THE COMMONWEALTH OF MASSACHUSETTS
WATER RESOURCES COMMISSION
100 CAMBRIDGE STREET, BOSTON MA 02114

Interbasin Transfer Act
Performance Standards Guidance

INTRODUCTION

Background

The Interbasin Transfer Act[1] (ITA) Performance Standards were first introduced in 1999 to provide applicants with information on the requirements of the ITA and how applications would be evaluated. The ITA regulations[2] describe seven criteria that the Water Resources Commission (WRC) must consider when deciding to approve or deny an interbasin transfer application that is not determined to be Insignificant.[3] The Performance Standards are based on these criteria. The WRC expects applicants to meet these standards, to the maximum extent possible, at the time an application for Interbasin Transfer Approval is submitted to the WRC. This guidance was updated on September 12, 2024, to conform with the revised ITA regulations (2018) and the revised Massachusetts Water Conservation Standards (2018) and to reflect industry advances in water conservation and water supply and wastewater system management.

Purpose

The Performance Standards are intended to help applicants provide the WRC with the information needed to determine compliance with applicable criteria of the ITA regulations and to understand how their application will be evaluated. In reviewing an applicant's submitted materials under an ITA request, the WRC will reference the regulations and the standards outlined in this guidance.

Applicability

The Performance Standards apply only to interbasin transfers governed by M.G.L. c.21, §§ 8C and 8D (i.e., all transfers of water or wastewater across a basin line, except those deemed Insignificant by the WRC). Requests for Determination of Insignificance under the ITA are governed by the criteria listed under 313 CMR 4.08(3) and are not subject to these Performance Standards.

Organization

This guidance is divided into sections for each criterion under the ITA regulations. These sections are further divided into subsections by the type of transfer to which particular aspects of the Performance Standards apply. Section II of this guidance compiles a list of all the subsections applicable to each type of transfer and should be used by applicants as a general index to ensure they have reviewed all aspects of the Performance Standards relevant to the type of transfer for which they are seeking approval. Note that not every action subject to the ITA will easily be described by one of the category types described

1 Transfer Act: M.G.L. c.21, §§ 8B-8D
2 Interbasin Transfer Regulations: 313 CMR 4.00
3 As defined in 313 CMR 4.02

in Section II, and some projects may be a combination of categories. WRC staff will assist applicants in determining which elements of the Performance Standards apply to a proposed project that does not easily fit into the categories named in Section II. The full text of all criteria, as they appear in the regulations, is provided in Appendix A.

Application Process

The specific information required by the WRC to be included in an ITA application is outlined at 313 CMR 4.09(2) and 4.10(2). The WRC uses the Environmental Impact Report (EIR), required by the Massachusetts Environmental Policy Act (MEPA) regulations (301 CMR 11.00), as its application. Documentation must be provided in the EIR to demonstrate compliance with the criteria of the ITA regulations, including meeting the Performance Standards outlined in this guidance. If sufficient documentation is not provided, the application will be determined to be incomplete until such time as the documentation is provided. In cases where the applicant clearly has not taken the actions required by the Performance Standards, they will be discouraged from applying until the standards are met. If an applicant does not meet the Performance Standards, is not under an enforcement order or emergency declaration, and cannot justify noncompliance due to local conditions, as described below under "Review Considerations," but decides to apply anyway, the application will be denied. The applicant can reapply once the Performance Standards are met.

As unique local circumstances will affect the type of information included in the application, applicants should consult with WRC staff in the Department of Conservation and Recreation's (DCR) Office of Water Resources to discuss the application process **before** submitting an application for approval (i.e., before submitting an EIR). This will help to ensure the applicant has correctly identified the information that must be provided in the application.[4]

Review Considerations

In two instances the WRC may approve applications for interbasin transfers when they are not deemed Insignificant and when the Performance Standards, as further described in this guidance, have not been fully met. These are (1) if the actions to meet the standards and appropriate deadlines are included as part of an enforcement order or emergency declaration issued by the Massachusetts Department of Environmental Protection (MassDEP) or (2) if local conditions make it infeasible to meet a particular Performance Standard, as described immediately below.

The WRC recognizes that in certain cases, local conditions may prevent an applicant from meeting or exceeding the standards described in this guidance, even after a substantial effort has been made. In these cases, the applicant should explain why that standard cannot be met, demonstrate an alternate method of meeting the intent of the criteria of the ITA regulations, and document any specific efforts that have been or will be undertaken to that end, along with anticipated timeframes for such efforts.

4 For contact information, please see *https://www.mass.gov/service-details/ita-contact-information*.

GUIDE TO INTERBASIN TRANSFER ACT CRITERIA AND PERFORMANCE STANDARDS THAT ARE APPLICABLE, BASED ON TYPE OF INTERBASIN TRANSFER

The types of interbasin transfers called out in this section are not necessarily mutually exclusive. If a proposed project is characterized by more than one type of transfer in this section, please review all the sections listed for each type of transfer that characterizes the project. Additionally, the types of interbasin transfers called out in this section may not cover every action subject to the ITA. WRC staff will assist applicants in determining which elements of the Performance Standards apply to a proposed project that does not easily fit into the categories named in this section.

Sections Applicable to Interbasin Transfer of Water Supply

For transfers involving the expansion of the service area of a Regional Water Supply System, as defined in 313 CMR 4.02, Donor Basin applicants are subject to Criteria 1, 5, and 7 and Receiving Basin applicants are subject to Criteria 1, 2, 3, and 4.

Sections Applicable to Interbasin Transfer of Wastewater

For wastewater transfers triggered by the development of a new source, the following <u>additional</u> sections apply:

This section of the guidance provides the measures the WRC will use to evaluate compliance with the seven criteria of the ITA regulations (i.e., the Performance Standards). For the purpose of this section, an abbreviated reference to each criterion is provided. The full text of 313 CMR 4.09(3) Criteria for Evaluation of Applications for Approval appears in Appendix A.

I. Guidance for Criterion #1 – Compliance with MEPA

A. Applicable to All Types of Interbasin Transfer

General

The MEPA regulations (301 CMR 11.03(4)(a)2 and 11.03(5)(a)2) require an Environmental Notification Form (ENF) and a mandatory EIR for any new interbasin transfer of water or wastewater of 1,000,000 gallons per day (GPD) or more or any amount not determined to be Insignificant by the WRC.

The WRC uses the EIR as its ITA application. All information required for ITA review should be included in the EIR. Since the EIR constitutes the Interbasin Transfer application, applicants should meet with WRC staff in the DCR's Office of Water Resources before developing the EIR, to ensure the included analyses and documentation will satisfy the application requirements of the ITA.

Effective January 1, 2022, all new projects in "Designated Geographic Areas" ("DGA," as defined in 301 CMR 11.02, as amended) around environmental justice (EJ) populations are subject to new requirements imposed by Chapter 8 of the Acts of 2021: *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy* ("Climate Roadmap Act") and amended MEPA regulations at 301 CMR 11.00. Two related MEPA protocols – the MEPA Public Involvement Protocol for Environmental Justice Populations and MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations – are also in effect for new projects filed on or after January 1, 2022. Under the new regulations and protocols, all projects located in a DGA around one or more EJ populations must take steps to enhance public involvement opportunities for EJ populations and must submit analysis of impacts to such EJ populations in the form of an EIR.

Evaluation of Criterion #1

The EIR must contain all the information required by the WRC to make a Decision on the application under the ITA. If any information is determined to be missing during the review of the EIR by WRC staff, the applicant must submit all outstanding information before the application will be considered as complete by the WRC.

The review of alternatives required under MEPA should, for the purposes of ITA review, include the review of viable in-basin alternatives as described in criterion #2. The EIR should also contain a description of the reasons for the transfer and an evaluation of how it supports the long-range water resources planning of the applicant.

The Secretary of Energy and Environmental Affairs' Certificate stating that the EIR properly complies with MEPA and its implementing regulations must be issued before initiating the public comment and hearing process described in the ITA.

II. Guidance for Criterion #2 - Develop all viable sources in the Receiving Area

A. Applicable to All Types of Interbasin Transfer

Definition of Viable Source and Receiving Area

The following definitions appear in the regulations (313 CMR 4.02):

Viable Source means a water source or wastewater service alternative that meets the current regulatory requirements of the permitting authorities, and is environmentally sound, technologically feasible and cost-effective.

Receiving Area means the location where compliance is evaluated under the Act by 4.09(3)(b) Criterion (2) related to Viable Sources, 4.09(3)(c) Criterion (3) related to water conservation measures, and 4.09(3)(d) Criterion (4) related to a comprehensive forestry management program.

Evaluation of Criterion #2

The applicant should use the EIR (301 CMR 11.07(6)(f) to discuss all in-basin alternatives to the transfer that were considered but rejected as not viable. An applicant may demonstrate non-viability of these in-basin alternatives on the basis of environmental soundness, technological feasibility, or economic viability, or on the basis of a combination of these reasons. Reasons for the rejection of in-basin alternatives should be clearly stated and represent a reasonable conclusion, based on the guidance in sections II.A.1-3 below. A copy of any studies or reports evaluating the alternatives should be submitted or referenced.

1. Guidance on Environmental Soundness as a Determinant of Viability of In-Basin Alternatives

To demonstrate that an in-basin alternative to the proposed interbasin transfer is not viable based on environmental impacts, the applicant should address direct and indirect, short and long term, and positive and negative anticipated environmental impacts of the alternative. These could include, but are not limited to, instream flow impacts such as those listed for the donor basin under 313 CMR 4.09(3)(e), impacts to groundwater quality, impacts to any other sensitive environmental receptors, and regulatory constraints. The applicant should also address whether any mitigation measures exist for the negative impacts identified and, if so, why the alternative is still not viable.

2. Guidance on Technological Feasibility as a Determinant of Viability of In-Basin Alternatives

To demonstrate that an in-basin alternative to the proposed interbasin transfer is not viable based on technological feasibility, the applicant should document one or more technical impediments to in-basin alternatives, such as: the inability to obtain a suitable site; lack of available technology or disposal options for treating a contaminant known to be present; lack of sufficient or compatible treatment, storage, or distribution infrastructure; or other technological impediments. The applicant should also address if these impediments could be overcome with sufficient funding and use the guidance below in Section II.A.3. to address cost as a factor in non-viability, if applicable.

3. Guidance on Cost as a Determinant of Viability of In-Basin Alternatives

To demonstrate that an in-basin alternative to the proposed interbasin transfer is not economically viable, the applicant should provide a financial analysis according to the

following guidance or any other financial analysis that is proposed to and accepted by WRC Staff.

Costs: The applicant shall compare the cost of the in-basin alternative(s) to the cost of the proposed interbasin transfer. Similar projects recently developed elsewhere in the Commonwealth may be used as reference. Present worth or equivalent annual cost should be used as the basis for presenting project costs, utilizing and referencing the appropriate cost index from Engineering News Record.[5]

Project costs include the following:

- Capital Costs – costs for design and construction of any new water resource infrastructure and any costs associated with lease, easement or right of way acquisition and permitting. Financing cost estimates should use the expected municipal bond rate or rate expected on other financing mechanisms anticipated to be available for the project.
- Operation and Maintenance Costs – costs for labor, utilities, materials, contractual services, expenses, replacement of equipment and parts to ensure effective and dependable operation during the planning period. The operation and maintenance costs should be adjusted to reflect any revenues received from the sale or distribution of any facility products or by-products such as residuals or the sale of water to other systems.
- Salvage Value – the value of any new facilities at the end of the planning period. This value is normally based on a straight-line depreciation from the initial cost at the time of analysis to the end of the planning period.
- Avoided Costs – cost savings resulting from the project. For example, projects that reduce leakage from the distribution system might be partially mitigated by savings in treatment and distribution costs.
- Outside support – grants or any other available support for the project.

Rates: The above costs should be used to calculate the average per household financial impact. Special attention should be given to low-income households (income below the 20th percentile of all households) including their ability to pay the lifeline rate if one exists. The following should be provided at a minimum:

For residential customers, calculate all the following:

- Incremental increase in the cost of water and wastewater services as a percent of median and 20th percentile of household income
- The total cost of all water and wastewater services including the incremental cost as a percent of median and 20th percentile of household income
- For the two metrics above, the percent difference between each alternative and the interbasin transfer option

If the project costs would be borne all or in part by local taxpayers through tax assessments rather than utility rates, the incremental tax increase should similarly be analyzed for affordability by calculating all the following:

- Incremental tax as a percent of median and 20th percentile of household income

5 https://www.enr.com/

- The total cost of all water and wastewater services including the incremental tax as a percent of median and 20th percentile of household income
- For the two metrics above, the percent difference between each alternative and the interbasin transfer option

B. Applicable to Water Supply Transfers, Including Receiving Basin Applicants Applying to Join a Regional Water Supply System

Clarification of Definition of Viable Source for Water Supply Transfers

The following definition clarification appears in the ITA regulations (313 CMR 4.02):

For water supply transfers, Viable Source means an in-basin source which can provide drinking water that meets the current water quality standards and water management requirements promulgated by the Department of Environmental Protection or other regulatory agency, and which can be used while preserving reasonable instream flow using the same criteria provided to evaluate impacts on the Donor Basin listed in 313 CMR 4.09(3)(e).

Clarification of Definition of Receiving Area for Water Supply Transfers

The following definition clarification appears in the ITA regulations (313 CMR 4.02):

For transfers of water supply, Receiving Area means the area into which the water is transferred for use, and is thereby receiving the water supply service.

Clarification of Evaluation of Criterion #2 for Water Supply Transfers

Analysis of alternative water supply sources in the Receiving Area should include the location and assessment of all existing, abandoned, and potential sources that were evaluated as in-basin alternatives to the transfer.

C. Applicable to Wastewater Transfers, Including Those Triggered by the Development of a New Supply Source

Clarification of Definition of Viable Source for Wastewater Transfers

The following definition clarification appears in the ITA regulations (313 CMR 4.02):

For wastewater transfers, including those triggered by the development of local water supplies that are transferred out of basin as wastewater, Viable Source includes alternatives which can treat, reuse, and/or discharge wastewater within the basin of origin, and can meet the requirements for approval by the Department of Environmental Protection or other regulatory agency.

Clarification of Definition of Receiving Area for Wastewater Transfers

The following definition clarification appears in the ITA regulations (313 CMR 4.02):

For transfers of wastewater, Receiving Area means the area whose wastewater is collected for discharge out of basin, and is thereby receiving the wastewater service.

Clarification of Evaluation of Criterion #2 for Wastewater Transfers

Analysis of alternative wastewater services in the Receiving Area should include an assessment of the feasibility of obtaining wastewater services from cities, towns, or districts

within the same basin as well as the feasibility of using Title 5 systems, groundwater discharge systems, alternative/innovative on-site systems, package treatment plants, or implementing wastewater reuse, in accordance with all applicable regulations.

An applicant should provide all relevant documentation supporting the determination that the proposed transfer is needed, such as a Comprehensive Wastewater Management Plan or other appropriate study (see Water Resources Planning MassDEP guidance at: https://www.mass.gov/doc/water-resource-management-planning-guidance-document/download).

III. Guidance for Criterion #3 - Must have implemented all practical water conservation measures

A. Applicable to the Receiving Basin Community in All Transfers in Which the Applicant has Control of the Water Supply System

Evaluation of Criterion #3

Applicants must meet all Standards that are applicable to water suppliers in the most recent edition of the Massachusetts Water Conservation Standards (available at https://www.mass.gov/doc/massachusetts-water-conservation-standards-2/download), even where they are not specifically laid out in these Performance Standards. Additionally, where the requirements under 313 CMR 4.09(3)(c) as further clarified in these Performance Standards include stronger measures than those required in the Water Conservation Standards, these must also be met.

1. Water Conservation Program

A long-term water conservation program should be in place for the receiving community, which, to the extent feasible, is customized based on the specific water use patterns and supply constraints of the system. The following sections provide a starting point intended to be relevant to most communities/projects. Programs based on more unusual community or project circumstances, or water conservation objectives should be discussed with WRC staff prior to submittal of the application.

a. Data Analysis

Determining where to focus water conservation efforts and resources should begin with data collection, management, and analysis. To the extent feasible, the system's water conservation programs should be developed using relevant data analysis. The specific analyses might vary depending on such factors as the level of technology used for metering and characteristics of the service area, but examples of useful metrics include:

- Customer base composition (% of service connections that are single-family residential, multi-family residential, commercial, municipal, and irrigation accounts)
- Water use breakdown (% of total water used by each customer class)
- A list of the top 10 water users for the system
- Residential gallons per capita per day

- Water loss control measures (for example, M36 audit[6] results)
- Summer/winter ratio (or comparable indication of outdoor water use patterns)
- Trends in the following for the past five years:
  - Annual water use
  - Service population
- Peak demand

For more detailed guidance on conducting data analyses to inform water conservation programs, see the workbook titled "Collecting, Managing, and Analyzing Water Usage Data" located at: https://www.mass.gov/doc/collecting-managing-and-analyzing-water-usage-data/download.

b. Water Conservation Plan Documentation

A water conservation/water efficiency plan should outline the system's water use profile, assessment of water savings potential, conservation measures for applicable customer categories, water efficiency-related policies, and measurable performance goals. If a formal water conservation and/or water efficiency plan has been developed for your community, the document or a link to the document should be included in the application package. While a formal water conservation plan is not required, applicants should submit a summary of existing water conservation efforts to help facilitate evaluation and guidance on the system's water conservation program. The written summary can be as simple as a 1–2-page memo, but should include:

- Name and contact information of person(s) responsible for water conservation efforts
- Description of current water conservation efforts, including (if applicable):
  - Budget
  - Internal/external partnerships
  - Methods/frequency of water efficiency outreach
  - Indoor water use programs
  - Outdoor water use programs
  - Residential programs
  - Non-residential programs
- Description of future water conservation actions based on existing program evaluation

c. Residential Water Use Efficiency (including multi-family):

The scope of a residential water efficiency program will be specific to circumstances in each community and should be informed by relevant data analyses. Applicants must meet the residential performance standard of 65 gallons per capita per day (gpcd). This is a system-wide average (including indoor and outdoor use) that represents a minimum

6 M36 Water Audits and Loss Control Programs, American Water Works Association (AWWA)

level of efficiency. If local environmental or operational conditions warrant higher efficiency (e.g., during times of drought), applicants should strive to achieve year-round residential water use of less than 65 gpcd by implementing indoor and outdoor efficiency measures.

(i) Indoor Water Use:

- Conduct consistent outreach to the system's highest residential water users with recommendations for maximizing efficiency.
- A broad-based public education program to promote water conservation should be in place. This program should use multiple outreach channels, such as traditional and social media, direct customer communications, partnerships with schools and non-profit organizations, and outreach opportunities at community events.
- A system should be in place for identifying and responding to customer-side water loss and general efficiency concerns including high use notifications, leak identification assistance, and indoor water use assessments.
- High-efficiency plumbing products that meet EPA WaterSense standards and/or the current MA plumbing code (whichever requires higher efficiency) should be encouraged in both new development and existing building upgrades through education/outreach and/or incentive-based programs. Toilets should be targeted for retrofit/rebate programs, as they account for ±25% of all water used inside homes. Appliances (e.g., clothes washers and dishwashers) should meet the most current Energy Star standards (which include a water factor), at a minimum.
- Multi-family buildings should be encouraged to implement sub-metering when feasible to better manage water use at the individual unit level, as well as to disaggregate domestic use from irrigation. Bylaws/ordinances should mandate water efficiency incorporation into all new multi-family developments and redevelopment.

(ii) Outdoor Water Use:

- The conservation program must include measures to reduce non-essential outdoor water use. Non-essential use is defined by MassDEP as uses not required by regulation, for health or safety reasons, for production of food and fiber, for maintenance of livestock, or to meet the core functions of a business (e.g., irrigation by plant nurseries as necessary to maintain stock).
- The first step of an outdoor water use program should be to establish authority to limit nonessential outdoor water use through a bylaw, ordinance or other legal mechanism. See MassDEP's Model Outdoor Water Use By-Law/Ordinance (https://www.mass.gov/info-details/model-water-use-restriction-bylawordinance-update).
- Efficiency of irrigation system components for newly installed irrigation systems or replacements of existing systems should meet EPA WaterSense efficiency standards. Incentivizing design, installation, and auditing of irrigation systems by professionals with certifications such as Qualified Water-Efficient Landscapers (QWEL) or Certified Landscape Irrigation Auditor (CLIA) will also help ensure

system efficiency. In addition, some municipalities have chosen not to allow the installation of new irrigation systems.

- The outdoor water use program should include education, technical assistance, and incentives to encourage installation and conversions from water intensive non-native grass areas to more water-efficient landscape types such as native grasses, trees, shrubs, and perennials.

- The outdoor water use program should involve collaboration with appropriate town entities to promote land use planning that minimizes water use, including low-impact development techniques in all new development and redevelopment. See Chapter 9 and Appendices B and H of the MA Water Conservation Standards, as well as the "Planners, Conservation Commissions, and Land Use Boards" section of the MA Water Conservation Toolkit (https://www.mass.gov/guides/planners-conservation-commissions-land-use-boards) for further guidance on incorporating water into land use planning.

d. Non-Residential Water Use Efficiency

Water conservation measures for the non-residential sector should incorporate the relevant components of indoor and outdoor water use efficiency described for the residential sector in Section III.A.1.c.(i-ii), above. In addition, the following should also be incorporated:

- All government and other public buildings under the control of the applicant should have been constructed or retrofitted with water fixtures meeting EPA's WaterSense standards and/or the current MA plumbing code, or the applicant should establish a timeline to transition to such fixtures.
- A program should be in place that identifies, ranks, and conducts outreach to commercial, industrial, and institutional customers based on water usage to determine areas where the greatest potential for water savings exists. The program should include regular contact with the highest users to promote water conservation, including the promotion of water reuse, where appropriate. See the EPA's WaterSense guidance for the commercial, industrial, and institutional sector at https://www.epa.gov/watersense/commercial-buildings.

2. Water Loss Control Program

A water loss control program should be in place and actively implemented. Guidance on water loss control programs can be obtained from EPA, AWWA, and the Water Research Foundation (WRF). Items to include in a water loss control program are:

a. An annual water audit in accordance with the methods in AWWA Manual of Water Supply Practice M36 "Water Audits and Loss Control Programs" 2016 or latest and the AWWA Free Water Audit Software v6.0 or latest.

The water audit shall receive a data validity score of at least 71 or demonstrate multiple years of showing an improvement in data validity, with at least a Level 1 validation as defined by the Water Research Foundation Level 1 Water Audit Validation Guidance Manual 2nd edition or latest.

b. Program goals and assessment measures

c. Record keeping, including tracking losses, leaks, and repairs

d. Leakage management including system wide leak detection surveys at least every three years and more frequently if warranted based on the M36 audit, zone flow analysis, leak repair, and pressure management.

- Repair all found leaks as expeditiously as possible
- Look for opportunities to reduce real losses through pressure management
- Have in place regulations to require property owners to fix leaks on their properties in a timely manner

e. Pressure reduction program

The Massachusetts Plumbing Code (248 CMR 10.14(g) Excessive Water Pressure) requires that a pressure-reducing valve be installed on the water service connection to a building when the supplied water pressure is 80 pounds per square inch (psi) or greater. Water suppliers should evaluate their systems to determine where sustained system pressures may exceed 80 psi to respond to user inquiries and to work with plumbing inspectors and property owners to make them aware of the potential need of a pressure-reducing valve.

f. Penalties and/or fines for stealing water

Those with authority to set and enforce penalties for theft of public water such as municipal Water Commissioners, Town Selectmen, and public water suppliers should develop a new bylaw/ordinance or amend existing bylaws/ordinances to establish a penalty, by providing authority to levy a significant fine and/or penalty, that may be enforced criminally or otherwise. Private water suppliers are encouraged to work with those with authority to develop bylaws and ordinances for water theft. M.G.L. Ch. 165, Sec. 11, establishes penalties for water theft consisting of triple the amount of damages or $1,000, whichever is greater, or imprisonment, or both (M.G.L. Chapter 165, Section 11: Intentional injury to or interference with meter; penalty).

g. Long-term capital improvement program

There should be a water system assessment conducted on a regular basis to determine where capital improvements are appropriate, and these recommendations should be incorporated into a long-term capital improvement program. Specifically, aged and undersized or structurally deteriorated pipe should be replaced, and structurally sound pipe should be cleaned and lined to ensure long-term structural integrity.

h. Standards for installation, repairs, rehabilitation, and replacement of pipe in accordance with AWWA and industry standards.

All pipe work, repairs, and connections should be designed properly, executed properly, and inspected.

3. Metering

a. The water supply system should be 100% metered.

- Ensure metering of all water uses including all indoor/outdoor water use at all public and/or municipal facilities served by the applicants (e.g., schools and athletic fields).
- Meter water supply sources to measure and record withdrawals of both groundwater and surface water, as appropriate, and measure and record purchased water.
- If there is potential for losses between withdrawal point and entry to the distribution system, measure and record finished water.

- Install distribution system meters as needed at key points such as municipal boundaries, pumping stations, pressure reduction facilities, storage facilities, and pressure management areas to improve operations and to support pressure management and real water loss calculations.

b. Properly size meters to handle required water flow rate and ensure a high level of metering accuracy. For guidance, see AWWA Manual M6, Water Meters – Selection, Installation, Testing, and Maintenance and AWWA Manual M22, Sizing Water Service Lines and Meters.

c. Meter reading should be done in a manner that allows for collection of actual data instead of use of estimated data.

d. Implement a water meter repair/replacement policy and program, including a budget for the calibration, repair, and replacement of all sources of supply and distribution network water metering systems. Consult American Water Works Association (AWWA) Manual M6 "Water Meters- Selection, Installation, Testing, and Maintenance" for guidance.

- Calibrate and or replace all meters according to their type and specification. Water suppliers should calibrate or establish the necessary regulations and controls to ensure that owners of large customer meters calibrate the meters according to the recommended interval and provide the results as part of a reporting requirement. The AWWA Standards (AWWA Manual M6) can be consulted for guidance on calibration requirements and accuracy standards. Time periods for calibration are generally based on meter size, as meter wear is a function of the amount of water metered rather than the passage of time.
- Calibrate source, raw, treatment, and finished water master meters at least annually, regardless of frequency in meter specification. Include in the application documentation of annual calibration of master meters and a description of the calibration program.
- Seal all water account metering systems against tampering and periodically inspect to ensure water works system integrity.

4. Water Rates and Billing Practices

a. Applicants should demonstrate full-cost pricing – i.e., that water system revenues, including rates, fees, and other charges collectively reflect the full cost of water service including operation, maintenance, capital needs, source protection, debt service, administration, regulatory compliance, and water conservation – or establish a timeframe for transitioning to full-cost pricing. At a minimum, applicants must demonstrate that total revenue sources, including any from outside the water system, are sufficient to cover these costs. Budgets used to establish costs should use a 10-year or longer planning horizon.

b. Municipal suppliers other than independent districts should demonstrate the use of an enterprise fund in accordance with M.G.L. Chapter 44, Section 53F ½, or equivalent mechanism to segregate water utility accounting from other municipal government activities and ensure all revenues derived from water utility activities are retained for, and applied only to, water utility expenditures.

c. The rate structure must encourage water conservation. Appendix B provides guidance on financially sustainable conservation-oriented rate structures.

d. Applicants should bill customers monthly or establish a timeframe for transitioning to monthly billing. At a minimum, customers must be billed quarterly, in which case

utilities should monitor usage monthly and utilize timely mechanisms such as email, phone calls, or texts to notify customers when abnormal water use is detected.

e. Bills should be based on actual usage, be easily understandable to the customer, indicate the rate structure clearly, and provide water use in gallons. Additionally, bills (or customer portals if using software services that support this) should provide information to help customers track their usage trends, such as seasonal shifts in use, comparisons to the same period in the previous year, or comparisons to typical usage in their customer category or sub-category.

5. Protection of Existing Sources in the Receiving Area

a. Applicants should provide a local drought management plan in accordance with Section 8 (Guidance for Communities) and any other relevant section(s) of the state's Drought Management Plan (https://www.mass.gov/doc/massachusetts-drought-management-plan/download). A local drought management plan may be a stand-alone document or be incorporated into a local emergency response plan (see Section 5(b) immediately below).

b. An emergency response plan, as described in 310 CMR 22.04, should be in place. This plan should establish operating procedures for adequately handling water supply emergencies, such as contamination of water supply sources or seasonal/drought related shortages of water supply. For guidance on developing compliant emergency response plans refer to https://www.mass.gov/lists/emergency-response-for-public-water-systems#emergency-response-plan-.

c. A written local surface water supply protection plan should be in place for all surface water sources in the Receiving Area under the control of the applicant in accordance with regulations outlined in 310 CMR 22.20 B and C. The plan must conform with the most recent MassDEP guidance for Developing a Local Surface Water Supply Protection Plan (https://www.mass.gov/files/documents/2016/08/mp/surfprot.pdf).

d. Land in the receiving area located in Zones I, II, III or Interim Wellhead Protection Areas (IWPA) of public drinking water wells must be protected in accordance with regulations outlined in 310 CMR 22.21. Compliance can be through implementation of zoning bylaws, general bylaws and/or health regulations that sufficiently prohibit the land uses and activities restricted for these areas under 310 CMR 22.21. For models of groundwater protection bylaws/ordinances and guidance on developing local wellhead protection plans refer to: https://www.mass.gov/lists/groundwater-wellhead-protection-and-surface-water-supplies#groundwater-and-wellhead-protection-.

B. Applicable to All Wastewater Transfers in Which Any Portion of the Wastewater Collection System is in the Donor Basin

Clarification of Definition of Donor Basin for Wastewater Transfers

The following definition appears in the ITA regulations (313 CMR 4.02):

Donor Basin means the basin from which the water or wastewater is transferred.

In the case of wastewater transfers other than those triggered by the development of a new source, the donor basin is determined by the area where the transferred wastewater is collected. Note that in these cases, the receiving area and the donor basin are the same.

In the case of wastewater transfers that are triggered by the development of a new source, the determination of the donor basin should be discussed during the application process, in consultation with WRC staff.

Additional Evaluation Measures of Criterion #3 for Wastewater Transfers

1. **Ongoing Inflow/Infiltration (I/I) Control Program**

   The applicant must provide an estimate of the volume of infiltration as part of the transfer amount and how that is expected to be controlled over time and an estimate of the volume of inflow as part of the transfer amount and how that is expected to be eliminated. Per MassDEP "Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys", all public and private inflow sources are considered "excessive", unless the existing conditions render removal technically infeasible or cost-prohibitive. New sewers should not have inflow as all sewer use regulations must prohibit connection of inflow sources per 314 CMR 12.03 (5). The applicant must demonstrate a MassDEP-approved ongoing program for existing systems or proposed plan for new systems to control sources of inflow and infiltration in the Receiving Area (see section III.B.3.b for definition of Receiving Area for wastewater transfers) in accordance with 314 CMR 12.00 and any other MassDEP requirements or guidance.

   For existing systems, the applicant should submit a copy of the MassDEP-approved I/I Analysis (or I/I Plan) due December 31, 2017 and provide an update of subsequent I/I control and removal activities. Sources of I/I should have been identified in an Inflow and Infiltration (I/I) study or Sewer System Evaluation Study (SSES) that was developed in accordance with MassDEP's *Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Survey*
   https://www.mass.gov/files/documents/2017/05/bad/iiguidelines517.pdf

   The applicant must demonstrate a commitment to continue to implement recommendations of the I/I control and removal program such that I/I does not exceed the amount estimated as part of the transferred flow at any point in the future. For transfers that are approved, applicants can expect to be requested to submit annual reports to the WRC on these measures.

2. **Wastewater Flow Meters**

   If an existing wastewater transfer is in place, the applicant should have installed flow meters at location(s) sufficient to document wastewater flows out of basin. Use of regional sewer meters that document wastewater flows out of basin is acceptable where these meters are in place. Documentation on meter calibration should be included with the application.

   Applicants should provide at least two years of data on the components of existing wastewater flow (sanitary, inflow, infiltration) with the application. Refer to MassDEP's *Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Survey* (https://www.mass.gov/files/documents/2017/05/bad/iiguidelines517.pdf) for a methodology for estimating the components of wastewater flow.

3. **Mitigation Measures**

   To the extent the proposed interbasin transfer results in impacts that need to be mitigated, the applicant should propose measures that keep water in the wastewater collection basin to mitigate these impacts such as additional I/I reduction, impervious surface remediation, groundwater recharge, or stormwater management programs consistent with MassDEP stormwater guidance.

4. Operation and Maintenance

An Operation and Maintenance plan should be in effect for the wastewater system, completed in accordance with 314 CMR 12.04(1), and should have been developed or updated within the five years prior to submitting an application for Interbasin Transfer.

C. Applicable to all Applicants that do not have control of the water supply system in the Receiving Area(s)

Evaluation of Criterion #3

In all cases where the applicant does not control the water supply system serving the Receiving Area(s), the applicant should work with the water supplier(s) of the Receiving Area(s) to incorporate compliance with the standards in Section III.A. into any agreements between the applicant and supplier(s), to the maximum extent practicable. At a minimum, for any facilities or systems in the Receiving Area that the applicant controls, the applicant must implement all practical water conservation measures that would reduce the volume of water transferred from the donor basin as a result of the proposed project.

IV. Guidance for Criterion #4 – Implementation of a Forestry Management Program

A. Applicable to Water Supply Transfers, Including Receiving Basin Applicants Applying to Join a Regional Water Supply System, and Wastewater Transfers Triggered by the Development of a New Source, when the Receiving Area is served by a surface water source that is under the control of the applicant.

Evaluation of Criterion #4

The applicant must have in place a Forestry Management plan approved by the DCR Service Forestry Program that includes:

- A description of the property, including adequate boundary maps.
- An inventory of its natural features with a special emphasis on the forest resource – forest stand or type maps and a quantitative assessment of forest growth, health and other attributes.
- An inventory of water resources, including reservoirs, inlet and outlet streams, wetlands, and other water bodies.
- An inventory of other important natural features (such as but not limited to rare or threatened species habitat and Areas of Critical Environmental Concern (ACEC)), and an inventory of cultural resources.
- A 10-year plan of action describing proposed activities and their purposes.
- A listing of the forestry best management practices (BMP) to be implemented. See Massachusetts Forestry Best Management Practices Manual available from DCR Division of Forest and Parks https://www.mass.gov/files/documents/2016/08/rk/ma-forestry-bmp-manual-rd.pdf.
- All timber harvesting activities must be carried out under a DCR-approved Forest Cutting Plan as described in 302 CMR 16, the Forest Cutting Practices regulations and be consistent with any other state policies on harvesting.
- If the transfer is approved, the applicant will be expected to submit periodic reports to the WRC of how the plan is being implemented.

V. Guidance for Criterion #5 – Maintain Reasonable Instream Flow

A. Applicable to all types of transfers, except Receiving Basin Applicants Applying to Join a Regional Water Supply System under 313 CMR 4.10.

General

For the WRC to evaluate Criterion #5, the applicant will need to supply information required under 313 CMR 4.09(2)(g)1-5, as applicable. Additionally, because the evaluation of Criterion #5 is dependent on local conditions and circumstances in the donor basin, applicants should consult with WRC staff at DCR's Office of Water Resources as early as possible in the planning process to determine how to address the data and analysis requirements for Criterion #5.

Evaluation of Criterion #5

When determining whether a proposed interbasin transfer leaves a reasonable instream flow, the WRC considers whether the transfer would have an adverse impact on any of the following:

- Flood flows, intermediate flows, low flows, and flow variability in affected rivers and streams, taking into account existing flow alterations where applicable
- Stage, velocity, and sediment regimen of affected surface waters
- Established riparian uses and uses dependent on recharge from streamflow
- Groundwater and surface water elevations
- Indigenous and anadromous/catadromous fisheries and other significant fauna
- Wetlands and dependent flora and fauna
- Water quality
- Recreational uses
- Aesthetic values
- Areas of Critical Environmental Concern (ACEC)
- State-listed species and their habitats protected under the Massachusetts Endangered Species Act
- Marine fisheries
- Eelgrass
- Shellfish beds
- Areas protected under Article 97 of the Amendments to the Massachusetts Constitution
- Hydropower production
- Other water withdrawals and undeveloped water rights within the Donor Basin
- Other instream uses, as applicable

B. Applicable to Wastewater Transfers

Evaluation of Criterion #5

For wastewater transfers, flow evaluated for impact must account for estimated maximum I/I over time, including how I/I losses impact donor basin streamflow or other environmental resources listed under 313 CMR 4.09(3)(e).

VI. Guidance for Criterion #6 – Impacts of Groundwater Withdrawals

A. Applicable to all Transfers Triggered by the Development of a New Groundwater Source

General

For the WRC to evaluate Criterion #6, the applicant will need to supply information required under 313 CMR 4.09(2)(g)3.

Evaluation of Criterion #6

The WRC will evaluate the impact of the proposed new groundwater withdrawals on static water levels and the cone of depression and determine whether the withdrawals will adversely impact adjacent wells, lakes, and pond levels.

VII. Guidance for Criterion #7 – Cumulative Impacts

A. Applicable to All Transfers

The applicant must provide sufficient data to enable the WRC to evaluate whether the effects of the proposed transfer exacerbate the impacts of all past, authorized or proposed transfers on streamflows, groundwater, lakes, ponds, reservoirs or other impoundments in the donor basin and relevant subbasins. This would include analysis of any water supply sources or sewer systems that have been recently developed or approved and therefore not captured by the historic hydrographs, consideration of any water supply sources in the new source approval or Water Management Act permitting processes, sewering plans under development, or any other factors that may affect the water balance in the donor basin.

Appendix A

Interbasin Transfer Act Regulations

Criteria for Evaluation and Approval

313 CMR 4.09(3): *Criteria for Evaluation of Applications for Approval: The Commission shall consider the following criteria in making its Decision to approve a proposed action to increase the Present Rate of Interbasin Transfer.*

(a) Criterion 1 – Compliance with MEPA. That an environmental review pursuant to MEPA, if required, has been complied with for the proposed increase.

(b) Criterion 2 – Viable Sources. That all reasonable efforts have been made to identify and develop all Viable Sources in the Receiving Area of the proposed Interbasin Transfer.

(c) Criterion 3 – Water Conservation. That all practical measures to conserve water have been taken in the Receiving Area, including but not limited to the following:

1. For water supply transfers, and for wastewater transfers triggered by the development of a water supply source:

a. A written water conservation plan that describes how the Person proposing an action to increase the Present Rate of Interbasin Transfer conforms with the most recent version of the Massachusetts Water Conservation Standards, including, at a minimum:

i. The identification of distribution system sources of unaccounted for water. The Person proposing an action to increase the Present Rate of Interbasin Transfer must conform with the Massachusetts Water Conservation Standards for leak detection. Leaks identified as a result of the survey shall be repaired to the greatest extent feasible

ii. Metering of all water users in the Receiving Area and a program of meter maintenance, repair or replacement

iii. Implementation of rate structures that reflect the costs of operation, proper maintenance, proposed capital improvements, and water conservation and that encourage the same

iv. Public information programs to promote water conservation, the use of water conserving devices, and industrial and commercial recycling and reuse

v. Contingency Plans for limiting the use of water during seasonal shortages or droughts

b. Implementation of land use controls to protect existing water supply sources of the Receiving Area that meet the requirements of the Department of Environmental Protection published in 310 CMR 22.20B: Surface Water Supply Protection, 22.20C: Surface Water Supply Protection for New and Expanded Class A Surface Water Sources and 22.21: Ground Water Supply Protection.

2. For wastewater transfers,

a. An active program to reduce sources of inflow and infiltration in the Donor Basin

b. Metering of existing wastewater transfers at location(s) sufficient to document wastewater flows out of basin. Use of regional sewer meters that document wastewater flows out of basin is acceptable where these meters are in place

c. An Operation and Maintenance manual for the wastewater system completed in accordance with 314 CMR 12.04: Maintenance of Treatment Works and Sewer Systems

d. For wastewater transfers where the Person proposing an action to increase the Present Rate of Interbasin Transfer has control over the water supply system, a program for implementing a water conservation program based on the Massachusetts Water Conservation Standards. In cases where the Person proposing an action to increase the Present Rate of Interbasin Transfer does not have control over the water supply system, the Person must have made reasonable efforts to coordinate with the water supplier to implement a water conservation program based on the Massachusetts Water Conservation Standards.

(d) Criterion 4 – Forestry Management Program. For water supply transfers, and for wastewater transfers triggered by the development a water supply source, that a comprehensive forestry management program which balances water yields, wildlife habitat, biodiversity, and natural beauty has been implemented on any watershed lands of surface water sources currently serving the Receiving Area and under control of the Person proposing an action to increase the Present Rate of Interbasin Transfer.

(e) Criterion 5 – Reasonable Instream Flow. That reasonable instream flow in the river from which the water is transferred is maintained. In determining whether reasonable instream flow would be maintained, the Commission shall take into consideration the impact of the proposed action to increase the Present Rate of Interbasin Transfer on the streamflow dependent ecosystems and water uses and the potential to affect instream values as listed in 313 CMR 4.09(2)(g), including:

1. The drainage area of the withdrawal and the distance of the withdrawal point from the nearest surface water body (such as a river, lake, or wetland)

2. Effects on flood flows, intermediate flows and low flows, considering existing flow alteration

3. Effects on groundwater and surface water elevations

4. Effects on stage, velocity, and sediment regimen

5. Significance of indigenous and anadromous fisheries and fauna and effects thereon

6. Significance of wetlands and dependent flora and fauna and effects thereon

7. Effects on water quality, recreational uses, aesthetic values, areas of critical environmental concern, state-listed species and their habitats protected under the Massachusetts Endangered Species Act and regulations, fisheries, eelgrass, shellfish beds and areas protected under Article 97 of the Amendments to the Massachusetts Constitution

8. Effects on established riparian uses and uses dependent on recharge from streamflow

9. Effects on hydropower production

10. Effects on other water withdrawals and undeveloped rights within the Donor Basin

11. Effects on other instream uses

(f) Criterion 6 – Impacts of Groundwater Withdrawals. In the case of groundwater withdrawals, the results of pumping tests will be used to indicate the impact of the proposed withdrawal on static water levels, the cone of depression, the potential impacts on adjacent wells and lake and pond levels, and the potential to affect instream values as listed in 313 CMR 4.09 (2)(g).

(g) Criterion 7 – Cumulative Impacts. The Commission shall consider the cumulative impacts of all past, authorized or proposed transfers on streamflows, groundwater, lakes, ponds, reservoirs or other impoundments in the Donor Basin and relevant subbasins.

APPENDIX B

GUIDANCE ON THE DEVELOPMENT OF RATE STRUCTURES
WHICH ENCOURAGE WATER CONSERVATION

The Interbasin Transfer regulations require applicants to implement a rate structure which reflects the costs of operation, proper maintenance, proposed capital improvements, and water conservation and which encourage the same (313 CMR 4.09(3)(c)1.a.iii).

Guidance Documents:

To help demonstrate that the rate structure encourages conservation while reflecting costs, applicants may refer to:

- *Water Conservation-Oriented Rates: Strategies to Extend Supply, Promote Equity, and Meet Minimum Flow Levels*. Wang et al., American Water Works Association (2005).
- *Building Better Water Rates for an Uncertain World: Balancing Revenue Management, Resource Efficiency, and Fiscal Sustainability.* Alliance for Water Efficiency (2014).
- The Massachusetts *Water Conservation Standards*, Chapter 4 – Pricing
- The American Water Works Association's *Principles of Water Rates, Fees, and Charges* (AWWA M1, most recent edition)
- The American Water Works Association's *Developing Rates for Small Systems* (AWWA M54, most recent edition), if appropriate

Conservation-Oriented Water Pricing Principals:

- Rates should reflect the true cost of delivering safe, reliable, and sustainable water services into the future, including operation, maintenance, capital needs, source protection, debt service, administration, regulatory compliance, and water conservation (i.e. full-cost pricing)
- Rates should send strong price signals that reduce inefficient and discretionary use
- Billing practices should support price signals:
  - Bills should help customers understand the impact of their usage patterns on their charges
  - Bills should be delivered frequently enough to allow customers to adjust their use or investigate possible leaks soon after a sudden increase in metered use; monthly billing is ideal
- Rate structures should incorporate mechanisms to address revenue stability and sufficiency, in the face of reduced demand
- Rates should be easy to interpret, reflect fair distribution of costs, and incorporate affordability protections for water to meet basic needs
- Rates should be reviewed annually and adjusted as needed

Conservation-Oriented Rate Structures:

1) Per-Unit Price Increases

The most common approach to encouraging efficient use of water targets inefficient and discretionary uses with higher per-unit charges. Such rates should:

a) Be based on analysis of customer usage data to reasonably distinguish water being used efficiently for essential purposes from water being used inefficiently, for discretionary purposes, or at times that place a particularly high burden on the system or environment; and
b) Charge a significantly higher per-unit cost for water in the latter categories

The following examples of conservation-oriented rate structures are among the most typical, although this list is not exhaustive, and other innovative approaches can be used to target specific usage categories for conservation. The examples listed here are not mutually exclusive and can potentially be combined.

- Seasonal Rates – Unit charges increase to reflect seasonal peak demands and/or seasonal source stressors. *For seasonal rates, applicants should describe the seasonal triggers for price increases and how they were selected.*
- Tiered Rates – Unit charges increase as a customer's usage crosses set volume thresholds within a billing period. Such thresholds are more effective at encouraging conservation and more equitable when they account for differences in customer type, such as single-family vs. multi-family units, and/or household size. To reduce the administrative burden of determining every household size, a supplier can assign tiers to all single-family residential customers that presume a given household size (such as 4 people) and allow larger households to apply for adjusted tiers based on actual household size. Another approach sets per-household tier thresholds based on each household's average winter water use, and percentages thereof. A simpler approach assigns system-wide residential tiers based on system-wide average winter water use per household, and percentages thereof. There is generally a trade-off between maximizing fairness of a tiered approach and minimizing administrative complexity. Each system must strike a reasonable balance based on its resources and goals. *For tiered rates, applicants should describe the basis for the tier breaks to demonstrate that they reasonably distinguish between water used efficiently for basic needs and water used for discretionary purposes or inefficiently. For multiple tiers, describe the justification for each volume threshold.*
- Drought or Scarcity Rates – Unit charges increase based on drought triggers or other specific indicators of source stress, such as deteriorating water quality, low streamflows or groundwater levels, or decline in reservoir levels. *For drought or scarcity rates, applicants should describe how the indicators that trigger price increases are determined and tracked.*
- Peak Use Rates – Unit charges increase during times the supply system is under the greatest stress from demand. Seasonal rates can be thought of as a version of peak use rates, but peak use rates can be implemented on a much smaller time scale, such as daily peak usage periods. *For peak use rates, applicants should describe how the peak use period is defined and the basis by which it was determined.*

For all the above rate structures, applicants should demonstrate that the price differentials intended to incentivize conservation are substantial. Some suppliers have found price increases of 200% or more effectively reduce use in the tiers targeting the most excessive use or use occurring at the most burdensome times.

2) Uniform Conservation-Oriented Rate

An alternative to rates that target discretionary or inefficient use with higher per-unit charges, but which can still encourage efficiency, are sufficiently high uniform rates. Uniform rates can be conceptually and administratively simple but may present affordability concerns for customers even when they are using water efficiently. If an applicant employs a high uniform water rate to send a conservation signal, mechanisms - such as lifeline rates - should be in place to protect the affordability of water for basic needs for those who may need such protections.

As a benchmark, for any of the above rate structures, staff will evaluate the volumetric charge for the average single-family customer who uses 65 gallons per person per day. This will be ranked among all suppliers whose pricing data was reported in the most recent MA Tighe and Bond Water Rate Survey. A volumetric charge that ranks below the 50th percentile at this level of usage would generally not be considered a strong signal.