 through 2035.
- In accordance with Section 176(c)(4) of the Clean Air Act as amended in 1990, the MPO for the Berkshire MPO completed its review and hereby certifies that the 2012 Berkshire MPO and its latest conformity determination satisfies the conformity criteria where applicable, and therefore conditionally conforms with 40 CFR Parts 51 and 93, and 310 CMR 60.03, and is consistent with the air quality goals in the Massachusetts State Implementation Plan.

C. HAZARD MITIGATION, SEVERE WEATHER, & WATER QUALITY

Hazard mitigation is "sustained action taken to reduce or eliminate the long-term risk to people and property from hazards and their effects". All communities have to prepare natural hazard mitigation plans to be eligible for FEMA funding from the Pre-Disaster Mitigation (PDM) grant program and for the post-disaster Hazard Mitigation Grant Program (HMGP).

Local communities can maintain eligibility by participation in a regional Hazard Mitigation Plan (HMP) process. The BRPC coordinates the update of the regional HMP with nineteen (19) communities. The BRPC asks local emergency responders and managers to identify the natural hazards affecting their communities, the risks from the hazards, and actions that could minimize those risks.

Berkshire County is affected by a number of natural hazards including flooding, severe winter weather, tornados, and wildfires. Localized flooding causes most of the county's natural hazard damage. The HMP identified that poorly maintained transportation infrastructure and inadequately sized stormwater systems contribute significantly to hazardous flooding conditions. Deferring maintenance (grading, ditching, culvert repair, etc.) because of budget constraints results in soil erosion and pavement damage.

Development increases the impervious surfaces that contribute to stormwater runoff. Upgrades to existing stormwater systems are not standard when new developments are approved, resulting in an inability to handle runoff.

The Berkshires' average precipitation has increased from 42 inches per year to 45 inches per year over the last 100 years, exacerbating stormwater runoff problems. Based on the research presented to the Commonwealth's Climate Change Adaptation Advisory Commission over the past two years, we can expect this increase to accelerate into the foreseeable future. In addition, precipitation will occur in "flashier" events, meaning that we can expect increases in the stress placed on the existing stormwater system resulting in more frequent and more severe damage to surface transportation systems and their supporting stormwater infrastructure. The TIP evaluation considers how projects improve drainage and mitigate impacts to the natural environment.

The region can mitigate natural hazards and damage from severe weather by:

- Limit the expansion of roads in flood-prone areas;
- Improve stormwater management systems that are located in flood prone areas or are inadequate to handle potential rainfall amounts;
- Encourage the use of "best management practices" on gravel roads that mitigate negative impacts;
- Develop example bylaws that require on-site storage and pre-treatment of stormwater; Consider the projected impacts of global warming on storm frequency and severity and incorporate higher stormwater design standards for all highway and bridge reconstruction and new construction projects, to accommodate those impacts; and
- Encourage the use of low-impact development (LID) techniques.

Stormwater runoff drastically degrades water quality, dumping more than 80% of sediments and nutrients into our waterways. According to the Massachusetts Non-point Source Pollution Manual, roads, highways and bridges are a significant source of runoff pollution. Pollutants most associated with roadways include sediment, oils/grease, road deicers (salts and sand), metals, herbicides and litter. The vast majority of roads in Berkshire have traditionally been designed to shed water as quickly as possible, directing untreated runoff into the nearest ditch or waterway.

Stormwater runoff can alter natural drainage features, increase peak discharge rates and volumes, reduce recharge to wetlands and streams, and increase the discharge of pollutants to wetlands and water bodies. Gravel roads contribute significant amounts of sediment to nearby wetlands, and act as impervious surfaces as vehicles compact them.

Sediment deposition and buildup can alter stream channels, reduce storage capacity, scour bank, bridge abutments and substrate, blanket habitat, reduce clarity, and kill aquatic organisms. Sediment can transport major pollutants like heavy metals, nutrients and pathogens. Stormwater management systems should remove 80% of post-construction load of total suspended solids and oils. Peak flood stages crest higher if storm events become more intense. Proper "first flush" pre-treatment methods are the most effective way to reduce suspended oils and solids from stormwater runoff.

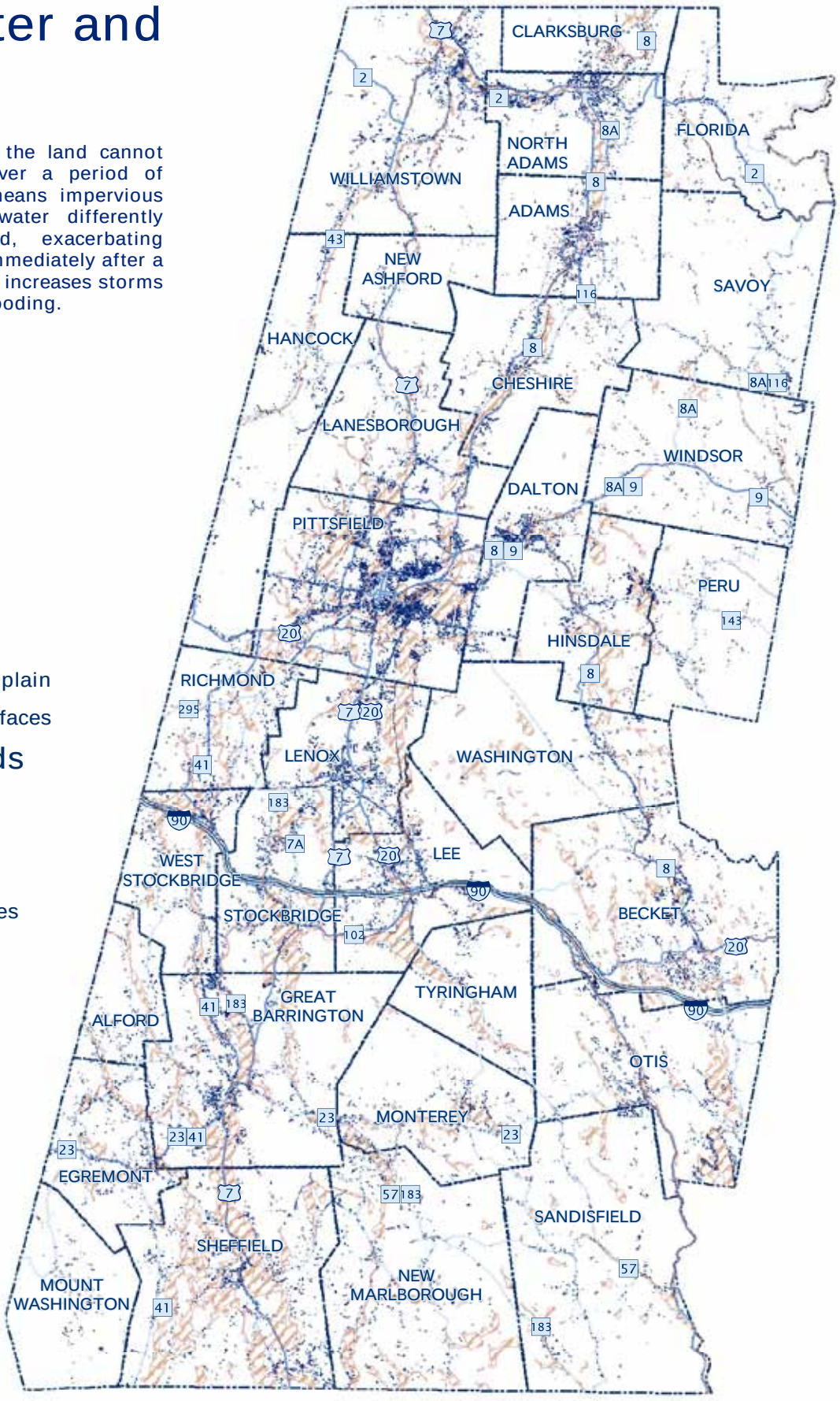
Road construction projects typically follow the Massachusetts Environmental Protection Act (MEPA). BRPC reviews MEPA filings for stormwater mitigation and natural resources enhancement, advocating for avoiding impacts close to sensitive environmental features. Typical mitigation measures for stormwater include deep sump catch basins, vegetated or stone-lined swales, outlet sediment traps, and, detention basins. Low impact development (LID) techniques, such as pervious pavement, rain gardens, infiltration trenches or vegetated swales should be integrated into improvements where feasible.

The Berkshires can lessen potential flooding and improve water quality by:

- Improve stormwater treatment in all projects, including deep sump catch basins and vegetated/stone lined swales;
- Limit expansion of impervious surfaces during road improvement projects, especially where runoff impacts environmentally sensitive areas and flood zones. Attempt to incorporate detention and retention into stormwater management systems;
- Engineer all road crossing improvement projects, both state and local, to handle increased flows caused by climate change;
- Educate planning boards and DPW Superintendents on LID;
- Consider pervious pavement surfaces for new impervious surface installations; and
- Employ infiltration / detention techniques along roadsides such as rain gardens, infiltration swales, and detention trenches.

Stormwater and Flooding

Flooding occurs when the land cannot accomodate rainfall over a period of time. Development means impervious surfaces that direct water differently than nature intended, exacerbating erosion and flooding immediately after a storm. Climate change increases storms and the likelihood of flooding.



Legend

- 100 Year Floodplain
- Impervious Surfaces

Berkshire Roads

- Interstate
- Arterials
- Collectors
- Local Boundaries

0 1.5 3 6 Miles

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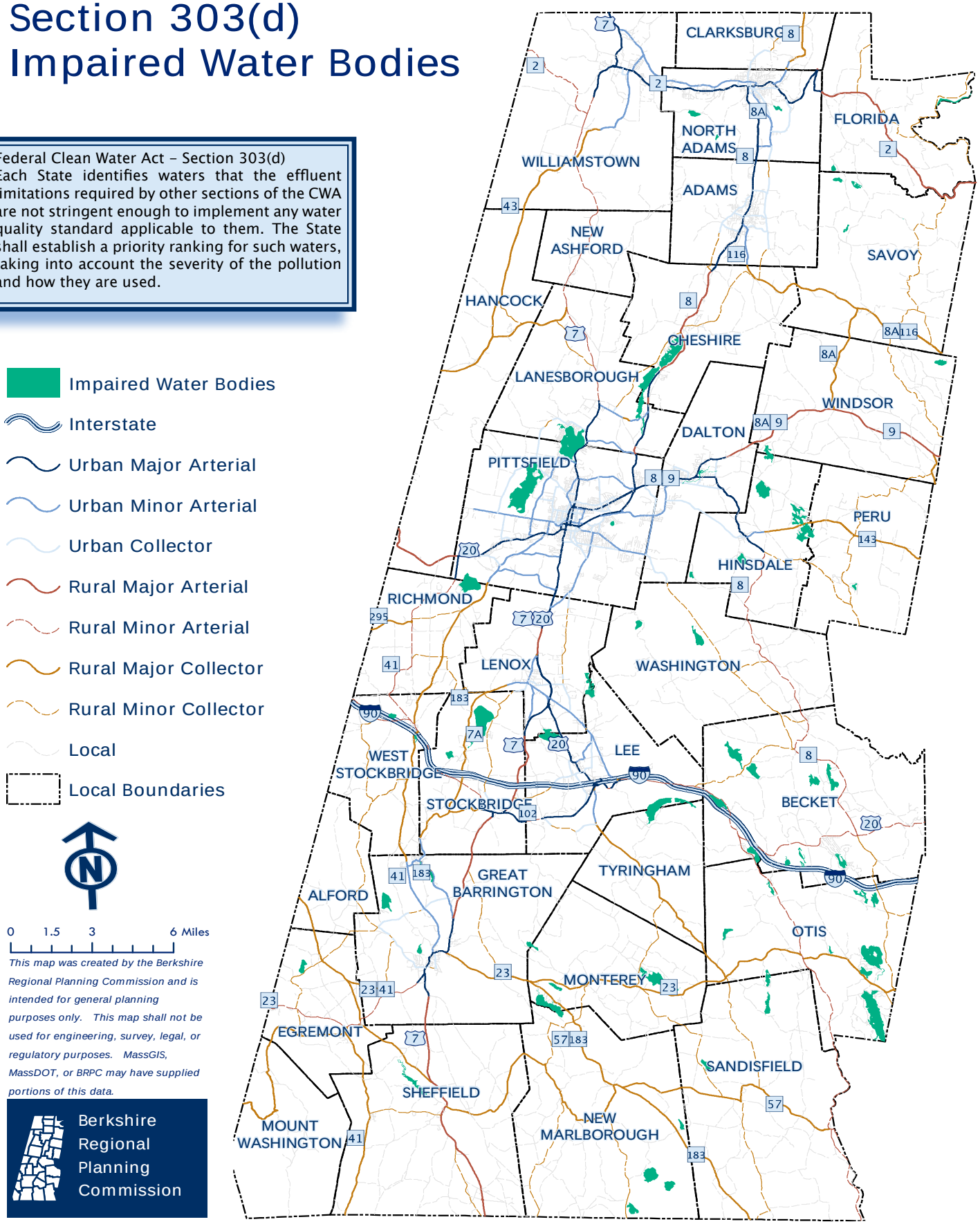
Berkshire Regional Planning Commission

Section 303(d) Impaired Water Bodies

Federal Clean Water Act – Section 303(d)
Each State identifies waters that the effluent limitations required by other sections of the CWA are not stringent enough to implement any water quality standard applicable to them. The State shall establish a priority ranking for such waters, taking into account the severity of the pollution and how they are used.



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Berkshire Regional Planning Commission

D. CRITICAL ANIMAL HABITAT

Highway construction, urban and residential development, and other physical alterations reduce natural habitat. Roads isolate wildlife populations into smaller units that are more vulnerable to threats including predators and inbreeding. Rivers and streams are particularly vulnerable to habitat fragmentation. Road systems and river and stream networks frequently intersect, often with significant negative consequences for the ecosystem.

Transportation systems should be designed to protect habitat quality and ecosystem processes that maintain habitats and population, particularly as climate change pushes cooler habitat becomes more northward and upward. Road projects should locate crossings away from sensitive areas (e.g. critical habitat, uncommon habitat types, areas particularly sensitive to disturbance).

UMass's Conservation Assessment and Prioritization System (CAPS) evaluates how road construction Impacts the natural environment CAPS assumes that by conserving intact, ecologically-defined communities of high integrity, the most species and ecosystems are conserved.

The region can mitigate transportation's impacts on natural habitat by:

- All construction projects should consider the ecological integrity of the area they impact using tools such as CAPS;
- Segments of roads bounded on both sides by protected open space should be evaluated for wildlife crossing improvements;
- Vehicle/animal collision data should be analyzed to identify potential priority areas for animal crossings.
- All new roads and major rehabilitation projects should comply with the Massachusetts River and Stream Crossing Standards.

Conservation Assessment & Prioritization System

Ecological integrity is how well an area sustains necessary ecological functions, biodiversity, and natural processes in the face of disturbance and stress.

The index of ecological integrity (IEI) assesses how closely the integrity of an area matches reference conditions (the “best” for the land's ecological function). The higher the IEI number, the better the chance, with preservation and management, for long term ecological integrity.

Source: UMass Landscape Ecology Lab