



Appendix A

MBTA Title VI

Complaint Form

in English, Spanish,

Chinese, and

Portuguese



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Massachusetts Department of Transportation

Office of Diversity and Civil Rights

Title VI Complaint Form

Title VI of the 1964 Civil Rights Act requires that “No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.” **If you feel you have been discriminated against in transit services, please provide the following information in order to assist us in processing your complaint.**

Name: _____

Address: _____

Telephone Numbers: (Home) _____ (Work) _____ (Cell) _____

Email Address: _____

Do you need documents related to processing this complaint in an Accessible Format?

Large Print _____ Audio tape _____ TDD _____ Other _____

Please indicate why you believe the alleged discrimination occurred:

_____ Race

_____ Color

_____ Gender

_____ National Origin

_____ Income

_____ Disability

_____ Other: _____

Are you filing this complaint on your own behalf?

Yes _____ No _____

If not, please supply the name and relationship of the person for whom you are complaining: _____

Please explain why you have filed for a third party.

Please confirm that you have obtained the permission of the aggrieved party if you are filing on behalf of a third party.

Yes _____ No _____

Have you previously filed a Title VI complaint with MassDOT?

Yes _____ No _____

Have you filed this complaint with any of the following agencies?

_____ Transit Provider

_____ U.S. Department of Transportation

_____ Department of Justice

_____ Equal Employment Opportunity Commission

_____ Other: _____

Have you filed a lawsuit regarding this complaint?

Yes _____ No _____

If yes, please provide a copy of the complaint form.

[Note: However, if your case has gone to court on the same issues, we defer to the decision of the court.]

Name of organization or agency complaint is against:

Contact person: _____ Title: _____

Telephone number: _____

Please describe your complaint. You should include specific details such as names, dates, times, route numbers, witnesses, and any other information that would assist us in our investigation of your allegations. Please also provide any other documentation that is relevant to this complaint.

May we release your identity to the transit provider?

Yes ____ No ____

Please sign here: _____

Date: _____

[Note - We cannot accept your complaint without a signature.]

Please send your completed form to: Title VI Program Coordinator, MassDOT Office of Diversity and Civil Rights, 10 Park Plaza, Suite 3800, Boston, MA 02116 or
MassDOT.civilrights@state.ma.us

**Departamento de Transporte de Massachusetts
Oficina de Derechos Civiles
Formulario de Queja**

El Título VI de la Ley de Derechos Civiles de 1964 declara que “Ninguna persona en Estados Unidos podrá ser excluida de participar o recibir beneficios de cualesquiera programas o actividades que reciban asistencia financiera federal, o estar sujeta a discriminación en el curso de los mismos, por motivos de raza, color o nacionalidad”.

Si siente que ha sido víctima de discriminación en un servicio de tránsito, por favor complete la información solicitada a continuación para ayudarnos a procesar su queja.

Sección I

Nombre: _____

Dirección: _____

Números telefónicos:

(Hogar) _____ (Trabajo) _____

Correo electrónico: _____

¿Necesita algún formato de fácil acceso?

Letra grande _____ Cinta de audio _____

TDD _____ Otro _____

Por favor escriba por qué razón cree que ocurrió el presunto incidente de discriminación:

_____ Raza

_____ Color

_____ Género

_____ País de origen

_____ Ingresos

_____ Discapacidad

_____ Otra

Sección II

¿Está presentando esta queja a nombre propio?

Sí _____ No _____

[Si contestó “sí” a esta pregunta, vaya por favor a la Sección III.]

Si no, por favor escriba el nombre de la persona a cuyo nombre está presentando la queja y diga qué relación o parentesco tiene con Vd.:

Por favor explique por qué está presentando una queja a nombre de otra persona: _____

Si está presentando la queja a nombre de otra persona, por favor confirme que esta persona le ha dado su autorización para hacerlo.

Sí _____ No _____

Sección III

¿Ha presentado alguna queja de Título VI al MassDOT anteriormente? Sí _____ No _____

¿Ha presentado esta queja a alguna de las siguientes agencias?

Proveedor de Tránsito _____ Departamento de Transporte de EE.UU. _____

Departamento de Justicia _____ Comisión de Igualdad de Oportunidades Laborales _____

Otra _____

¿Ha entablado una demanda o litigio en relación con esta queja? Sí _____ No _____

Si lo hizo, por favor incluya una copia del formulario de queja.

[Nota: Sin embargo, si su caso ha pasado a un tribunal judicial por las mismas razones, el MassDOT habrá de atenerse a la decisión tomada en la corte.]

Sección IV

Nombre de la organización o agencia en contra de la cual está presentando esta queja:

Persona de contacto: _____ Título: _____

Número telefónico: _____

Por favor describa su queja. Incluya detalles concretos tales como nombres, fechas, números de ruta, testigos y cualquier otra información que pudiera ayudarnos a investigar sus acusaciones. Por favor también incluya cualquier documentación que pudiera ser pertinente a la presente queja.

Sección V

¿Podemos revelar su identidad al proveedor de servicios de tránsito?

Sí _____ No _____

Por favor firme aquí: _____

Fecha: _____

[Nota: No podemos aceptar quejas que no estén firmadas.]

Por favor envíe el formulario diligenciado a: Coordinador del Programa de Título VI, Oficina de Derechos Civiles del MassDOT, 10 Park Plaza, Suite 3170, Boston, MA 02116 o a la dirección MassDOT.civilrights@state.ma.us

Departamento de Transporte de Massachusetts
Escritório de Direitos Civis
Formulário de Reclamação

O Título VI do Ato de Direitos Civis de 1964 (Title VI of the 1964 Civil Rights Act) exige que “Ninguém nos Estados Unidos, por motivo de raça, cor, ou origem nacional, seja excluído da participação ou que lhe sejam negados benefícios ou sujeito à discriminação sob qualquer programa ou atividade que receba assistência financeira federal.” **Se você sente que foi vítima de discriminação pelos serviços de transporte, por favor, forneça as seguintes informações para nos auxiliar a processar sua reclamação.**

Seção I

Nome: _____

Endereço: _____

Números de Telefone:

(Residência) _____ (Trabalho) _____

Endereço de Email: _____

Você precisa de um Formato Acessível?

Letras grandes _____ Fita de áudio _____

TDD (conversor de texto para deficientes auditivos) _____ Outro _____

Por favor, indique o motivo pelo qual você acredita que a discriminação alegada ocorreu:

_____ Raça

_____ Cor

_____ Sexo

_____ Origem Nacional

_____ Renda

_____ Deficiência

_____ Outro

Seção II

Você está registrando esta reclamação em seu próprio nome?

Sim ___ Não ___

[Se você respondeu "sim" a esta questão, vá para a Seção III.]

Em caso negativo, por favor, informe o nome e relação que tem com a pessoa pela qual está reclamando:

Por favor, explique o motivo pelo qual está registrando a reclamação por terceiros. _____

Por favor, confirme se você obteve a permissão da parte ofendida se estiver registrando a reclamação em lugar de terceiros.

Sim ___ Não ___

Seção III

Você já registrou alguma reclamação de Título VI com o MassDOT? Sim _____ Não _____

Você registrou esta reclamação com quaisquer das seguintes agências?

Provedor de Transporte _____ Departamento de Transporte dos EUA _____

Departamento de Justiça _____ Comissão de Oportunidades Iguais de Emprego _____

Outra _____

Você abriu um processo ou ação relacionada a esta reclamação? Sim ___ Não ___

Caso afirmativo, por favor, forneça uma cópia do formulário de reclamação.

[Nota: Se o seu caso foi julgado pelo mesmo problema, nos submetemos à decisão da corte de justiça.]

Seção IV

Nome da organização ou agência contra a qual está sendo registrada a reclamação:

Contato: _____ Cargo: _____

Número de telefone: _____

Por favor, descreva sua reclamação. Você deve incluir detalhes específicos tais como nomes, datas, horários, números de trajetos, testemunhas e quaisquer outras informações que possam nos ajudar em nossa investigação de suas alegações. Por favor, forneça também qualquer outra documentação que seja relevante a esta reclamação.

Seção V

Podemos informar sua identidade ao provedor de transporte?

Sim ___ Não ___

Por favor, assine aqui: _____

Data: _____

[Nota – Não podemos aceitar sua reclamação sem a assinatura.]

Por favor, envie o formulário preenchido a: Title VI Program Coordinator, MassDOT Office of Civil Rights, 10 Park Plaza, Suite 3170, Boston, MA 02116 ou por email a MassDOT.civilrights@state.ma.us

麻薩諸塞州運輸部
民權辦公室
投訴表格

根據1964《公民權利法》第六章之規定：“美國境內一切接收聯邦政府財政撥款之項目或活動人人平等，無因種族、膚色、民族本源之差別而遭受歧視、被剝奪參與權或被剝奪相關受益權。”如果您在本州交通領域感到已受歧視，請提供以下資訊，以協助我們處理投訴。

第一部分

姓名： _____

地址： _____

電話號碼：（住宅）_____（辦公室）_____

電郵地址： _____

您是否需要其他更便於您使用的表格形式？

字體放大 _____

錄音帶 _____

助聽設備 _____

其他 _____

請說明您認為被歧視的原因：

_____ 種族

_____ 膚色

_____ 性別

_____ 民族本源

_____ 收入

_____ 身心障礙

_____ 其它

第二部分

您是否為當事人？

是_____ 否_____

[如果您的回答“是”，請跳至第三部分]

如果您是當事人的代理人，請提供當事人的姓名以及你們的關係：

請簡釋你代理當事人的理由： _____

如果您代理當事人，請確認您已獲得當事人的授權許可。

是_____ 否 _____

第三部分

您以前是否向麻省交通局提起過第六章權利投訴？是_____ 否 _____

您是否已就本次事由向以下機構提起投訴？

涉事交通業務提供商 _____ 美國運輸部 _____

律政司 _____ 平等就業機會委員會 _____

其它 _____

您是否就本次投訴事項向法院提起訴訟？是 _____ 否 _____

如果您已經提出訴訟，請提供投訴表格副本。

[注：如果您的投訴已在法院立案，我們遵從法院的判決。]

第四部分

涉事機構/組織的名稱：

連絡人：_____ 名銜： _____

電話號碼： _____

請您填寫投訴內容。內容應包括具體的細節問題，如名稱（姓名）、日期、時間、路由編號、證人、和任何其他資訊，以便我們核查您的指控。如有與之相關的材料證據，請您一併提供。

第五部分

我們是否可以向涉事交通業務提供商透露您的真實身份？

是 _____ 否 _____

請在此簽名： _____

日期： _____

[注：如無您的簽字我們不能接受您的投訴。]

請將您填寫的表格寄送至：**Title VI Program Coordinator, MassDOT Office of Civil Rights, 10 Park Plaza, Suite 3170, Boston, MA 02116** 或電郵至：**MassDOT.civilrights@state.ma.us**



Appendix B

MassDOT

Memorandum on
ADA Complaints



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Deval L. Patrick, Governor
Timothy P. Murray, Lt. Governor
Richard A. Davey, Secretary & CEO

massDOT
Massachusetts Department of Transportation

Memo

To: Eddie J. Jenkins, Chief Diversity & Civil Rights Officer
From: John Lozada, Manager of Federal Programs
Date: 02/16/12
Re: Disability and Title VI Complaint Coordination with Rail & Transit Division,
Regional Transit Authorities and the Federal Transit Administration

This memorandum provides an outline of MassDOT's responsibility for investigations regarding Regional Transit Authority (RTA) related civil rights complaints and how that effort is coordinated with the Federal Transit Administration (FTA) and the RTAs. The analysis will focus on complaint handling authority, although MassDOT's broader civil rights oversight responsibility for Title VI is referenced, to illustrate some of the confusion that has existed in this area. Also considered are factors for building the resource and coordination for complaint handling. This focus is specific to complaint matters that would arise concerning the RTAs, where there has been the most significant lack of clarity in terms of roles and responsibilities. This memo does not reach MassDOT's civil rights relationship to the Metropolitan Planning Organizations (MPO), although MassDOT is clearly the primary recipient as all of the MPOs and smaller subrecipients, and is primarily responsible for securing civil rights compliance from each of these entities.

Short Summary of Facts and Analysis

The relationship between MassDOT and the RTAs is set forth by state and federal statutory and regulatory provisions, creating oversight responsibility that includes civil rights complaint investigations. The structure for complaint handling has been weak due to several factors: MassDOT has not had a fully staffed Rail & Transit Division, the lack of a State Management Plan with a well developed strategy on civil rights matters that is in part linked to the Rail & Transit staffing issue, and prior limitations in staffing and oversight within MassDOT's Office of Civil Rights. Nonetheless, efforts have been underway to build up program management within the Rail & Transit Division, restate a more comprehensive State Management Plan and coordinate civil rights activities between Civil Rights and Rail & Transit on civil rights matters.

MassDOT role in providing civil rights oversight to RTAs is based on its receipt of federal funding and regulatory grant oversight obligations, although the FTA also has oversight responsibilities regarding civil rights and the RTAs. This dual responsibility has been confusing in the past based on the different levels of accountability among non-rural RTAs to MassDOT and the FTA. The FTA has an obligation to provide direct oversight

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 617-248-2880, TDD: 617-973-7306
www.mass.gov/massdot

of funds it grants directly to the RTAs, including with regard to complaint matters, but MassDOT is also obligated to provide civil rights oversight of the RTAs based on its status as a designated recipient of federal funds. The non-rural RTAs in turn have an obligation to provide a structure for addressing civil rights complaints which is reviewed and approved by the FTA, and MassDOT reviews the rural RTA's mandated civil rights program requirements. Complainants are able to file grievances with the FTA, MassDOT or individual RTAs on civil rights matters. On complaints filed with MassDOT, there is a practice of contacting the FTA to confirm the appropriateness of complaint handling on non-rural RTA matters, similar to a protocol established by the Federal Highway Administration (FHWA). This is not a written requirement, but a practical way to address jurisdictional considerations to limit conflict with the other agencies.

Beyond Civil Rights unit resources, and those of the FTA, there are potential investigative capacities within the RTAs and the Rail & Transit Division that MassDOT could utilize to handle complaints. If a structure were developed to rely on Rail & Transit resources for investigations, there would be training, capacity and support needs to address, although the Civil Rights unit would have to be in control of that staff person's activities on complaints. Regardless of the structure for complaint handling, it would remain practical to check in with the FTA in complaint matters. Civil rights oversight responsibilities, including with regard to complaint investigations, should be spelled out in the MassDOT State Management Plan required for RTA program management.

Law, Facts and Analysis

1) *How the RTA, MassDOT and FTA relationships are structured – Law and Regulation*

The Regional Transit Authorities are established as a political subdivision of the Commonwealth pursuant to M.G. L. c. 161B and as approved by majority vote of the legislative body of the combination of cities and towns. The affairs of each authority are managed by an administrator who is appointed by, and serves at the pleasure of, the advisory board of the authority. The authority holds and manages the mass transportation facilities and equipment it acquires. There are 15 RTAs in Massachusetts, of which three are identified as operating completely in non-urbanized areas, and referenced to as rural RTAs. Both MassDOT and the RTAs are empowered to take such actions and carry out such responsibilities as are related to the receipt of federal aid.

Each authority is authorized and directed from time to time to take all necessary action to secure any federal assistance which is or may become available to the commonwealth or any of its subdivisions for any of the purposes of this chapter. If any federal law, administrative regulation or practice requires any action relating to such federal assistance to be taken by any department or instrumentality of the commonwealth other than the authority such other department or instrumentality is authorized and directed to take all such action, including without limitation filing applications for assistance, supervising the expenditure of federal grants or loans and making any determinations and certifications necessary or appropriate to the foregoing, and the authority is authorized and directed to take all action necessary to permit such other department or instrumentality to comply with all federal requirements. M.G.L. c. 161B, Sc. 22

At the federal level, there are different grants available to RTAs, some administered by the FTA directly (relying on MassDOT to pass-through funds), and others which MassDOT administers directly, including those under 49 U.S.C. §§ 5310 (elderly

individuals and individuals with disabilities program), 5311 (Non-urbanized Area Formula Program), 5316, Job Access and Reverse Commute (JARC) and 5317 (New Freedom Program). The FTA has responsibility for national implementation of these and other funding programs, including the granting of federal aid to the RTAs under 49 U.S.C. §§ 5307 (Urbanized Area Formula Funding program) which is financially more substantial than the grants administered by MassDOT. Of the fifteen RTAs only the three rural RTAs do not receive §5307 funds, including the Martha's Vineyard, Nantucket and Franklin RTAs, all of which receive funding that MassDOT administers. MassDOT is considered a direct recipient of federal financial assistance for purposes of civil rights oversight responsibility, and has primary oversight over the three rural agencies pursuant to FTA regulatory provisions. See, Circular 4702.1A, Title VI and Title VI-Dependent Guidelines for Federal Transit Administration Recipients, Chapter VI (note that there is a revision to this Circular pending, for which public comment is currently being evaluated).

2) *Civil Rights Accountability Structure*

On complaints concerning disability related matters, the nondiscrimination provisions under 49 C.F.R. Part 27 set forth MassDOT's obligation, as a recipient, to assure that "the program or activity will be conducted or the facility operated in compliance with all the requirements imposed by or pursuant to this part. 49 C.F.R. § 27.9(a). MassDOT's obligations include the designation of a responsible person to carry out the obligations, providing notice to the public and establishing procedures to resolve grievances related to the requirements. 49 C.F.R. §§ 27.13 and 15. These provisions are related to the requirements for Title VI oversight, which are found in FTA Circular 4702.1A and 49 C.F.R. Part 21.

The question of funding and MassDOT's accountability for civil rights program implementation, including complaint investigation, has been confusing in the past as related to RTA civil rights reporting and the Title VI program. The essence of the confusion stems from the different reporting obligations between the rural and non-rural RTAs. Despite the fact that non-rural RTAs report directly to FTA, MassDOT maintains a broad obligation to provide resources and address civil rights complaints, as does the FTA, 49 C.F.R. § Sec. 27.123. To date, there have been no written protocols to identify how to decide or when MassDOT or the FTA should take the lead on an investigative matter.

In practice, however, FTA will refer a matter to MassDOT to address, or MassDOT will apprise the FTA of a matter to determine whether the FTA is interested in handling the complaint or if MassDOT should handle the matter. In 2011, for example, MassDOT took a deep look into the activities within the Southeastern Regional Transit Authority (SRTA) in light of MassDOT concerns and FTA triennial audit findings noting deficiencies on multiple levels, including with respect to civil rights matters. SRTA is directly accountable to the FTA under the funding scheme and regulations. The approach for checking in with the FTA is consistent with the way the FHWA structures the handling of ADA complaint matters, set forth in a memorandum to FHWA Division Directors on the handling of Title VI and ADA complaints. See, [MassDOT Civil rights\ADA\FHWA\policy\Attachment - Memorandum - Office of Civil Rights - FHWA.mht](#). There was recently some clarification of the reporting obligation in the proposed restatement of FTA Circular C 4702.1A on

Title VI obligations for FTA recipients. In the Title VI arena, for example, the regulation will not clearly state that where MassDOT is effectively a pass through of funds to an RTA that is a “direct recipient” of funds through the FTA, the RTA has no reporting oversight obligation to the State Transportation Agency (STA). It must be noted that even where there the FTA would directly investigate a matter as to a particular RTA, MassDOT still has state level civil rights obligations that may require MassDOT to independently investigate a matter, including, but not limited to M.G.L. 151b and Executive Order 526.

Regardless of the interplay between the agencies, for FTA Disability complaints and Title VI complaint purposes, an aggrieved person may file a matter with an RTA, MassDOT or the FTA, each of which have the obligation to address grievances. Given the evident concern about agencies potentially investigating themselves that the conflicts that could result, it is critical that a system of communication between the respective agencies be articulated and maintained.

3) *Practical Operational Considerations on Rail & Transit Investigations*

The Rail & Transit Division (RTD), led by Acting Division Administrator Jonathan Davis, is the entity designated to administer MassDOT’s FTA related grant programs. This Division is led by John Englert (who will resign from MassDOT, effective February 2012), and includes a Community Transit Programs Unit (CTP), which oversees the FTA programs that support the RTAs, among other subrecipients that include small grantees. The CTP also has responsibility for managing the Commonwealth’s capital funding programs for all fifteen RTAs and providing technical assistance on a range of matters, as well as providing fiscal administration services. The CTP is supported by various MassDOT Enterprise Services offices, including Budget, Fiscal, Human Resources, Civil Rights and the Office of Transportation Planning. Currently, there are two staff members within MassDOT Civil Rights who are partially funded through the FTA, to provide civil rights support relating to the FTA programs, but others within MassDOT could be assigned. FTA administrative support funding could be secured to provide assistance, for such civil rights program needs as exist, including with respect to investigations.

In coordinating MassDOT civil rights oversight regarding the RTAs, there has been discussion about Rail & Transit employing two program managers to provide on the ground assistance with program management. It was considered that one of the managers might be linked to Civil Rights to address civil rights requirements, to ensure congruity and support from the Civil Rights unit. Under such a relationship, the Civil Rights unit should supervise those civil rights activities of a staff person from the Rail & Transit division that would normally be a Civil Rights responsibility under 49 C.F.R. §§ 27.13 and 15. To date, Rail & Transit has hired one program manager, who has participated in discussions on Rail & Transit Title VI Program development. The question of whether that manager could investigate complaints has not been addressed. It is not certain when or if the second program manager position will be filled, and what supervision, training or other support from Civil Rights would be required to enable complaint handling by this manager. When the structure of any civil rights complaint administration within Rail & Transit is addressed, the redraft of the State Management Plan must include the method MassDOT will use for this civil rights oversight.

Conclusion

The development of the Rail & Transit Division is adding structure and depth to the relationship between the RTAs and MassDOT, while demonstrating to the non-rural RTAs that MassDOT's Civil Rights and Rail & Transit Divisions are resources beyond the funding relationship that has served as the primary focus of attention. This issue of building the RTA-MassDOT relationship is a focal component of the Beyond Boston transit study that is underway, which MassDOT Civil Rights sits on as a working group member.

Although there is no written FTA structure for determining which agency should handle complaints, MassDOT should reasonably check in with the FTA and the RTAs on non-rural RTA complaints to ensure there is no FTA interest in directly investigating a particular matter. This approach is consonant with the FHWA's approach to ADA complaints and allows for MassDOT to coordinate well with the FTA, including as to the possibility of referring particular matters for investigation by an RTA. If the Rail & Transit Division has sufficient staff resources, and supervision by Civil Rights on civil rights activities could be worked out, it would be helpful since the Rail & Transit Division has recurring business with all of the RTAs. It will also be important for MassDOT to develop a better understanding of the capabilities among the non-rural RTAs to address complaint matters.

Ultimately, the management structure for civil rights oversight, including investigations, must be spelled out in the State Management Plan for MassDOT, which remains pending a final draft, and was the subject of a deficiency finding from the FTA in both its 2010 State Management Review and its 2011 Title VI audit. We received an e-mail this week from the Rail & Transit Division program manager that the revised State Management Plan will be forwarded to MassDOT Civil Rights next week for review, comment and inclusion, after any needed revision, into MassDOT's Title VI Plan for Rail & Transit.



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Appendix C

MBTA Public

Participation Plan



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4/4/2014 Draft

Massachusetts Bay Transportation Authority

PUBLIC PARTICIPATION PLAN



Massachusetts Bay Transportation Authority

Driven by Customer Service

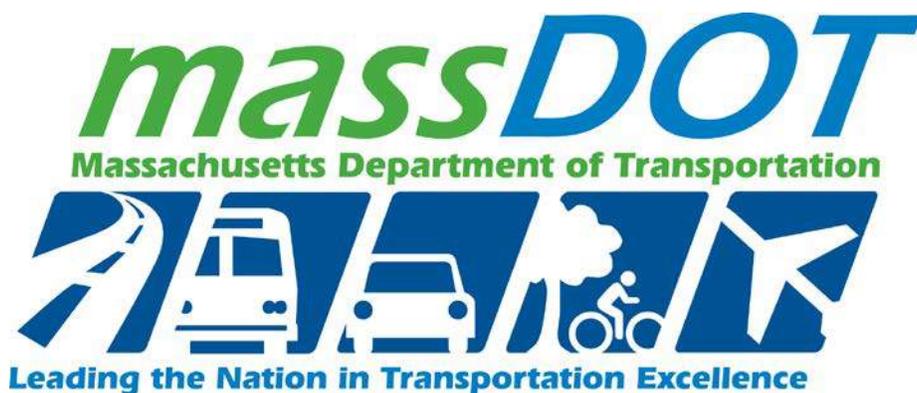


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1 INTRODUCTION

In accordance with state and federal law requirements¹, and to ensure inclusive and accessible public engagement processes for transportation decision making, the Massachusetts Bay Transportation Authority (MBTA) as a component of the Massachusetts Department of Transportation (MassDOT/MBTA) has developed this Public Participation Plan (PPP). This Plan serves to guide agency public participation efforts, including populations that have been underserved by the transportation system and/or have lacked access to the decision-making process. This Plan guides MassDOT/MBTA in its efforts to offer early, continuous, and meaningful opportunities for the public to help identify social, economic, and environmental impacts of proposed transportation policies, projects and initiatives across MassDOT/MBTA.

The Plan is based on federal and state requirements for encouraging and ensuring community participation. It describes MassDOT/MBTA's overall goals, guiding principles, and strategic approach to achieving stated objectives. The Plan also defines how MassDOT/MBTA incorporates public participation into its transportation decision-making processes, and how the agency ensures access for people with disabilities and the inclusion of low income and minority stakeholders. Specifically, the Plan states the methods that MassDOT/MBTA will use to reach out to persons who are low-income, minority, Limited English Proficient (LEP), or have a disability, and other traditionally underrepresented populations. Because different transportation decisions to be made require different techniques for reaching the public, this Plan provides a toolbox of techniques to be applied, as appropriate, to achieve effective participation.

This Plan is a living document which will change and grow to help MassDOT/MBTA deepen and sustain its work to engage diverse community members throughout the state. Therefore, MassDOT/MBTA will modify its public participation methods and activities over time, based on ideas and feedback from community members and MassDOT/MBTA's evaluation of our public participation effectiveness.

The Plan was developed through a collaborative effort between the MassDOT/MBTA Highway Division, the Rail and Transit Division (including the Massachusetts Bay Transportation Authority's Systemwide Accessibility Department), the Office of Transportation Planning and the Office of Diversity and Civil Rights. It is intended as a document that will govern MassDOT/MBTA's public

¹ The federal and state statutory and regulatory requirements are included at Attachment 1.

participation activities, but also serve as a useful guide for the metropolitan planning organizations and cities and towns MassDOT/MBTA works with, as well as for the consultants we contract with for public engagement support. The Plan also empower the public through its clear definition of how MassDOT/MBTA conducts its public participation activities, and sets a standard for our public facing departments, including managers and staff, to achieve. This Plan is not intended to be applied in a wooden manner, meaning that there may be occasions where the facts or circumstances may not allow for absolute compliance with the protocols and policies stated, but that we will make every effort to meet the standards we have set. Also, it is important to note that some areas within MassDOT/MBTA have pre-existing and approved policies for public engagement that are unique to the functions they carry out or the targeted audiences served, and in such instances (for example, Disadvantaged Business Enterprise goal setting), there may be departures from this Plan that are legitimate and reasonable.

In order for this Plan to take full effect, MassDOT/MBTA requires and will seek public comment, and make such changes and improvements on this Plan and related protocols and policies as will improve our ability to provide an equal opportunity for public input in our transportation decision making processes.

1.1 MassDOT/MBTA's Structure, Mission and Values

The MBTA is a separate legal entity but exists within the organizational structure of MassDOT. The MBTA operates within the Rail and Transit subdivision of the MassDOT structure.

- The Rail and Transit Division is responsible for overseeing, coordinating, and planning all transit and rail matters throughout the commonwealth. The division administers and manages the freight and rail programs of the department and the intercity bus capital assistance program, and oversees the Massachusetts Bay Transportation Authority (MBTA) and all regional transit authorities in the Commonwealth. The MassDOT/MBTA Board of Directors serves as the governing body of the MBTA.

MassDOT/MBTA's mission is to deliver excellent customer service to people who travel in the Commonwealth and to provide our nation's safest and most reliable transportation system in a way

that strengthens the Commonwealth's economy and quality of life. MassDOT/MBTA embraces the following values:

1. **Dedication:** We will provide service around the clock and under all circumstances.
2. **Respect:** We will treat the public as our valued customer, and treat one another as we would like to be treated.
3. **Innovation:** We will improve and integrate transportation services using creative thinking and the best available practices and technology, while minimizing disruption to the public.
4. **Diversity:** We will promote an inclusive workforce and a culture that serves employees and customers fairly.
5. **Honesty:** We will provide the public with accurate information that is understandable and accessible.

1.2 MassDOT/MBTA's Public Participation Goals

MassDOT/MBTA has the following public participation goals which agency representatives and those working in concert with MassDOT/MBTA on transportation projects and initiatives should strive to achieve:

1. *Obtain Quality Input and Participation*

Comments received by MassDOT/MBTA are to be encouraged and reviewed to the extent they can be useful, relevant, and constructive, and contribute to better plans, projects, programs, and decisions.

2. *Establish Consistent Commitment*

MassDOT/MBTA strives to communicate regularly and develop trust with communities, while helping build community capacity to provide public input, as needed.

3. *Increase Diversity*

Participants who are encouraged to participate in public engagement processes should represent, as appropriate to a project or those impacted, a range of socioeconomic, ethnic, and cultural perspectives and include people from low-income and minority neighborhoods, people with limited English proficiency, and other traditionally underserved people.

4. *Ensure Accessibility*

Every effort should be made to ensure that participation opportunities are physically, geographically, temporally, linguistically and culturally accessible.

5. *Provide Relevance*

Issues are framed clearly and simply such that the significance and potential effect may be understood by the greatest number of participants.

6. *Foster Participant Satisfaction*

MassDOT/MBTA should encourage the public to participate in project and initiative related discussions, recognizing that people who take the time to participate feel it is worth the effort to join the discussion and provide feedback.

7. *Clearly Define Potential for Influence*

The process clearly identifies and communicates where and how participants can have influence and direct impact on decision making.

8. *Establish and Maintain Partnerships*

MassDOT/MBTA develops and maintains partnerships with communities and community-based organizations through the activities described in the PPP.

9. *Provide Opportunities to Build Consensus*

MassDOT/MBTA should ensure that discussions, particularly where there are conflicting views, are structured to allow for levels of compromise and consensus that will satisfy the greatest number of community concerns and objectives. MassDOT/MBTA recognizes that processes which allow for consensus to be achieved is critical to enable public support for recommended actions.

1.3 Guiding Principles for Public Participation at MassDOT/MBTA

To help MassDOT/MBTA achieve its goals for public participation, the following principles have been adopted:

1. *Promote Respect*

All transportation constituents and the views they promote should be respected. All feedback received should be given careful and respectful consideration. Members of the public should have opportunities to debate issues, frame alternative solutions, and affect final decisions.

2. *Provide Proactive and Timely Opportunities for Involvement*

Avenues for involvement should be open, meaningful, and organized to let people participate comfortably, taking into consideration accessibility, language, scheduling, location and the format of informational materials. Meetings should be structured to allow informed, constructive dialogue, be promoted broadly and affirmatively; and be clearly defined in the early stages of plan or project development. Participation activities should allow for early involvement and be ongoing and proactive, so participants can have a fair opportunity to influence MassDOT/MBTA decisions.

3. *Offer Authentic and Meaningful Participation*

MassDOT/MBTA should support public participation as a dynamic and meaningful activity that requires teamwork and commitment at all levels. Public processes should provide participants with purposeful involvement, allowing useful feedback and guidance. Participants should be encouraged to understand and speak with awareness of the many competing interests, issues, and needs that lead to transportation ideas and projects.

4. *Provide a Clear, Focused, and Predictable Process*

The participation process should be understandable and known well in advance. This clarity should be structured to allow members of the public and officials to plan their time and use their resources to provide input effectively. Activities should have a clear purpose, the intended use of input received made clear, and all explanations described in language that is easy to understand.

5. *Foster Diversity and Inclusiveness*

MassDOT/MBTA should proactively reach out to and engage people with disabilities, as well as low-income, minority, limited English proficient disabled and other traditionally underserved populations.

6. *Be Responsive to Participants*

MassDOT/MBTA meetings should facilitate discussion addresses participants interests and concerns. Scheduling should be designed to meet the greatest number of participants possible and be considerate of their schedules and availability. Informational materials provided should be clear, concise and responsive to known community concerns, while avoiding misleading or biased suggestions or solutions.

7. Record, Share and Respond to Public Comments ***

Public comments, written and verbal, should be given consideration in MassDOT/MBTA decision making processes and reported in relevant documents. Specifically, public comments provide an opportunity for shared knowledge among MassDOT/MBTA departments and transportation partners, but also require clear responses that are documented to demonstrate that community input was in fact addressed. MassDOT/MBTA should communicate the impact of the public input on decisions at a broad summary level, describing the major themes, the decisions reached, and the rationales for the decisions.

8. *Self-evaluation and Plan Modification*

The effectiveness of this Plan will be reviewed periodically to ensure it meets the needs of the public, and will be revised to include new strategies and approaches.

2. MassDOT/MBTA'S APPROACH TO PUBLIC PARTICIPATION

Transportation decision making and project development processes are regulated and follow set procedures, including the need to give the public opportunities to participate. These public involvement objectives are further shaped by MassDOT/MBTA's commitment to civil rights related obligations, such as removal of barriers to participation, diversity, and inclusive outreach. This Public Participation Plan describes participation opportunities generally and includes specific protocols and resources that are designed to facilitate diverse and inclusive public outreach and involvement. The plan is a flexible and evolving document. As necessary, MassDOT/MBTA will revise the PPP based on recurring assessments of successes and/or challenges associated with outreach, as well as suggestions made and the results of public engagement processes.

In this chapter, a general description of MassDOT/MBTA's public participation activities is presented. Chapter 3 contains the specific civil rights protocols utilized by MassDOT/MBTA for all public outreach activities, categorized by types of communication formats, including large group discussions targeted group engagement and one-on-one interactions. Chapter 3 also contains the MassDOT/MBTA Accessible Meeting Policy. Our view is that if these objectives and standards are consistently applied to the different types of public meetings MassDOT/MBTA convenes or participates in, the resulting discussions and resolution of issues will be inclusive and accessible to all.

In the subsequent chapters, specific opportunities to participate are described in the context of the development of:

- Fare Changes
- Service Planning and Operations
- Capital Project Development and Design

These outreach described for these specific activities should be read in concert with the civil rights protocols set forth in Chapter 3, as they are both congruent with and structured to facilitate inclusion in all MassDOT/MBTA public participation efforts.

In addition, relevant federal policy guidance, principles and techniques are referenced that enhance the potential for successful public participation processes. These ideas are derived from the U.S. DOT– sponsored guidance for systematically setting up and implementing a public

participation program for a specific plan, program, or project. See Appendix 2, U.S. DOT Guidance, *Public Involvement Techniques for Transportation Decision-Making*.

2.2 Public Participation Techniques

MassDOT/MBTA takes pride in its work to maintain a collaborative relationship with community and municipal stakeholders and has strategically developed this Public Participation Plan to foster collaboration in an all-inclusive manner. The MassDOT/MBTA public outreach effort rests on utilizing multiple communication channels to distribute information to and solicit input from affected constituencies. MassDOT/MBTA typically communicates with the general public through one or more of the following methods:

- MassDOT/MBTA website
- Public Media (including local minority and non-English newspapers, radio stations, and television stations)
- Press releases
- Posters, display boards, and flyers
- Project fact sheets
- Brochures
- Newsletters
- Public service announcements
- Mailing and email lists
- Information stands at local events
- Social media tools, including Twitter, the blog, Flickr, YouTube, email distribution lists, and other new media venues
- Legislative briefings
- Presentations, public meetings, public hearings, open houses, and workshops
- Civic advisory committees and working groups

MassDOT/MBTA Website Specifics:

Many people use the Internet as their main source of data and information. The MassDOT/MBTA website is a comprehensive resource for people wanting information about MassDOT/MBTA programs, projects, and activities. Public notices of all MassDOT/MBTA meetings, public hearings, and public comment periods are posted on this site, along with information about MassDOT/MBTA programs, projects, and activities. Some programs and projects have dedicated web pages on the MassDOT/MBTA website that include:

- Information about upcoming meetings
- Project presentations and fact sheets
- Summary notes for meetings/workshops on the project
- A way to be added to the project's electronic distribution list

Project websites are important tools for people who cannot attend meetings. Members of the public can review presentations and meeting summaries and provide comments through emails and letters to the project team. People with disabilities that limit their ability to attend meetings can also review project information and provide comments on the website, and thereby have an alternative to physically attending a meeting.

Meeting Notice Content and Distribution:

MassDOT/MBTA announces all meetings, public hearings, open houses, workshops, and public comment periods through press releases, mailings, and/or the distribution of informational meeting flyers as well as placing meeting information on the MassDOT/MBTA website. Notices are published in local English newspapers, and if the project has an impact on low income or minority populations, an effort is made to place notices in media that serves local, minority and non-English communities in regions across the Commonwealth. In the greater Boston area, such publications include *El Mundo*, *El Planeta*, *Vocero Hispano*, *Mattapan Reporter*, *Haitian Reporter*, *Sampan*, and *The Bay State Banner*. Meeting notices will include information about getting to a meeting location using public transportation, when transit is available. MassDOT/MBTA notices also let people know they can request foreign language assistance, and that sign-language interpreters and other accommodations are available on request for people with disabilities (with timely notification). There is also information that lets people know who they can contact with questions or concerns. The information for these meetings and the informational materials provided at the meetings are translated into languages other than English, as needed.

2.2.1 Public Meetings, Open Houses, and Workshops

1) Public Meetings

Public meetings are held to present information to the public and obtain input from community residents. Meetings provide a time and place for face-to-face contact and two-way communication. They are generally tailored to specific issues or community groups and can be either informal or formal. Public meetings are used to disseminate information, provide a setting for public discussion, and receive feedback from the community.

2) Open Houses

Open houses are informal settings where people can obtain information about a plan, program, or project. They do not have formal agendas, and no formal discussions or presentations take place. At open houses, people receive information informally from exhibits and staff, and they are encouraged to give opinions, make comments, and state preferences to staff, orally or in writing. Informal presentations, slide shows, and one-on-one discussions take place continuously throughout the event, which usually includes a series of stations: a reception area; a presentation area for slide shows or short talks; areas for one-on-one discussions between community people and agency staff members; and displays of background information, activities to date, work flow, and anticipated next steps, accompanied by an array of primary subject panels. Since there is no fixed agenda, open houses are usually scheduled for substantial portions of a day or evening, so that people can drop in at their convenience and fully participate.

Note that Open Houses often involve one-on-one discussion of issues or concerns between meeting participants and project engineers or other MassDOT/MBTA representatives. The content and nature of these informal exchanges is not easily captured in documents such as meeting summaries or notes. Thus, those MassDOT/MBTA representatives that have such an exchange are instructed to relay the content to the Project Manager so that these issues are catalogued and tracked, as needed.

3) Workshops

Workshops are organized around a particular topic or activity and typically involve a relatively small group of people who want to participate intensively. These events are usually one to three hours in duration, and small groups work on a specific agenda. MassDOT/MBTA staff members provide

information, answer questions, and participate as individuals in workshops. Workshops are inherently participatory and encourage a “working together” atmosphere.

2.2.2 Public Hearings

A public hearing is more formal than a public meeting. The public hearing is an opportunity for members of the public to make recorded statements of their views immediately before project decision making and, in the case of an environmental impact statement (EIS), preparation of the final environmental impact statement (FEIS). MassDOT/MBTA views the hearing as a specific, observable administrative benchmark for public involvement.

A public hearing is held near the end of a process or subprocess, prior to a decision point, to gather community comments and hear the positions of all interested parties for the public record and input into decisions. Public hearings are required by the federal government for many transportation projects and have specific legal requirements.

2.2.3 Meeting Facilities and Accessibility

MassDOT/MBTA is required to hold public hearings, meetings, open houses, and workshops in accessible facilities that are, wherever possible, at locations close to or served by fixed-route transit service, to let people know that the meeting location is accessible. Meeting planners must conduct an analysis of the demographics of the area where the meeting is to be held to determine whether notices should be translated into languages other than English. The availability of handout materials in alternative formats—Braille, large print, and/or audio cassette, and languages other than English—as well as other accommodations (language interpreters, sign language interpreters, CART translators, etc.) must be indicated in the meeting notices along with specific information on how to request these accommodations.

MassDOT/MBTA meeting planners should research and make every effort to select the location, size, and setup of meeting facilities based on the specific characteristics of the audience and the type of information to be presented. Whenever possible, hearings, meetings, and workshops should be held in places that are centrally located to the project and likely to attract a cross section of the people and businesses representative of the community stakeholders. Public libraries, public schools, and community centers are often used.

MassDOT/MBTA meeting planners should strive to create a welcoming environment. The staff members charged with the coordination of any meeting are responsible for providing resources, including free accessibility assistance and language assistance, to ensure that the event is

accessible to all people and to provide the greatest opportunity for participation by interested parties.

2.3 Tailoring Outreach to Underserved People

Meeting planners should not only schedule a room, post notices and ensure that accommodations are in place for a meeting to be well attended. There is also an obligation to conduct outreach to encourage attendance, particularly among groups protected by the anti-discrimination laws MassDOT/MBTA has promised to comply with.

Many people in minority and low-income communities, as well as those with low literacy and/or limited English proficiency, have traditionally been underserved by conventional outreach methods. Outreach to traditionally underserved groups helps ensure that all constituents have opportunities to affect the decision-making process. It sets the tone for subsequent project activities and promotes a spirit of inclusion. The greater the consensus among all community members, the more likely the position agreed upon will aid in decision making for the plan, program, or project. Inclusive outreach efforts are particularly useful because they:

- Provide fresh perspectives to project planners and developers
- Give MassDOT/MBTA firsthand information about community-specific issues and concerns
- Allow MassDOT/MBTA to understand potential controversies
- Provide feedback to MassDOT/MBTA on how to get these communities involved
- Ensure that the solutions ultimately selected will be those that best meet all of the communities' needs

MassDOT/MBTA staff should strive to understand the full range of a community's needs in order to create more responsive and more innovative plans. By interacting with community members, MassDOT/MBTA staff will gain insight into the reasons why community members agree or disagree with proposed plans or projects. The perspective of traditionally underserved people can inform the goals and outcomes of planning and project development, and ignoring this input can seriously threaten a project from being approved. Such individuals can suggest fresh approaches to transportation issues that otherwise might not be raised. MassDOT/MBTA's public outreach efforts are designed to accommodate the needs of low-income, minority, Limited English Proficiency, and other traditionally underserved people throughout all phases of any public participation process. MassDOT/MBTA staff should recognize that traditional techniques are not

always the most effective with these populations. Staff and managers employ a variety of public involvement techniques when working with underserved populations and communicates with community leaders to find out the best techniques for working with a particular group (e.g., which approaches to use, where and when to hold events, how to recruit people, and what to avoid doing).

2.4 The MBTA Rider Oversight Committee (ROC)

The MBTA established the Rider Oversight Committee in 2004 to meet monthly and discuss customer-service improvements and service-quality issues. Through the ROC, the MBTA has institutionalized ongoing public participation in all aspects of the Authority's operations.

The MBTA Rider Oversight Committee's mission statement is:

The MBTA ROC, a diverse group of riders, advocates, and MBTA employees, provides recommendations to the MBTA that communicate the needs and concerns of all riders in order to assist the MBTA in providing affordable, safe and quality service.

The MBTA and members of the ROC come together to address the concerns of public-transit customers. The 24-member committee addresses various transit-related issues, including but not limited to the MBTA's Fare Policy, fare structure, fare equity issues, service improvements, service-quality standards, ridership data collection, and alternative funding sources for both the capital program and the operating budget. In addition to monthly meetings, the committee meets quarterly with the MBTA's General Manager and Deputy General Manager/Chief Financial Officer, and the Secretary of Transportation, who also serves as Chairman of the MBTA board of Directors.

3 Title VI and ADA PROTOCOLS, POLICIES, AND RESOURCES

The civil rights protocols set forth in this document are a baseline for holding inclusive, accessible and responsive public meetings, hearings and the like. There are two primary sections in this chapter. Section 3.1 contains protocols and resources for ensuring diversity and inclusivity in public engagement. Section 3.2 contains protocols and resources for ensuring the accessibility of MassDOT/MBTA's public activities. These efforts are related and appropriate references are made between these sections, as needed.

3.1 Civil Rights Protocols for Public Engagement

Many MassDOT/MBTA departments and units conduct and participate in unique types of meetings and hearings within the course of their day to day operations. These Protocols have been designed with the intention of supporting and not supplanting the basic form and structure of existing operations. Further, these Protocols will provide links, resources and contacts for the purpose of achieving public engagement that is compliant with civil rights law. It is anticipated that these Protocols should be considered part of existing Standard Operating Procedures, Guidelines and Manuals, and that as these document are revised, these Protocols will be incorporated into the relevant portions of these documents.

The obligation to comply with these Protocols begins with the person(s) responsible for organizing and/or conducting the meeting or hearing, and because of the shared nature of many public processes between units, should be viewed as a shared responsibility. For example, in the 25% Design Public Hearing, there are multiple units involved in presenting information to the public, and each unit has specific civil rights obligations to ensure that Title VI/Nondiscrimination populations, including people with limited English proficiency and/or disabilities are able to participate equally in these meetings.

These Protocols include steps and strategies to implement prior to holding a public meeting or other such activity and during the course of the public process. Due to the varied nature of MassDOT/MBTA's engagement with the public, it is not the intention within these Protocols to include all required actions specific to varying stages of the planning process, or varying departmental standard operation procedures. However, where a Project Manager or other staff member encounters a difficult public involvement situation, he/she is advised to contact the Title VI Specialist and/or the Manager of Federal Programs to identify strategies and alternatives to address such situations.

Similarly, these Protocols should not be woodenly applied to every meeting/hearing. Meetings should be tailored to the special needs of the community, and/or the target audience and subject matter to be addressed. Effective public participation from a civil rights perspective includes awareness of the local population (demographics) or individuals to be engaged, including languages spoken, represented cultural groups, community organizations and leaders and key players. Equally critical to an effective meeting are well communicated (effectively circulated across types of media, and translated when needed) and timely notice, early response and coordination on requests for language assistance for limited English proficient individuals or reasonable accommodation for people with disabilities.

Federal nondiscrimination obligations, through Title VI of the Civil Rights Act of 1964, Section 504 and 508 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act (ADA) reach the categories of race, color, national origin (including LEP), age, sex, and disability. These protocols are designed to ensure that sufficient consideration of outreach to and inclusion of these groups is incorporated into MassDOT/MBTA's public engagement procedures. Adherence to these protocols will also sufficiently address State-level nondiscrimination obligations².

While the following protocols endeavor to highlight specific resources where available, past experience with the public can and should be considered a resource to identify individual and community needs, including civil rights related considerations such as language assistance needs, accessibility accommodations and inclusive public participation. Please use these Protocols as a guide and use good professional judgment in the decisions you make as you implement them.

3.1.1 Civil Rights Protocols by Type of Public Engagement

The following represent the four types of public engagement most commonly encountered by MassDOT/MBTA employees:

- Meetings for the general public
- Targeted outreach gatherings
- Open houses
- One-on-one interactions

² State level protections include the federal protections plus ethnicity, sexual orientation, gender identity or expression, religion, creed, ancestry, veteran's status (including Vietnam-era veterans), and background.

An introduction to each of these four types of public engagement is provided below. Familiarity with the following descriptions will help inform the user on how they should navigate the protocols set forth in this document.

Meetings for the General Public (Sec 2.1)

Public meetings and hearings, both at the project level and more broadly, are an opportunity for members of the public to engage in the transportation decision making process. The civil rights considerations described in this section are designed to inform and guide all MassDOT/MBTA staff involved in planning and conducting such events. Incorporation of these processes and utilization of these resources when planning or participating in public meetings/hearings will help ensure that these events are Title VI compliant.

Open Houses (Sec 2.2)

In the case that you are planning an open house session as a standalone event (such as a public information session) that will not precede a public meeting or hearing, see Sections 2.1.1 to 2.1.4.

MassDOT/MBTA staff and consultants regularly interact with members of the public through “open house” sessions prior to meetings/hearings. These sessions afford members of the public an opportunity to view design plans for projects that will be discussed at the formal public outreach event. MassDOT/MBTA staff and consultants (Designers, Planners, Right of Way Agents, Environmental Agents, etc.) are on hand to discuss particular details of interest with members of the public. While the interactions during these sessions are informal, critical issues are often raised. MassDOT/MBTA staff and consultants strive to address these issues accurately and effectively during these sessions. *[Practice Tip: Some attendees choose to forego the meeting/hearing satisfied with the information gained or with the opportunity to express concerns at the open house session.]* Due to the direct nature of interaction with members of the public at these open houses, there exist civil rights risk factors. These risks can be mitigated by adhering to the principles outlined in this section.

Targeted Outreach Gatherings (Sec 2.3)

At times, the complexity of a project, controversial issues, or the reality of having multiple large Title VI groups to address may require engaging targeted audiences of stakeholders. Similarly, MassDOT/MBTA may at times convene selected people within advisory committees, research efforts, focus groups and the like. The general work of understanding the demographics of people in a locality or project area still apply to determine what Title VI groups are impacted by an

initiative, as described above. However, there may be a need to include strong and possibly visible community leaders within Title VI populations; this can require more subtle and challenging efforts to secure their participation and needed contribution to discussions or deliberations.

One-on-One Interactions (Sec 2.4)

MassDOT/MBTA staff members interact directly with the public by virtue of the public facing programs, services, and activities the organization provides. These interactions can include planned meetings, such as those with property and business owners directly impacted by transportation projects, and spontaneous interactions with members of the public. These interactions, whether in person, over the phone, or electronic, present particular civil rights related risk factors that can be mitigated through the strategies articulated in Section 2.4.

3.1.2 Meetings for the General Public

3.1.2.1 Preliminary/Ongoing Considerations

- 1) Identify the population and composition of the individuals/communities impacted by the MassDOT/MBTA program, service, or activity by considering the following:
 - a. Project parameters, such as location, areas that will be impacted by construction phases, areas that may benefit from the completed project, and the areas that may be burdened by the completed project
 - b. The nature of the program, service, or activity (is it connected to the project development process? is it statewide, regional or local?)
- 2) Determine the Title VI features of the community to be engaged by reference to MassDOT/MBTA's Title VI maps, which include the limited English proficient (LEP) and minority populations across the Commonwealth. Consult the following maps and additional resources. *[Practice Tip: The first map (Figure 3) shows concentrations of LEP populations. You can identify the particular languages present in those areas by referencing the language specific maps. Foreign language services may be required for public outreach in these areas (see below).]*
 - a. MassDOT/MBTA LEP Maps
 - i. Percentage of LEP Speakers
<https://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/TitleVI/Item5/Fig3.pdf>
 - ii. Spanish Language Overlay
<https://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/TitleVI/Item5/Fig4.pdf>

- iii. Portuguese Language Overlay
<https://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/TitleVI/Item5/Fig5.pdf>
 - iv. Chinese Language Overlay
<https://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/TitleVI/Item5/Fig6.pdf>
 - v. French Creole Overlay
<https://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/TitleVI/Item5/Fig7.pdf>
 - vi. Vietnamese Language Overlay
<https://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/TitleVI/Item5/Fig8.pdf>
 - vii. Additional Languages Overlay
<https://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/TitleVI/Item5/Fig9.pdf>
- b. MassDOT/MBTA Minority Populations Map *[Practice Tip: This map shows the concentration of minority populations. This information can help you develop a strategy to publicizing public engagement opportunities and disseminating materials that effectively reaches representative and diverse stakeholders.]*<https://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/TitleVI/Item5/Fig3-2.pdf>
 - c. US Census Bureau Language Mapper
http://www.census.gov/hhes/socdemo/language/data/language_map.html?e=ml=gd
- 3) Identify key Title VI-related and other community based organizations and community leaders. *[Practice Tip: You may already have well established connections with individuals and groups throughout the Commonwealth. You are encouraged to continue reaching out to those. These instructions provide you with steps to identify previously unknown points of contact to diversify outreach.]* There are several approaches meeting planners can take to accomplish this step:
- a. Use the Civil Rights Constant Contact database that has been developed through IT, and codes organizations by e-mail, county. (pending completion)
 - b. Contact the MPO for the local area for a list of organizations by county and key leaders.
 - c. Consult tOffice of Transportation Planning MPO Liaisons who work with the individual MPOs and can support the effort to identify groups and individuals.

- d. Consult the Office of Public Affairs which has conducted a variety of meeting outreach efforts across the state and can identify key groups and individuals in every city in the state.
- e. For outreach in the Boston region, contact the Mayor's Office of Neighborhood Services. http://www.cityofboston.gov/ons/coor_list.asp
[Practice Tip: This office maintains liaisons in all of the Boston neighborhoods as well as liaisons to these demographic groups.]

3.1.2.2 Meeting Location and Time

1) Title VI Considerations

- a. Consult with community leaders and community based organizations to identify any aspects of the community which may be central in determining the time and location of the public engagement activity. *[Practice Tip: These individuals can help you understand the cultural, ethnic, religious, gender, and political histories/experiences of the demographic groups in the locale to better inform meeting planning.]*
- b. Consider factors such as cultural sensitivities and/or professional and academic commitments in setting the number of meetings. Multiple meetings can be held at various locations and times if doing so promotes meaningful access to the public engagement opportunity.
- c. Where possible, select a meeting location near public transportation options. *[Practice Tip: A general rule of thumb is within ½ mile walking distance.]*

2) ADA Considerations

- a. Identify a venue for the public meeting that is ADA compliant and accessible to people with disabilities.
 - i. MassDOT/MBTA maintains an Accessible Facilities Database that contains updated information regarding venues that have been previously assessed for ADA compliance.
- b. If an appropriate venue cannot be identified in the database, the following resources can identify public meeting venues that may be accessible:
 - i. The Massachusetts Office on Disability
<http://www.mass.gov/anf/employment-equal-access-disability/oversight-agencies/mod/>
 - ii. The Disability Commissions (S:\Civil Rights\ADA\Disability Commissions)

- iii. The Independent Living Centers
<http://www.masilc.org/membership/cils>
- c. Take the opportunity afforded by early communication with venue staff to identify pre-existing accessibility accommodations, such as assistive listening devices and Communication Access Real-Time Translation (CART) equipment. *[Practice Tip: Even though you don't know if such devices will be needed yet, this is a good opportunity to take stock of what is available should the need arise.]* The need for these accommodations will be addressed in Section 2.1.4, below.
- d. For a full treatment regarding ADA obligations in the public outreach context, consult the MassDOT/MBTA Accessible Meeting Policy in Section 3.2 below or online at:
http://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/ADA/Attachment_13.pdf . The policy enumerates ADA obligations in the public meeting context and provides a checklist for holding an ADA accessible public meeting. *[Practice Tip: If you are planning on using a venue for the first time, this checklist can help you verify its accessibility. The completed checklist should be shared with ODCR's Manager of Federal Programs for incorporation into the database.]*

3.1.2.3 Coordinating Public Notice

- 1) Draft the public meeting notice document, either utilizing existing approved templates or creating a new one, ensuring that the following civil rights related components are included:
 - a. Notice of Nondiscrimination
 - i. (Insert Updated Notice Language Here)
 - b. Availability of language services and reasonable accommodations
 - i. (Insert Updated Notice Language Here)
 - c. Contact information and procedures for requesting the above services, additional information, or to express a concern
 - i. (Insert Updated Notice Language Here)
 - d. International Symbol of Accessibility
http://en.wikipedia.org/wiki/International_Symbol_of_Access
- 2) Public meeting notices must be accessible. For guidance, please refer to Section 2.1.4 §§ 3. *[Practice Tip: Since public meeting notices are disseminated in a variety of ways, including physical postings, website postings, and email blasts, it is*

important that the appropriate font and font size be used and that the electronic document be compatible for use with screen readers.]

- 3) Address language needs and utilize non-English language outreach resources in the dissemination area if individuals who have limited proficiency in English are present.
 - a. Identify non-English language media (print, TV, radio, online, etc.) and sites with a strong presence of individuals who have limited proficiency in English (transportation facilities, community centers, libraries, commercial/employment/educational establishments, places of worship, cultural centers, etc.) that may be effective in communicating notice to individuals who have limited proficiency in English. *[Practice Tip: The reason you are identifying these resources first is to know what services actually exist to provide translated materials to.]* Consider consulting the following resources:
 - i. MassDOT/MBTA Office of Diversity and Civil Rights
<http://www.MassDOT/MBTA.state.ma.us/OfficeofCivilRights.aspx>
 - ii. MassDOT/MBTA Public Affairs
 - iii. Community Leaders
 - iv. Metropolitan Planning Organizations (MPOs)
<http://www.MassDOT/MBTA.state.ma.us/Portals/17/Images/DataMaps/boundry/MPOs-RPAs-Statewide.pdf>
 - v. Regional Transit Agencies (RTAs)
<http://www.MassDOT/MBTA.state.ma.us/Portals/17/docs/MapCatalog/Maps/RTAs-Statewide.pdf>
 - vi. Public Libraries <http://www.publiclibraries.com/massachusetts.htm>
 - vii. Schools/Universities
http://en.wikipedia.org/wiki/List_of_colleges_and_universities_in_Massachusetts
 - viii. Chambers of Commerce <http://masshome.com/cofc.html>
 - ix. Local Legislators
 - b. Develop translated version(s) of the notice document or other related announcements, as needed, based on the extent of LEP need and available media sources. *[Practice Tip: If you've identified a large population of individuals who are LEP in the meeting or project locale, consider translating the meeting notice in full. If you are less likely to encounter individuals who*

are LEP, you can consider including the single line of text into the languages other than English you may encounter.] This could include:

- i. Full translation of the notice into the languages indicated
 - ii. The inclusion of the following statement translated into the appropriate languages into the English language version of the notice.
 1. “This notice describes the date, time, and location of a public meeting or hearing on a transportation project in this area. If you need this notice translated, contact MassDOT/MBTA’s Title VI Specialist at 857-368-8580.”
 - iii. Translated versions of print, TV, radio, and online announcements related to the meeting, as applicable.
- c. Consult the following resources for translation needs:
- i. UMass Translation Center
 1. Request Procedure:
<http://www.umasstranslation.com/services/request-an-estimate/>
 2. Rates: <http://www.umasstranslation.com/services/rates/>
 - ii. Statewide Language Services Contract
 1. Contract Info:
<https://www.ebidsourcing.com/displayPublicContSummView.do?doValidateToken=false&docViewType=ACTIVE&docId=124184&docStatus=ACTIVE&docUserId=3155&userType=PUBLIC>
 2. Vendor Info:
https://www.ebidsourcing.com/displayPublicContActiveSwcVendorList.do?doValidateToken=false&menu_id=2.4.4.1&docUserId=3155&docViewType=ACTIVE&docId=124184&userType=PUBLIC&docNumberText=PRF48
- 4) The final dissemination of public notice should incorporate the following:
- a. The dissemination of public notice has occurred sufficiently in advance of meeting to ensure adequate processing time for language and accessibility accommodation requests. *[Practice Tip: Distributing notice three weeks in advance of a public engagement opportunity is generally regarded as appropriate, with two weeks or 10 business days considered the minimum limit for reasonable notice.]*

- b. The public notice/announcement materials have been delivered to non-English language outreach resources and sites identified in Section 2.1.3 §§ 3; a.
- c. The public notice has been delivered directly to individuals, organizations, and other stakeholders that represent Title VI populations in the region. You should consider sending notice to the entities below with the instruction that they forward the notice among their own distribution lists and/or post it.
 - i. MassDOT/MBTA Office of Diversity and Civil Rights
<http://www.MassDOT/MBTA.state.ma.us/OfficeofCivilRights.aspx>
 - ii. MassDOT/MBTA Public Affairs
 - iii. Community Leaders
 - iv. Metropolitan Planning Organizations (MPOs)
<http://www.MassDOT/MBTA.state.ma.us/Portals/17/Images/DataMaps/boundry/MPOs-RPAs-Statewide.pdf>
 - v. Regional Transit Agencies (RTAs)
<http://www.MassDOT/MBTA.state.ma.us/Portals/17/docs/MapCatalog/Maps/RTAs-Statewide.pdf>
 - vi. Public Libraries <http://www.publiclibraries.com/massachusetts.htm>
 - vii. Schools/Universities
http://en.wikipedia.org/wiki/List_of_colleges_and_universities_in_Massachusetts
 - viii. Chambers of Commerce <http://masshome.com/cofc.html>
 - ix. Local Legislators
 - x. Boston Mayor's Office of Neighborhood Services
http://www.cityofboston.gov/ons/coor_list.asp

3.1.2.4 Preparation for the Meeting

- 1) While preparing for the meeting, consider the following questions: (1) are there civil rights implications in the background/history of the project, (2) what public involvement has already been accomplished and did it illuminate civil rights concerns, and (3) what are the known benefits and burdens of the MassDOT/MBTA program, service, or activity on Title VI populations? Consult the following resources:
 - a. Public meeting/hearing transcripts

- b. Written public comments
 - c. MassDOT/MBTA staff involved in planning and/or conducting prior related meetings
 - d. ProjectINFO comments
 - e. Public meeting demographics surveys
- 2) Meeting planners should maintain an ongoing dialogue with the individuals and organizations identified in Sections 2.1.3 §§ 3; a; i and 2.1.3 §§ 3; c; i in order to remain well informed on the level of community interest and likely involvement in the public outreach event.
- 3) Ensure that electronic documents related to the subject of the public meeting and intended for public dissemination and review are accessible, in compliance with the Americans with Disabilities Act and Section 508 of The Rehabilitation Act of 1973. *[Practice Tip: Adobe Acrobat Professional and Microsoft Word have built-in “accessibility checkers.”]* This applies to documents produced by MassDOT/MBTA staff as well as consultants. Consult the following for instructions on developing accessible documents:
- a. Best practices for text and color contrast considerations when preparing hardcopy and electronic visual aids (such as maps, posters, plans, PowerPoint templates/graphics, charts, graphs, etc.)
<http://www.lighthouse.org/accessibility/design/accessible-print-design/>
 - b. Creating accessible Word documents: <http://office.microsoft.com/en-us/word-help/creating-accessible-word-documents-HA101999993.aspx>
 - c. Creating accessible Excel workbooks: <http://office.microsoft.com/en-us/excel-help/creating-accessible-excel-workbooks-HA102013545.aspx?CTT=3>
 - d. Creating accessible PowerPoint presentations:
<http://office.microsoft.com/en-us/powerpoint-help/creating-accessible-powerpoint-presentations-HA102013555.aspx?CTT=3>
 - e. Creating accessible PDFs with Microsoft Office products through “Tagging”:
<http://office.microsoft.com/en-us/excel-help/create-accessible-pdfs-HA102478227.aspx?CTT=3>
 - f. General information on accessibility from Adobe:
<http://www.adobe.com/accessibility/>

- g. Adobe Acrobat X Accessibility Guide:
<http://www.adobe.com/content/dam/Adobe/en/accessibility/products/acrobat/pdfs/acrobat-x-accessible-pdf-from-word.pdf>
 - h. Adobe Acrobat 9 Pro Accessibility Guide:
<http://www.adobe.com/content/dam/Adobe/en/accessibility/products/acrobat/pdfs/A9-accessible-pdf-from-word.pdf>
 - i. Video on preparing accessible InDesign files:
<http://tv.adobe.com/watch/accessibility-adobe/preparing-indesign-files-for-accessibility/>
- 4) The period between notice dissemination and the meeting date should be used to identify and arrange accommodations and produce meeting materials in alternate languages and formats (such as Braille and large-print), if requested.
- a. Alternate formats can be obtained by contacting:
 - i. MassDOT/MBTA Copy and Print Center
 - ii. MBTA System Wide Accessibility
http://www.mbta.com/riding_the_t/accessible_services/default.asp?id=16901
 - iii. The Central Transportation Planning Staff
 - 1. Janie Guion, 617-973-7507 or jguion@ctps.org
 - b. The nature and extent of accommodations that may be needed can be identified through the following.
 - i. Direct requests
 - ii. Past experiences, both within the community and at specific meeting locations which can include previously encountered reasonable accommodation and language service requests
 - 1. Meeting coordinators are required to submit demographic and accommodation summaries to ODCR. You can request this information from ODCR to better understand the past experiences of other meeting planners in the locale of your meeting.
 - iii. An understanding of community demographics

- iv. Feedback from community leaders, CBOs, stakeholders, advocacy groups, etc.
- v. MassDOT/MBTA Accessible Meeting Checklist
- c. Foreign language document translation can be provided by:
 - i. UMass Translation Center
 - 1. Request Procedure:
<http://www.umasstranslation.com/services/request-an-estimate/>
 - 2. Rates: <http://www.umasstranslation.com/services/rates/>
 - ii. Statewide Language Services Contract
 - 1. Comm-PASS Info:
<https://www.ebidsourcing.com/displayPublicContSummView.do?doValidateToken=false&docViewType=ACTIVE&docId=124184&docStatus=ACTIVE&docUserId=3155&userType=PUBLIC>
 - 2. Vendor Info:
https://www.ebidsourcing.com/displayPublicContActiveSwcVendorList.do?doValidateToken=false&menu_id=2.4.4.1&docUserId=3155&docViewType=ACTIVE&docId=124184&userType=PUBLIC&docNumberText=PRF48
- d. To obtain accessibility accommodations not provided by the venue (Section 2.1.2 §§ 2; c), contact:
 - i. MassDOT/MBTA Facilities
 - 1. Phone: (857) 368-9560
 - 2. Email: dotgeneralservices@dot.state.ma.us
 - ii. MBTA System Wide Accessibility
http://www.mbta.com/riding_the_t/accessible_services/default.asp?id=16901
 - iii. Metropolitan Planning Organizations
<http://www.MassDOT/MBTA.state.ma.us/Portals/17/Images/DataMaps/boundry/MPOs-RPAs-Statewide.pdf>

- iv. Massachusetts Office on Disability
<http://www.mass.gov/anf/employment-equal-access-disability/oversight-agencies/mod/>
- e. If unsure how to provide a particular accommodation or for guidance on recommended accommodations, consult:
 - i. MassDOT/MBTA Office of Diversity and Civil Rights
<http://www.MassDOT/MBTA.state.ma.us/OfficeofCivilRights.aspx>
 - ii. MassDOT/MBTA Public Affairs
 - iii. MBTA System Wide Accessibility
http://www.mbta.com/riding_the_t/accessible_services/default.asp?id=16901
 - iv. The Massachusetts Office on Disability
<http://www.mass.gov/anf/employment-equal-access-disability/oversight-agencies/mod/>
 - v. The Disability Commissions (S:\Civil Rights\ADA\Disability Commissions)
 - vi. The Independent Living Centers
<http://www.masilc.org/membership/cils>
- f. Funding Considerations
 - i. All accommodations must be provided to the public free of charge.
 - ii. For public outreach events which are necessitated by the project development process, each project contains an administration budget that should be utilized, if available.
 - iii. For all other requests, contact the MassDOT/MBTA Budget Office at (857) 368-9150.

3.1.2.5 Meeting Set-Up

- 1) ADA considerations in public outreach are fully articulated in the MassDOT/MBTA Accessible Meeting Policy in Section 3.2 below and online at: http://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/ADA/Attachment_1_3.pdf. Meeting setup is addressed in the “Accessibility Checklist for Meeting Planners” which should be used in order to verify the following:

- a. If the main entrance to the building is not accessible, is the accessible entrance unlocked?
 - b. Are there integrated seating areas for individuals who use a wheeled mobility device in the meeting room? [*Practice Tip: Seating areas for individuals with disabilities should not be segregated from the rest of the audience or limited to just one area.*]
 - c. Is there seating available for attendees who are deaf or hard of hearing, and have requested an accommodation, near the front of the meeting room so that attendees may see the interpreter/captioner, or lip read?
 - d. Is the space allotted to sign language interpreters and/or the CART screen or monitor clearly visible?
 - e. Are the aisles at least three feet wide and clear of obstacles or tripping hazards?
 - f. If microphones are used during the public meeting, are adjustable microphone stands available for attendees? Can staff be used as floaters with microphones as an alternative?
 - g. If the main entrance to the building is not accessible, is there directional signage towards the accessible entrance?
 - h. Is the accessible entrance unlocked and able to be used independently? If the meeting is taking place at night, is the path leading to the alternate entrance well lit?
 - i. If a stage or platform will be used during the public meeting, is it accessible?
 - j. If a podium will be used during the public meeting, is the podium height adjustable? If not, is there a small table (between 28 and 34 inches in height) provided to the side of the podium?
 - k. Have assistive devices been tested for full functionality immediately prior to the start of the event?
 - l. Is there directional signage for accessible restrooms and/or emergency exits, if applicable?
- 2) Title VI considerations can be addressed through the following:
- a. Based on identified or likely-to-be-encountered language needs, has signage in other languages been posted?
 - b. Is the space allotted to foreign language interpreters clearly visible to the entire audience?

- c. Has space been given to foreign language interpreters to sit with individuals who need language assistance?
- d. Have Title VI related materials been made available at the welcome desk and/or in the meeting packet? *[Practice Tip: Assistance is provided at the welcome desk, paying special attention to indications that meeting attendees may have literacy or non-English speaking issues.]* This should include:
 - i. “I speak” language cards <http://www.lep.gov/ISpeakCards2004.pdf>
 - ii. Translated versions of the written comment form, as applicable
 - iii. Demographics survey (insert link)

3.1.2.6 During the Meeting

- 1) In the event that this public meeting/hearing is preceded by an open house, please refer to Section 2.2 regarding civil rights considerations in that setting.
- 2) At the official start of the meeting, make the following statements. If a foreign language translator(s) is present, instruct them to repeat.
 - a. (Insert language here, address: general statement regarding nondiscrimination and availability of language and accessibility accommodations, including assistance in providing written comments and/or filing in forms such as the demographics survey)
 - b. Include instructions on site-specific accessibility considerations, such as accessible emergency exits.
 - c. Encourage attendees to complete the Demographics Survey, which can be either turned in during the event or mailed to MassDOT/MBTA after the fact.
- 3) MassDOT/MBTA is required to “demonstrate explicit consideration and response to public input” ([23 CFR 450.210](#)). During a public outreach event, this requires affording attendees with opportunities to voice comments, questions, and concerns and provide an adequate response at the event or by following up in writing (see Section 2.1.7) or at subsequent public outreach opportunities. *[Practice Tip: All MassDOT/MBTA staff in attendance should give their attention to oral comments made by the public during the meeting and during one-on-one interactions in order to relay general sentiments and/or particular issues to the Project Manager as part of post-meeting follow up.]*

3.1.2.7 Post Meeting

- 1) All public comments (written and oral), testimonials, and sentiments expressed during the public outreach event have been gathered/documentated by

MassDOT/MBTA staff that attended the meeting and passed on to the Project Manager (or designee). *[Practice Tip: This can be accomplished through in-person debriefing sessions following the meeting or reviewing the meeting transcript, if available.]*

- 2) Once received, the Project Manager (or designee) catalogues all public comments.
- 3) The Project Manager is responsible for coordinating responses to public comments. *[Practice Tip: Remember: direct impacts require direct communication. [23 CFR 450.210](#)]*
 - a. Methods of responses can include:
 - i. Individualized written responses
 - ii. General distribution written statements (web, email, newsletter, newspaper, etc.)
 - iii. Postings to project specific website, if available
 - iv. In-person or telephonic follow-ups with individuals/organizations regarding the topics of discussion at the public outreach event *[Practice Tip: The protocols and tips found in Section 2.4 regarding one-on-one interactions can help you eliminate communication barriers you may encounter.]*
 - b. The Project Manager (or designee) reviews the public comments to determine which MassDOT/MBTA program areas (such as Civil Rights, Right of Way, Design, Environmental, Planning, etc.) should be consulted with or assigned the responsibility of drafting a response that “demonstrate[s] explicit consideration... to public input” ([23 CFR 450.210](#)).
- 4) In instances where MassDOT/MBTA will draft a written response to a public comment, the content of the response itself can “demonstrate explicit consideration” by:
 - a. Describing changes to the recommended design prompted/requested by the comment and how they will be considered
 - b. Describing alternate designs prompted/requested by the comment and how they will be considered
 - c. Describing mitigation measures prompted/requested by the comment and how they will be considered
 - d. Describing the MassDOT/MBTA program areas that were consulted in formulating the response

- e. Noting whether the comment is novel or previously encountered
 - f. Noting whether the comment has been received from a multitude of sources
- 5) Responses should also contain:
- a. Contact information for additional information and follow-up
 - b. Notice of upcoming related public engagement opportunities
- 6) The Project Manager should note, through ProjectINFO “comments,” civil rights considerations encountered through the planning and conducting of the outreach event, such as translation requests or foreign languages encountered. *[Practice Tip: For projects that have received a ProjectINFO number, the “comments” section can be used to highlight civil rights related comments or concerns from the public. The document database for these projects can also be used to store scans of comment forms.]*
- 7) The community leaders identified in Section 2.1.1 §§ 3 should be thanked for their assistance/efforts with a call or written correspondence.

3.1.3 Open Houses

3.1.3.1 Title VI Considerations

- 1) “I Speak” language cards have been provided at the welcome desk.
<http://www.lep.gov/ISpeakCards2004.pdf>
- 2) If MassDOT/MBTA is providing interpretive services at the public meeting/hearing session, then they should also be available during the open house session and their availability should be made clear through signage and/or announcements. *[Practice Tip: Those running the meeting should ask interpreters to announce their presence and the availability of their services several times during the open house.]*
- 3) After the session, MassDOT/MBTA staff and consultants in attendance should relay the nature of questions and concerns identified through interaction with the public to the Project Manager (or designee). *[Practice Tip: It is important for MassDOT/MBTA staff working on all stages of project development to know community concerns. Sometimes these are made evident during informal open house interactions. Just because they don't make it onto a public hearing transcript doesn't mean we don't have an obligation to be aware of them and respond accordingly.]*
- 4) Written descriptions of items on display may need to be translated depending on requests received and/or the anticipated level of LEP participation.

3.1.3.2 ADA Considerations

- 1) The open house should be set up in an ADA compliant manner. Please see the MassDOT/MBTA Accessible Meeting Policy in Section 3.2 below or online at: http://www.MassDOT/MBTA.state.ma.us/Portals/0/docs/CivilRights/ADA/Attachment_13.pdf
- 2) Consider the following when setting up the open house venue:
 - a. Consult the following guide on best practices for text and color contrast considerations when preparing hardcopy and electronic visual aids (such as maps, posters, plans, PowerPoint templates/graphics, charts, graphs, etc.) <http://www.lighthouse.org/accessibility/design/accessible-print-design/>
[Practice Tip: Choose color schemes that are least likely to be problematic for individuals with common types of color blindness and visual impairments.]
 - b. Pathways that guide attendees to display materials or MassDOT/MBTA staff and consultants should be clear of obstructions. *[Practice Tip: Rule of Thumb: remove tripping hazards (such as electrical cords) and keep the pathway at least 3' wide.]*
 - c. Proper heights and viewing angles of display materials to make them accessible. *[Practice Tip: Rules of Thumb: For display materials mounted on the wall, they should be no higher than 48" from the floor and provide clear floor space 30" wide and 48" wide. For tabletop displays, the table should be between 28 and 34" inches in height and there should be at least 27" of knee space from the floor to the underside of the table.]*
 - d. Horizontal surfaces used for display should be at a height accessible to individuals that are short of stature and/or rely on assistive mobility devices.
 - e. Similarly, materials displayed vertically should not be at an excessive height nor at an angle that makes them difficult to view.
- 3) MassDOT/MBTA staff and consultants should be prepared to describe displays to blind or visually impaired attendees.
- 4) Alternate versions (Braille, large print, etc.) of public documents (such as informational packets) should be available if requested.

3.1.4 Targeted Outreach Gatherings (Small Group Meetings/Committees/Task Forces/Studies)

3.1.4.1 Strategic Planning for Title VI Group and Individual Inclusion

Strategic planning for the involvement of Title VI community members on special purpose meeting groups or committees is essential to an inclusive and successful effort. Engaging the public in a targeted context is complex, political and always challenging, and ensuring diverse participation adds even more difficulty to meeting this objective.

Preliminary Steps:

- 1) Identify and analyze the location affected by the project or initiative at issue to determine the Title VI populations in the area.
- 2) Establish a clear objective and role for the envisioned targeted group, including the nature of community involvement and particular skills which may be needed for fruitful discussion or deliberations.
- 3) Create an outline or public participation matrix to identify the different types of community representation and interests that reflect the community affected by a project or initiative with careful attention to Title VI populations. Types of organizations or interests that may include representatives of Title VI populations:
 - a. transit-dependent community
 - b. affected businesses
 - c. civic organizations (women, seniors, youth, people with disabilities)
 - d. freight interests
 - e. the disability community
 - f. neighborhood association
 - g. schools
 - h. churches

Beyond demographic data and identification of the types of Title VI related groups or individuals in the community, there are certain key questions to help define the individuals or groups to invite. Consider meeting with a small group of internal staff and/or managers from among key MassDOT/MBTA departments who know the community and who can help answer these key questions:

- 1) Who can represent these diverse groups and constituencies in a credible and responsible way?
- 2) Who needs to be at the table for the work to be accomplished?
- 3) What is the history of relationships between stakeholder representatives and groups? Is there any past tension that may be a deterrent to participation? If so,

are there other community leaders who could help mediate to encourage participation despite differences?

- 4) If known from past experience, are there stakeholders critical to the process who may be reluctant to participate? How can this reluctance be alleviated? What would be the impact of their refusal to participate in the process? Is there an alternative to their participation?
- 5) What commitments do you want from participants?
- 6) Other than known stakeholders, what other individuals or groups could have an interest in the project that are not in the immediate project area, and/or are not otherwise represented in the outreach strategy?
- 7) Do any necessary parties have possible concerns about participating? How can those concerns be alleviated?
- 8) Do you have natural allies on an issue? Natural adversaries?

3.1.4.2 Consult MassDOT/MBTA and MBTA and State Resources

Based on MassDOT/MBTA and the MBTA's vast prior experience in communities across the Commonwealth, we have significant corporate knowledge of local groups, key individuals and community issues or concerns that can help answer these questions.

- 1) the Office of Diversity and Civil Rights (which does a range of outreach across the Commonwealth, responds to complaints and works with key Title VI leadership on transportation matters in contracting and employment)
- 2) Office of Transportation Planning (which conducts significant long-range studies that engage the public and builds knowledge of communities and has access to the Metropolitan Planning Organizations in all regions of Massachusetts)
- 3) Government and Public Affairs (which can reach out to state legislators and their aides for suggestions)
- 4) Design (which works directly with project proponents, especially in instances of municipally proposed projects, although there can be a risk of bias in favor of suggestions that support the project.)
- 5) Use the MassDOT/MBTA Title VI interactive mapping tool (currently under development) to identify community organizations that are associated with Title VI community members and interests

There may be other sources of contact in additional MassDOT/MBTA and MBTA departments or Divisions (Design, Environmental, Right of Way, Registry or Aeronautics)

that may have had experience with a location and or community representatives, which could also be helpful to explore.

3.1.4.3 Consult Statewide Resources

- 1) Reach out at the state level for help in identifying and possibly supporting our outreach to potential Title VI related groups and individuals to contact. These resources may also have particular information that is important to know about the locality, its history and community challenges or controversy which may be critical to support your outreach:

- a. Administration and Finance – Office of Access and Opportunity

Office of Access & Opportunities
State House, Room 373, Boston, MA 02133
Phone: (617) 727-2040
E-mail: Ronald.Marlow@state.ma.us

- b. Massachusetts Office on Disability

One Ashburton Place #1305
Boston, MA 02108
(617) 727-7440 or (800) 322-2020 toll free (both V/TTY)
E-mail: Myra.Berloff@state.ma.us

3.1.4.4 Conduct Targeted Research on the Leads you Gather

Conduct a Google-type search on the communities involved and the groups and individuals who have been identified. This effort is potentially time consuming, but will both educate the meeting convener and potentially identify “landmines” that could complicate the effort to organize a group.

Tip: In carrying out this task, it is useful to limit searches which can be done through linking key words to a query such as a year, a past issue or individual words like “bio,” “biography,” “background,” “transportation,” “complaint” and the like.

If a meeting planner is not aware of the racial, ethnic or national origin background of the individual or group being engaged, it is similarly possible to research Title VI groups individually, using query strings to the group or individuals and Massachusetts, the regional area or the locality where the group or individual is based. This information is useful in gaining a basic understanding of traditions and holidays which may impact participation, through to a more thorough understanding of complex considerations like values, beliefs and relationship to government and/or transportation.

3.1.4.5 Reaching out to Potential Title VI Group Members – Anticipating Potential Obstacles to Participation

- 1) Outreach approaches:
 - i. Look for formal and informal opportunities to engage, collaborate, and build relationships, including calls of introduction made by volunteers you identify who are trusted in the community.
 - ii. Use multiple outreach methods and do not rely on e-mail or websites alone
 - iii. Tailor materials to the audience, including translations
 - iv. Identify existing channels of communication through communities
 - v. Experiment and reflect on the effectiveness of new approaches

In Title VI communities, there are a range of factors leading to reluctance to participate for individuals and groups that could be helpful in a transportation planning or development process. For example, many times natural leaders are either the heads or well-placed leaders of agencies or community groups; this causes limits their ability to participate because there are many demands on their time, resources and commitment.

- 2) Think through and identify the factors which would encourage participation and involvement before reaching out, to be in the best position to explain how it is important for this individual or group to participate. If there is a possibility of grant funding to support participating groups, this can certainly provide an incentive for participation, but such ideas should only be shared if the possibility is real.
- 3) The following are some common barriers to participation, and reasonable responses that a meeting planner should anticipate, understand and be able to articulate to encourage potential participants to get involved:
 - a. **Limited English language skills and/or limited literacy** – it is first important to know that MassDOT/MBTA has the ability and obligation to fund translation and interpretation support and to convey this message. It would be ideal to have a colleague or staff person who speaks the language or is of the culture in question to support the outreach effort, or to use a translator as an intermediary.
 - b. **Lack of trust due to past experiences** - it is important to be in a position to respond with as much information as will demonstrate that both participation and the project are being honestly and openly addressed.
 - c. **Lack of experience with transportation decision making processes** – if this process is not well understood or the meeting convener has a difficult

time explaining the process, it is important to have a representative from Planning involved to explain the process.

- d. **Economic barriers** – transportation costs, work schedules – meetings should be sited in the community to avoid cost factors, and they should be timed to meet the schedule of the majority of participants, after due consideration of all schedules, suggested alternatives and needs.
- e. **Cultural barriers** – there may be intergroup dynamics that make bringing groups together problematic due to class, racial ethnic or political differences. Early research will help build understanding of this possibility, and suggest whether a mediated way of bringing the groups together is an option, or there is a need to have separate meetings.
- f. **Common barriers** – time, other demands. The key to this element is making sure that the importance of an effort is clear and well stated to the candidate, including the benefit to an individual or group representative being recruited.

3.1.4.6 Responding to a Refusal to Participate from a Potential Title VI Participant

- 1) If a person or group declines to participate in a particular effort, it is important not to get frustrated and to handle the refusal diplomatically because that same group might be the subject of an outreach effort in the future, and may wish to participate on another occasion.
- 2) In responding to a decision not to participate, thank the person or group for considering the invitation and suggest that they might accept an invitation for a different opportunity in the future. In this way, no feelings are hurt, doors are left open and the person or group remains feeling that they are valued into the future.
- 3) Consider sending the individual or organizations updates on the effort that are sent to others. This effort could be informative and demonstrate a good faith effort to be inclusive.

3.1.4.7 Documenting the Effort to Achieve Diversity and Next Steps

It may be impossible to achieve a perfectly diverse committee for purposes of transportation planning, given the difficulty of recruitment and obstacles to participation. Simply put, the concept of diversity in transportation planning is elastic - it will change based on the geographic location, the issue under study or discussion or the nature of the need for input. Nonetheless, our federal partners, and even community members will

expect to know about our efforts and may wish to question whether MassDOT/MBTA truly conducted outreach for Title VI inclusion purposes. For Title VI purposes, this documentation is good evidence of the opportunity that was given to the public, such that complaints after the fact about the lack of inclusion can be responded to. Our Title VI obligation requires us to provide an equal opportunity to participate in transportation planning exercises; ultimately, it is the exercise of trying and proving that MassDOT/MBTA has been thoughtful and reached out effectively to increase diversity in our community engagement.

For purposes of proving that an outreach effort was genuine and reached out to diverse communities, there are steps that the meeting convener or planner should take:

- 1) The meeting planner should keep a file on available resources and methods used to identify individuals and groups, the nature of the outreach effort, the people invited and the results of a recruitment effort. Possible resources:
 - a. Lists of potential invitees who were considered and/or accepted
 - b. Samples of research conducted and/or consultations made for recruitment
 - c. Copies of invitation e-mails or other correspondence
 - d. Group membership lists, with indications of the Title VI communities represented
 - e. Meeting sign in sheets
 - f. Correspondence from invited individuals
- 2) The meeting planner should make the list of actual participants easily available and strive to secure a means for the public to reach out to these individuals should they have question, comments or concerns that they may not be willing to air publicly.
- 3) Meeting planners should plan to discuss with the members of the group that is ultimately recruited the efforts made to reach out and recruit individuals, including the potential need that may remain after the fact for additional participation by certain Title VI group members or related organizations.
- 4) Effective management of the group that is ultimately formed is key to the productivity and longevity of relationships with Title VI community members. Following-through with stakeholders to demonstrate that input was considered and/or had an impact on project parameters, study outcomes, and planned activities can demonstrate to participants the value added to their interests and communities through continued involvement in these activities.

3.1.5 One-on-One Interactions

3.1.5.1 Communicating with Individuals with Limited English Proficiency (LEP)

If a member of the public is attempting to interact with you but there is a language barrier, the following procedures are recommended based on the types of interactions.

- 1) In-person (such as MassDOT/MBTA reception areas, district offices, construction sites, RMVs, E-ZPass service centers, etc.)
 - a. The first step is to identify the preferred language of the individual. The following resources are available:
 - i. "I Speak" cards, <http://www.lep.gov/ISpeakCards2004.pdf>
 - ii. Google Translate (<http://translate.google.com/>) or a similar real-time free online language translator can be used to identify the language. *[Practice Tip: If the member of the public is directed to type (or speak into the computer's microphone, if available) on the webpage in a language other than English, the software can "Auto-Detect" which language is being used and provide real-time translations. Please note that the accuracy and effectiveness of these translation systems is not complete and should not be relied on as an exclusive means of providing language access to LEP individuals.]*
 - i. Assistance from co-workers in your unit that may be able to identify the language.
 - ii. Language Line (<https://www.language.com/>)
 - b. Once the language has been identified, the methods you use to address the needs of the individual will change depending on the circumstances.
 - i. You may be able to address simple inquires informally on-the-spot with the aid of multi-lingual staff or Google Translate (<http://translate.google.com/>) or a similar product. *[Example: providing directions around the building/office to an LEP individual.]*
 1. If you work in one of the MassDOT/MBTA Highway units that has been surveyed for multi-lingual staff (ROW, OTP, Environmental, Design, and OREAD), refer to the corresponding database to identify a co-worker in your unit that can assist. *[Practice Tip: Assisting in this way is purely voluntary and the nature of the communication should be incidental.]*

- a. S:\Civil Rights\Title VI\Staff Language Directory
 2. An employee and an LEP individual can type or speak into Google Translate software and carry out a rudimentary conversation. This should remain limited to incidental interactions.
 - ii. If the conversation turns to more complex issues or you have reached the limitations of the technology or your knowledge of the subject at issue, the MassDOT/MBTA staffer providing informal translations or Google Translate should inform them that professional language services are available that may be better suited to meeting their need. More complex issues may require professional translators/interpreters. *[Example: An LEP individual who needs assistance to engage in the complaint resolution process or to participate in a MassDOT/MBTA program, service, or activity that requires an application process. (such as a driver's licenses, E-ZPass, etc.)]* Complex issues are those that affect the legal rights of the individual and therefore depend on the accuracy of translations/interpretations. The following services are available in those instances:
 1. Language Line (<https://www.language.com/>)
 2. Statewide Language Services Contract
 - a. Comm-PASS Info:
<https://www.ebidsourcing.com/displayPublicContSummView.do?doValidateToken=false&docViewType=ACTIVE&docId=124184&docStatus=ACTIVE&docUserId=3155&userType=PUBLIC>
 - b. Vendor Info:
https://www.ebidsourcing.com/displayPublicContActiveSwcVendorList.do?doValidateToken=false&menu_id=2.4.4.1&docUserId=3155&docViewType=ACTIVE&docId=124184&userType=PUBLIC&docNumberText=PRF48
 - iii. Should you require time to secure professional language services (such as scheduling a meeting with an interpreter or sending out documents to be translated) then you should try to make this clear to the individual on-the-spot with the aid of multi-lingual staff or Google Translate. *[Practice Tip: Using Google Translate to convey this information allows you to include details such as expected turnaround times, meeting dates and locations, and contact information.]*
- 2) Over the Phone

- a. If you are able to identify the language of the caller and you work in one of the MassDOT/MBTA Highway units that has been surveyed for multi-lingual staff (ROW, OTP, Environmental, Design, and OREAD), refer to the corresponding database to identify a co-worker in your unit that can assist.
 - i. S:\Civil Rights\Title VI\Staff Language Directory
 - b. If you are unable to identify the language of the caller and/or you do not work in ROW, OTP, Environmental, Design, and OREAD, contact Language Line for real-time over the phone interpretation services (<https://www.languageline.com/>)
- 3) Electronically (includes email, website comment form, etc.)
- a. If you receive such correspondence in a language other than English, use Google Translate (<http://translate.google.com/>) or similar product to determine the language and nature of the interaction
 - b. Once the language and the nature of the interaction has been identified, the methods you use to address the needs of the individual will change depending on the circumstances.
 - i. You may be able to address simple inquires informally with the aid of multi-lingual staff or Google Translate (<http://translate.google.com/>) or a similar product. *[Example: emailing a link to requested web content.]*
 1. If you work in one of the MassDOT/MBTA Highway units that has been surveyed for multi-lingual staff (ROW, OTP, Environmental, Design, and OREAD), refer to the corresponding database to identify a co-worker in your unit that can assist.
 - a. S:\Civil Rights\Title VI\Staff Language Directory
 - ii. If the conversation turns to more complex issues or you have reached the limitations of the technology or your knowledge of the subject at issue, the MassDOT/MBTA staffer providing informal translations or Google Translate should inform them that professional language services are available that may be better suited to meeting their need. More complex issues may require professional translators/interpreters. *[Practice Tip: Complex issues are those that affect the legal rights of the individual and therefore depend on the accuracy of translations/interpretations.] [Example: An LEP individual who needs assistance to engage in the complaint resolution process or to participate in a MassDOT/MBTA program, service, or activity that requires an application process. (such as a driver's licenses, E-ZPass, etc.)]* The following services are available in those instances:
 1. Language Line (<https://www.languageline.com/>)

2. Statewide Language Services Contract

a. Comm-PASS Info:

<https://www.ebidsourcing.com/displayPublicContSummView.do?doValidateToken=false&docViewType=ACTIVE&docId=124184&docStatus=ACTIVE&docUserId=3155&userType=PUBLIC>

b. Vendor Info:

https://www.ebidsourcing.com/displayPublicContActiveSwcVendorList.do?doValidateToken=false&menu_id=2.4.4.1&docUserId=3155&docViewType=ACTIVE&docId=124184&userType=PUBLIC&docNumberText=PRF48

3.1.5.2 Communicating with People with Disabilities

1) Outlined below are tips to help you in communicating with persons with disabilities.

[Practice Tip: For more information visit:

[http://www.labor.state.ny.us/workforcenypartners/forms/communication.pdf.\]](http://www.labor.state.ny.us/workforcenypartners/forms/communication.pdf.)

a. General Tips:

- i. When introduced to a person with a disability, it is appropriate to offer to shake hands. People with limited hand use or who wear an artificial limb can usually shake hands. (Shaking hands with the left hand is an acceptable greeting.)
- ii. If you offer assistance, wait until the offer is accepted. Then listen to or ask for instructions.
- iii. Relax. Don't be embarrassed if you happen to use common expressions such as "See you later," or "Did you hear about that?" that seem to relate to a person's disability.
- iv. Don't be afraid to ask questions when you're unsure of what to do.

b. Tips for Communicating with Individuals who are Blind or Visually Impaired:

- i. Speak to the individual when you approach him or her.
- ii. State clearly who you are; speak in a normal tone of voice.
- iii. When conversing in a group, remember to identify yourself and the person to whom you are speaking.
- iv. Never touch or distract a service dog without first asking the owner.
- v. Tell the individual when you are leaving.

- vi. Do not attempt to lead the individual without first asking; allow the person to hold your arm and control her or his own movements.
 - vii. Be descriptive when giving directions; verbally give the person information that is visually obvious to individuals who can see. For example, if you are approaching steps, mention how many steps.
 - viii. If you are offering a seat, gently place the individual's hand on the back or arm of the chair so that the person can locate the seat.
- c. Tips for Communicating with Individuals who are Deaf or Hard of Hearing:
- i. Gain the person's attention before starting a conversation (i.e., tap the person gently on the shoulder or arm).
 - ii. Look directly at the individual, face the light, speak clearly, in a normal tone of voice, and keep your hands away from your face. Use short, simple sentences.
 - iii. If the individual uses a sign language interpreter, speak directly to the person, not the interpreter.
 - iv. If you telephone an individual who is hard of hearing, let the phone ring longer than usual. Speak clearly and be prepared to repeat the reason for the call and who you are.
- d. Tips for Communicating with Individuals with Mobility Impairments:
- i. If possible, put yourself at the wheelchair user's eye level.
 - ii. Do not lean on a wheelchair or any other assistive device.
 - iii. Never patronize people who use wheelchairs by patting them on the head or shoulder.
 - iv. Do not assume the individual wants to be pushed —ask first.
 - v. Offer assistance if the individual appears to be having difficulty opening a door.
 - vi. If you telephone the individual, allow the phone to ring longer than usual to allow extra time for the person to reach the telephone.
- e. Tips for Communicating with Individuals with Speech Impairments:
- i. If you do not understand something the individual says, do not pretend that you do. Ask the individual to repeat what he or she said and then repeat it back.
 - ii. Be patient. Take as much time as necessary.

- iii. Concentrate on what the individual is saying.
 - iv. Do not speak for the individual or attempt to finish her or his sentences.
 - v. If you are having difficulty understanding the individual, consider writing as an alternative means of communicating, but first ask the individual if this is acceptable.
- f. Tips for Communicating with Individuals with Cognitive Disabilities:
- i. If you are in a public area with many distractions, consider moving to a quiet or private location.
 - ii. Offer assistance completing forms or understanding written instructions and provide extra time for decision-making. Wait for the individual to accept the offer of assistance; do not "over-assist" or be patronizing.
 - iii. Be patient, flexible and supportive. Take time to understand the individual and make sure the individual understands you.
- 2) Additional information can be provided by:
- a. MassDOT/MBTA Office of Diversity and Civil Rights
<http://www.MassDOT/MBTA.state.ma.us/OfficeofCivilRights.aspx>
 - b. MBTA System Wide Accessibility
http://www.mbta.com/riding_the_t/accessible_services/default.asp?id=16901
 - c. Massachusetts Office on Disability <http://www.mass.gov/anf/employment-equal-access-disability/oversight-agencies/mod/>
 - d. Commonwealth of Massachusetts - Office of Access and Opportunity
<http://www.mass.gov/anf/employment-equal-access-disability/diversity-access-and-opportunity/access-and-opportunities/>

3.2 MassDOT/MBTA Accessible Meeting Policy

1.0 Purpose

This policy outlines criteria that must be fulfilled in order to ensure that all MassDOT/MBTA public meetings are fully accessible to persons with disabilities. This document will also address issues related to attendees with limited English proficiency.

The ability to access and participate in state government, including participating in public meetings, is a fundamental right protected by both State and Federal law. The Massachusetts Public Accommodation Law and the Americans with Disabilities Act mandate that persons with disabilities must not be denied participation in public meetings, and that reasonable accommodation requests made by attendees shall be honored. For these reasons, when planning and executing public meetings, MassDOT/MBTA personnel must ensure that all aspects of the meeting are accessible to persons with disabilities.

Under Title VI of the Civil Rights Act of 1964 and Commonwealth Executive Order 526, MassDOT/MBTA must also ensure that programs and activities do not discriminate based on race, color or national origin, age, disability and sex, among other protected categories. A public participation plan is being developed for Title VI purposes, which should be consulted by meeting planners in coordination with this Accessible Meeting Policy to ensure that MassDOT/MBTA includes Title VI constituencies in transportation programs and activities. The method for determining whether and/or what non-English languages need to be translated or interpreted is called a “four factor analysis.” Essentially, to determine whether translation is needed, meeting planners must analyze the number of limited English proficiency persons (LEP) by language group where a meeting will be held, the frequency of contacts with the program, the importance of the program and cost factors.

This document will provide guidelines for ensuring the accessibility of public meetings hosted by MassDOT/MBTA. Components such as the meeting location, room setup, alternate formats and translations of handouts, and the requirement to provide CART and/or sign language and/or foreign language interpreters upon request will be discussed.

2.0 Definitions

2.1 Public Meeting

Any meeting open to the general public, hosted by or on behalf of the MassDOT/MBTA, during which information is shared.

2.2 Attendee

An individual attending a public meeting.

2.3 Reasonable Accommodation

Any reasonable service, aid, modification or adjustment to the public meeting that gives a person with a disability the opportunity to be an active participant in the meeting process.

2.4 Path of Travel

A continuous, unobstructed way of pedestrian passage by means of which an area may be approached, entered, and exited.

2.5 TTY (Text Telephone)

An electronic device for text communication via a [telephone](#) line, used when one or more of the parties has a hearing or speech-related disability. Public payphones equipped with TTY have a small keyboard that pulls out underneath the phone. Note: TTYs are gradually phasing out for many people due to the increased use of voice and video relay, but they will remain in use for some period into the future.

2.6 Clear floor space

The minimum unobstructed floor or ground space required to accommodate a single, stationary wheelchair and occupant.

2.7 *Wheeled mobility device*

Means by which some individuals with physical disabilities travel throughout their environment. Commonly refers to such devices as wheelchairs (manual and motorized) and scooters. Non-traditional wheeled mobility devices may include Segways and bicycles.

2.8 *American Sign Language (ASL) Interpreter*

An individual trained to facilitate communication between a deaf American Sign Language user and hearing individuals via American Sign Language.

2.9 *Assistive Listening Device*

An electronic device used by individuals who are hard of hearing to amplify sound. The assistive listening device is usually used as a system where the audio source is broadcast [wirelessly](#) over an FM frequency. The person who is listening may use a small FM [Receiver](#) to tune into the signal and listen at their preferred volume. There are other forms of Assistive Listening Devices that exist and could be used as alternatives.

2.10 *CART (Computer Assisted Real-time Transcription)*

A trained operator uses keyboard or stenography methods to transcribe spoken speech into written text. This may be done either on site or remotely by using a voice connection such as a telephone, cell phone, or computer microphone to send the voice to the operator and the real-time text is transmitted back over an Internet connection. For meeting rooms without an internet connection, it is possible to establish connectivity via a WIFI router connection or by using a wireless “hot spot.”

2.11 *Video Remote Interpreting*

A contracted video service that allows individuals who are Deaf to communicate over webcams/video phones with hearing people in real-time, via a sign language interpreter.

2.12 *Video and Telecommunication (Voice) Relay Services*

Video Relay Service (VRS) is a form of Telecommunications Relay Service (TRS) that enables persons with hearing disabilities who use American Sign Language (ASL) to communicate with voice telephone users through video equipment, rather than through typed text. Video equipment links the VRS user with a TRS operator – called a “communications assistant” (CA) – so that the VRS user and the CA can see and communicate with each other in signed conversation. The VRS caller, using a television or a computer with a video camera device and a broadband (high speed) Internet connection, contacts a VRS CA, who is a qualified sign language interpreter. They communicate with each other in sign language through a video link. The VRS CA then places a telephone call to the party the VRS user wishes to call. The VRS CA relays the conversation back and forth between the parties – in sign language with the VRS user, and by voice with the called party. No typing or text is involved.

Telecommunications Relay Service (TRS) is a telephone service that allows persons with hearing or speech disabilities to place and receive telephone calls. TRS uses operators, called communications assistants (CAs), to facilitate telephone calls between people with hearing and speech disabilities and other individuals. A TRS call may be initiated by either a person with a hearing or speech disability, or a person without such disability. When a person with a hearing or speech disability initiates a TRS call, the person uses a teletypewriter (TTY) or other text input device to call the TRS relay center, and gives a CA the number of the party that he or she wants to call. The CA in turn places an outbound traditional voice call to that person. The CA then serves as a link for the call, relaying the text of the calling party in voice to the called party, and converting to text what the called party voices back to the calling party. VRS and TRS are overseen by the Federal Communications Commission and private contractors who perform the intermediary communication service are reimbursed for this service.

2.13 *Closed Captioning*

A term describing several systems developed to display text on a television, computer or video screen to provide additional or interpretive information to viewers/listeners who wish to access it. Closed captions typically display a transcription of the audio portion of a program (either verbatim or in edited form), sometimes including non-speech elements.

2.14 *Descriptive Video/Described Narration*

A feature that makes television programs, videos, films, and other visual media accessible to people who are blind or visually impaired by providing descriptive narration of key visual elements in programs. Key visual elements in a program that a viewer who is visually impaired would ordinarily miss are described by voice. Actions, costumes, gestures and scene changes are just a few of the elements that, when described, engage the blind or visually impaired viewer with the story.

2.15 *Limited English Proficient (LEP)*

Individuals who do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English can be limited English proficient, or “LEP.” These individuals may be entitled to language assistance with respect to a particular type of service, benefit, or encounter.

2.16 *Four Factor Analysis*

Federal DOT guidance outlines **four factors** recipients should consider to assess language needs and decide what steps they should take to ensure meaningful access for LEP persons:

- 1) The number or proportion of LEP persons eligible to be served or likely to be encountered by a program, activity, or service of the recipient or grantee.
- 2) The frequency with which LEP individuals come in contact with the program.
- 3) The nature and importance of the program, activity, or service provided by the recipient to the LEP community.
- 4) The resources available to the MassDOT/MBTA and overall cost.

In each instance, this analysis will enable MassDOT/MBTA staff to determine the extent of language assistance that must be provided to enable LEP individuals to participate in a program or activity. For further information, including answers to specific situations that meeting planners may encounter, planners should consult the ADA Coordinator, the Title VI Specialist and/or the Language Access Plan.

2.17 *Vital Document*

A vital document is determined by the context of a program, service or activity, and can include but not be limited to an application, notice, complaint form, legal contract, and outreach material published by a covered entity in a tangible format that informs individuals about their rights or eligibility requirements for benefits and participation.

2.18 *Language Access Plan*

Under Federal Executive Order Executive Order 13166, each Federal agency is required to prepare a plan to improve access to its federally conducted programs and activities by eligible LEP persons. Each plan is required to be consistent with the standards set forth in related guidance, and shall include the steps the agency will take to ensure that eligible LEP persons can meaningfully access the agency's programs and activities. Just as federal agencies must have LEP Plans, as a condition of receiving federal financial assistance, they must establish guidelines for recipients such as MassDOT/MBTA to comply with Title VI and LEP requirements, including the provision of language assistance, as needed.

3.0 Scope

All public meetings hosted by, or on behalf of, MassDOT/MBTA.

4.0 Responsibilities

It is the responsibility of the MassDOT/MBTA staff or Department(s) charged with the coordination of the public meeting to ensure that the public meeting is accessible to all. The local contacts for the meeting facility, in conjunction with the responsible MassDOT/MBTA staff, are responsible for filling out the “Accessibility Checklist for Meeting Planners” in Attachment 6.1 to ensure the space is accessible prior to the meeting.

5.0 Policy

5.1 General Considerations

5.1.1 Public meeting planners shall identify at least one person who is responsible for making sure that the public meeting is accessible for all attendees. This individual shall serve as the contact for attendees requesting reasonable accommodations. See, Attachment 6.1 for a Checklist for Meeting Planners.

5.1.2 Public meetings should be planned and publicized as early as possible—ideally, at least 21 calendar days, but no less than 14 days in advance.

5.1.2.1 Meeting notices should include a date by which attendees should request reasonable accommodations—typically ten days before the meeting.

Note: After the cutoff date, staff must still try to provide an accommodation but should not guarantee the provision of the requested accommodation. Since it is so difficult to schedule CART and/or sign language interpreters with less than 2-3 weeks’ notice, most meetings should be publicized with 21 days’ notice. This allows attendees ample opportunity to request and receive appropriate reasonable accommodations.

5.1.3 Attendees shall not be charged for any reasonable accommodation provided.

5.2 Choosing a Location

5.2.1 Access to Nearby Transportation. All public meetings shall be within ¼ mile of an accessible bus stop or rail station, where feasible.

5.2.1.1 The path of travel from the transit stop to the meeting location shall be accessible. Specifically, it should be:

5.2.1.1.1 At least three feet wide

5.2.1.1.2 Unobstructed (not blocked by trash cans, light poles, etc.)

5.2.1.1.3 Free of steps, drop-offs or curbs

5.2.2 Parking. If parking is available to meeting attendees, meeting planners shall ensure that the number of accessible parking spaces available complies with state and Federal regulations. See, Attachment 6.2 for state and Federal regulations regarding accessible parking.

5.2.2.1 The path of travel from the accessible parking to the meeting location shall be accessible. Specifically, it shall be:

5.2.2.1.1 At least three feet wide

5.2.2.1.2 Unobstructed (no trash cans, light poles, etc.)

5.2.2.1.3 Free of steps, drop-offs or curbs

5.2.3 Identifying the Accessible Entrance. If the main entrance to the building (in which the public meeting is being held) is not the accessible entrance, a sign containing the universal symbol of accessibility with an arrow appropriately pointing to the accessible entrance shall be posted at the main entrance.

5.2.4 Ensure the alternate accessible entrance is unlocked and available to be used independently and that the path of travel to the alternate entrance is well lit (if the meeting is taking place at night). If the door is locked and intercom service or another format is used to gain access, an attendant must be at the door to accommodate deaf or hard of hearing individuals, as well as others with disabilities.

5.2.5 Accessible Restrooms. If restrooms are available for use by the public then all public meetings shall have at least one accessible restroom for men and one accessible restroom for women, or one accessible gender neutral restroom. See, Attachment 6.3 for state and Federal regulations regarding accessible restrooms.

5.2.5.1 The accessible restrooms shall be within reasonable proximity to the meeting room.

5.2.6 Accessible Telephones. If two or more public payphones are available at the meeting facility, at least one should be:

5.2.6.1 Equipped with TTY

5.2.6.2 Mounted no higher than 48" from the floor and provide clear floor space 30" wide and 48" wide (so that attendees using wheeled mobility can properly access the phone).

5.2.6.3 MassDOT/MBTA should notify the facility owner if the facility does not comply with the accessible telephone requirement.

5.2.7 The Meeting Room: The meeting room in which the public meeting will take place shall be made accessible for persons with disabilities. The following shall be provided:

5.2.7.1 An integrated seating area for wheeled mobility device users shall be made available.

5.2.7.1.1 If possible, meeting planners should remove several chairs to accommodate potential attendees who use wheeled mobility devices.

Note: Remove a chair to the side and to the rear of the designated space to ensure enough room for the wheeled mobility device.

5.2.7.1.2 Such spaces for wheeled mobility device users shall be dispersed throughout the room, and not clustered all in one section (e.g. all in the front or all in the back). This allows attendees using wheeled mobility a variety of seating/viewing options.

5.2.7.2 Space for Sign Language, CART and Foreign Language Interpreters

5.2.7.2.1 A well-lit area and chairs facing the audience shall be made available for sign language interpreters at the front of the room (likely just off to one side of the main presentation area). If a CART provider is to be used, a small table for the laptop and space for a screen and projector should be provided near an electrical outlet.

5.2.7.2.2 Priority seating at the front of the audience and in direct line of sight of the interpreters/CART provider shall be provided for attendees who are deaf/hard of hearing.

5.2.7.2.3 For foreign language interpreters, there is a need for space where they can sit with the individuals who require language assistance.

5.2.7.3 Aisles within the meeting room shall be

5.2.7.3.1 Clear of tripping hazards (e.g. electric cords).

5.2.7.3.2 At least 3 feet wide.

- 5.2.7.4 Microphones. The microphones used at public meetings shall be available on a stand that is adjustable in height.

Note: While wireless microphones have become popular, some attendees with disabilities will not be able to hold a microphone independently. In this situation, allowing an attendee use of a microphone stand adjusted to their height is almost always preferable to holding the microphone for them. Alternatively, and particularly for larger meetings, staff with a floating microphone would be preferable to facilitate communication.

- 5.2.7.5 Podiums. If any attendee may have an opportunity to speak at a podium, meeting planners shall ensure that either:

- 5.2.7.5.1 The podium is height adjustable, or

- 5.2.7.5.2 A small table is provided to the side of the podium.

- 5.2.7.5.2.1 The table shall be between 28 and 34" inches in height.

- 5.2.7.5.2.2 There shall be at least 27" of knee space from the floor to the underside of the table.

- 5.2.7.5.2.3 If a microphone is provided at the podium, one shall also be provided at the small table.

- 5.2.7.6 Raised Platforms. If any attendee may have an opportunity to move onto a raised platform or stage during the meeting, the raised platform or stage shall be accessible by:

- 5.2.7.6.1 A ramp that

- 5.2.7.6.1.1 Is at least 3 feet wide.

- 5.2.7.6.1.2 Does not have a slope that exceeds 1/12.

- 5.2.7.6.2 Platform lift

- 5.2.7.7 High Speed internet Connection. Public meeting rooms shall provide for a high speed internet connection to allow attendees who rely on video remote interpreting or CART. There should also be a conference capable telephone with a speakerphone function available.

5.3 American Sign Language and Foreign Language Interpreters, Assistive Listening Devices, CART and Video Remote Interpreting.

- 5.3.1 American Sign Language and/or foreign language interpreters shall be provided at all public meetings upon request. See, Attachment 6.4 for information on how to request an interpreter.

- 5.3.1.1 To ensure their availability, interpreters should be requested at least two weeks in advance of the public meeting.
- 5.3.1.2 The cost associated with providing sign language or foreign language interpreters shall be paid for by the Department hosting the event.
- 5.3.2 Assistive Listening Devices.** Assistive Listening Devices for attendees who are hard of hearing shall be provided at all public meetings upon request. See, Attachment 6.5 for information on how to provide assistive listening devices.
- 5.3.3** CART services shall be provided at all public meetings upon request (See Attachment 6.6 for information on how to provide CART services.). Staff should schedule or make requests for CART services at least two weeks in advance of the meeting, and preferably as soon as an attendee makes this need known. When remote CART services are to be used (the CART reporter is not in the room), staff should try to provide the reporter any technical terms or acronyms to be used, as well as the names of key meeting attendees before the meeting date.
- 5.3.4** Video Remote Interpreting shall be provided at all public meetings upon request via a computer/laptop with a webcam and high speed internet connection.

Note: Video Remote Interpreting is a relatively new form of technology and may be an adequate alternative to providing ASL interpreters in certain situations. However, if an attendee requests Video Remote Interpreting, ASL interpreters will be an adequate substitute, if the meeting planner cannot secure the requested technology.

5.4 Alternative Formats and Translation of Handouts/Presentation Material

Large print versions of all printed material shall be available at all public meetings. If requests for additional alternative formats are made in advance of the meeting (within the timeframes below), these formats must be available for the start of the meeting. If requests for alternative formats are made at or following the meeting, the alternative format must be provided within seven days of the request.

These requirements are the same with respect to translation into foreign languages, where the language requested is identified through application of the four factor analysis process, set forth in the MassDOT/MBTA Title VI Language Assistance Plan. When a language group is small, defined as 5% or 1,000, whichever is less, of the population of persons eligible to be served or likely to be affected or encountered, foreign language translations of “vital documents” should be provided,

and non-vital documents may be orally translated. This requirement does not affect the requirement to provide meaningful translation to one or more in a small group of LEP individuals through competent oral interpreters or translation where language services are needed and are reasonable.

5.4.1 Creating Alternative Formats

See attachment 6.7 for step by step instructions on creating alternative formats.

5.4.2 Large Print Version

5.4.2.1 At least five copies of any text-based printed material to be handed out during the meeting shall be in large print.

5.4.2.2 Large print meeting materials shall:

5.4.2.2.1 Be created using "Arial" font with a font size of 16 pt.

5.4.2.2.2 Have the same information as the original handout.

5.4.2.2.3 Have the highest contrast possible (e.g. black on white).

5.4.2.2.4 If graphics (such as images, tables, or graphs) are used in the original document, the same graphics shall be included in the large print version of the document.

5.4.2.2.4.1 If graphics are used in the large print document, a brief description of the image shall be provided. Image descriptions shall be brief and provide the viewer of the document with a general idea of what is in the image.

5.4.2.2.4.2 If tables or graphs are used in the large print document, a summary of the table or graph shall be provided.

5.4.3 Electronic Version

5.4.3.1 If an electronic version of materials is requested within 24 hours in advance of the meeting, this version shall be available for the meeting, if no advance request is made but rather is requested at or after the meeting, then meeting materials shall be made available electronically, within 7 calendar days of the request.

Note: Whenever possible, meeting planners should bring several copies of an electronic accessible version of the meeting material to the public meeting. Some individuals with visual

impairments or other disabilities may attend with portable screen reading software that would allow them to access electronic material during the meeting.

5.4.4 Braille Version

5.4.4.1 If a Braille version of materials is requested within one week in advance of the meeting, this version shall be available for the meeting, if no advance request is made but rather is requested at or after the meeting, then Meeting materials shall be made available in Braille within 7 calendar days of the request.

5.4.5 Audible Version

5.4.5.1 If an audible version of materials is requested within one week in advance of the meeting, this version shall be available for the meeting, if no advance request is made but rather is requested at or after the meeting, then meeting materials shall be made audible, within 7 calendar days of the request.

5.4.6 Foreign Language Version

5.4.6.1 If a common foreign language version of materials is requested within one week in advance of the meeting, this version shall be available for the meeting, if no advance request is made but rather is requested at or after the meeting, then Meeting materials shall be made available in the language requested within 7 calendar days of the request.

5.4.7 Other requests for alternate formats

5.4.7.1 Individual attendees may have unique specifications for alternate formats. All reasonable requests for alternate formats shall be honored upon request, within 7 calendar days of the request.

5.4.8 Meeting attendees will not be charged for any cost affiliated with the creation of alternate formats of meeting material.

5.5 Publicizing the Meeting

5.5.1 Public meetings shall be publicized as early as possible—ideally, at least 21 calendar days in advance, but never less than 14 days in advance. This allows attendees time to submit requests for reasonable accommodations and for meeting planners to set deadlines for accommodation requests to be made

in a timely manner. The meeting publicity also needs to be translated into the languages that are identified through application of the four factor analysis set forth in the MassDOT/MBTA Title VI Language Assistance Plan.

5.5.2 In addition to any other means, all public meetings shall be posted on www.mbta.com or <http://www.MassDOT/MBTA.state.ma.us>

5.5.3 All meeting notices shall include:

5.5.3.1 The statement “This location is accessible to persons with disabilities”

5.5.3.2 A brief listing of accessibility features that either are available or may be made available upon request during the public meeting (e.g. sign language, CART, assistive listening devices and/or foreign language interpreters).

5.5.3.3 Information on how to request reasonable accommodations by phone, e-mail or fax and the deadline for requests.

5.5.3.4 Information on how to request foreign language interpreter assistance.

5.5.3.5 See Attachment at section 6.7 for a sample meeting posting.

5.6 Additional Considerations

5.6.1 Within 48 hours, meeting planners shall follow-up with attendees who have requested reasonable accommodations to let them know their request has been received and will be honored to the extent possible.

Note: Especially in the case of ASL interpreters, the meeting planner may not know of their availability until 24 hours prior to the meeting. It is reasonable to let people know their request has been received and that it is in the process of being put in place, however if no interpreter is available people need to be notified and alternate plans must be made – such as CART or Video Relay.

5.6.2 Emergency Preparedness

5.6.2.1 In the event of an emergency, some attendees with disabilities may not be able to evacuate independently. Meeting planners shall familiarize themselves with the evacuation plan for the meeting space.

5.6.2.2 At the beginning of each meeting, meeting presenters shall announce the safety briefing--including information regarding where those attendees who would require assistance should wait during an emergency.

5.6.3 When opening a public meeting, presenters shall announce:

- 5.6.3.1 The presence and function of sign language interpreters (if interpreters are in the room), and/or CART providers
- 5.6.3.2 That assistive listening equipment is available
- 5.6.3.3 The location of accessible restrooms
- 5.6.3.4 The safety briefing (see 5.6.2.2).

5.6.4 When presenting, presenters at public meetings shall:

- 5.6.4.1 Speak slowly and clearly so that the sign language interpreters have time to interpret.
- 5.6.4.2 Verbally describe information presented visually (e.g. PowerPoint) so that attendees with visual impairments can access the information.
- 5.6.4.3 Ensure that any videos/DVDs shown during the meeting are encoded with closed captioning and are shown on a closed caption compatible device. Subtitles are an acceptable alternative.
 - 5.6.4.3.1.1 Provide an alternate version of the video/DVD with descriptive video/described narration. (See Attachment 6.9 for captioning resources.)

Note: It may not always be a good choice to use a described video in an open meeting as this can be a problem for other viewers.

6.0 Attachments

6.1 Accessibility Checklist for Meeting Planners

Meeting Date:

Meeting Time:

Subject of Meeting:

Location:

MassDOT/MBTA

Attendees:

Is there at least one person or Department who is responsible for ensuring that the public meeting is accessible for all attendees?

Print Name/Department: _____

Publicizing Meeting:

Has the public meeting been publicized at least 3 weeks in advance?

Has the meeting been publicized on the MassDOT/MBTA or MBTA website?

Has the meeting been publicized in the required foreign languages and ethnic newspapers for the relevant populations in the community where the meeting is to be held?

Does the public meeting notice include accessibility information, how to request a reasonable accommodation, relevant dates for making requests and information on whom to contact to request a reasonable accommodation?

Does the public meeting notice include information on how to request foreign language interpreters?

Facility:

Date of Facility Assessment: _____

Where applicable (in areas where public transportation is available), is the meeting location 1/4 mile or less from the nearest accessible bus stop or rail station?

- Where applicable, is there an accessible path of travel provided from the public transportation stop to the meeting location and meeting room?
- If parking will be available at the meeting location, are there accessible parking spaces available (review # of car and van accessible spaces)?
- Is there an accessible path of travel provided from the accessible parking area to the meeting area?
- If the main entrance to the building is not accessible, is there directional signage towards the accessible entrance?
- Is the accessible entrance unlocked and able to be used independently? If the meeting is taking place at night, is the path leading to the alternate entrance well lit?
- If there are restrooms that are open to the public, is there a pair of accessible restrooms available within close proximity of the meeting area? If not, is there at least one accessible gender neutral restroom?
- If there are public phones, is there at least one accessible (TTY and within appropriate height range) telephone available?
- If a stage or platform will be used during the public meeting, is it accessible?
- If a podium will be used during the public meeting, is the podium height- adjustable? If not, is there a small table (between 28 and 34 inches in height) provided to the side of the podium?
- Is there a high speed internet connection within the meeting space?

Ensuring Appropriate Accommodations:

- Have sign language and foreign language interpreters, if requested, been reserved for the public meeting?
- Have CART services, if requested, been reserved for the public meeting?
- Are Assistive Listening Devices available for the public meeting? Does someone know how to use the device? Have you checked the devices at least 24 to 48 hours before the meeting and

rechecked immediately before the meeting starts? (Note: For large meetings, to avoid the loss of equipment, it is reasonable to ask for a driver's license or other ID as collateral.)

- Are at least five large print copies of meeting handouts available?
- Are printed materials available upon request, in alternative formats and/or relevant foreign languages?
- Are film or video presentations closed captioned and audio described?

Facility/Room Setup (prior to meeting):

- If the main entrance to the building is not accessible, is the accessible entrance unlocked?
- Is there an integrated seating area for individuals who use a wheeled mobility device in the meeting room?
- Is there seating available for attendees who are deaf or hard of hearing, and have requested an accommodation, near the front of the meeting room so that attendees may see the interpreter/captioner, or lip read?
- Is there an appropriately lit area in the front of the room for sign/foreign language interpreters and/or CART providers?
- Are the aisles at least three feet wide and clear of obstacles or tripping hazards?
- If microphones are used during the public meeting, are adjustable microphone stands available for attendees? Can staff be used as floaters with microphones as an alternative?

For recordkeeping and reporting purposes, please submit a copy of this completed checklist to:

Massachusetts Department of Transportation
Office of Diversity and Civil Rights
10 Park Plaza, Suite 3170
Boston, MA 02116
(For MassDOT/MBTA hosted or sponsored meetings)

Or

Department of System-Wide Accessibility
MBTA
10 Park Plaza, Suite 4470
Boston, MA 02116
(For MBTA hosted or sponsored meetings)

6.2 Ensuring adequate accessible parking

6.2.1 See http://www.mass.gov/Eeops/docs/dps/aab_regs/521023.pdf for Massachusetts Architectural Access Board (MAAB) regulations

6.2.2 See <http://www.access-board.gov/ada-aba/final.cfm#a502> for Americans with Disabilities Act Architectural Guidelines (ADAAG)

6.3 Accessible Restrooms

6.3.1 See http://www.mass.gov/Eeops/docs/dps/aab_regs/521030.pdf for Massachusetts Architectural Access Board (MAAB) regulations

6.3.2 See <http://www.access-board.gov/ada-aba/final.cfm#a603> for Americans with Disabilities Act Architectural Guidelines (ADAAG)

6.4 How to request sign language, CART Providers or foreign language interpreters

6.4.1 Sign Language Interpreters

- Complete and submit an on-line request for interpreting services through the Massachusetts Commission for the Deaf and Hard of Hearing's (MCDHH) website
 - Go to <http://mass.gov/mcdhh>
 - Click on "Interpreter/CART referral services"
 - Select "Request an Interpreter on-line"
 - Note: A copy of the Request Form is attached at 6.7, for reference.
- Requests should be submitted within 21 days, but no later than 14 calendar days in advance of the meeting to ensure interpreter availability.
- If the meeting is cancelled or rescheduled, interpreter requests must be canceled at least 48 hours advance in order to avoid being billed for the service. CART providers must be cancelled no later than 72 hours in advance of the event.
- Interpreters invoices are billed as a minimum of two hours.

- For meetings that are anticipated to last more than 75 minutes, two interpreters shall be provided. In most situations, one CART provider is sufficient if the meeting is no longer than three hours.

6.4.2 How to reserve CART Providers

Complete and submit an on-line request for interpreting services through the Massachusetts Commission for the Deaf and Hard of Hearing's (MCDHH) website

Go to <http://mass.gov/mcdhh>

Click on "Interpreter/CART referral services"

Click on "[CART \(Communication Access Realtime Translation\) Providers](#)"

Click on "Request a CART Provider" and follow listed directions

Note: A copy of the Request Form is attached at 6.7, for reference.

6.4.3 Foreign Language Interpreters/Translators

- MassDOT/MBTA's policy combines the use of bilingual staff, interpreter services and translated materials to communicate effectively with persons who are not fluent in English. When a request for oral interpretation is made, or a significant language speaking population is expected to attend a public meeting, the following steps should be reviewed and carried out to ensure compliance with Title VI requirements.
- Conduct a four-factor analysis as to the kind of meeting in question and the populations that are in the affected communities, using the language group maps that are contained in the Language Assistance Plan. Identify the languages that are likely to be needed and consult with the Office of Diversity and Civil Rights Title VI Coordinator and/or Specialist for assistance with any problems concerning the language groups that may require interpreter services.
- Identify the source for interpreter services, recognizing that most providers require one-two weeks advance notice of a meeting, based on the language(s) to be interpreted.

6.4.2.1 Interpreter Resources

Projects should have a line item in the budget allocating funds for translation/interpretive services for public meetings. When additional resources are needed for unexpected or unanticipated documents or meetings, there may be funds available. Please contact your department manager to make a request through Budget to secure state or federal funds, as needed. For shared services or internal operations where there may not be a project number, please contact the Chief Administrative Officer of MassDOT/MBTA to secure the funds.

6.4.2.2 Request and cancellation timeframes

- Requests should be submitted at least 14 calendar days in advance of the meeting to ensure interpreter availability
- If the meeting is cancelled or rescheduled, interpreter requests must be canceled at least 48 hours advance in order to avoid being billed for the service
- Interpreter invoices vary by provider but may have a minimum of two to three hours.
- For meetings that are anticipated to last more than 75 minutes, two interpreters shall be provided.

6.5 How to reserve assistive listening devices

6.5.1 Contact MassDOT/MBTA Facilities at 857-368-9560.

6.5.2 Departments that frequently host public meetings are encouraged to purchase Assistive Listening Devices so that they are readily available.

6.5.3 Currently OTA/THE RIDE owns Assistive Listening Devices that other departments can reserve and sign out for a public meeting.

Contact:

Carol Joyce-Harrington, OTA/THE RIDE

617-222-2256 or CJoyce-Harrington@MassDOT/MBTA.com

6.6 How to Create Alternate Formats

6.6.1 Electronic Version

- 6.6.1.1 Accessible electronic formats include email, and Microsoft Word Document (DOC or DOCX), a text file (TXT), or Rich Text Format (RTF).

Note: Some attendees requesting material electronically may have a visual impairment and use screen reading software. The formats referenced above are most compatible with such software.

- 6.6.1.2 Public meeting materials that are created electronically shall:

- 6.6.1.2.1 Be created using "Arial" font and a font size of 16 pt.
- 6.6.1.2.2 Shall have the same information as the original document and shall have the highest contrast possible.
- 6.6.1.2.3 If graphics (such as images, tables, or graphs) are used in the original document, the same graphics shall be included in the electronic version of the document.
- 6.6.1.2.4 If images are used in the electronic document, a brief description (providing the viewer of the document with a general idea of what's in the image) shall be provided.
- 6.6.1.2.5 If tables or graphs are used in the electronic document, a summary of the table or graph shall be provided.

6.6.2 Braille Version

- 6.6.2.1 Meeting materials that are in Braille shall:

- 6.6.2.1.1 Be created using contracted Braille (Grade 2) and single-spaced.
- 6.6.2.1.2 Braille documents shall have the same information as the non-accessible handout.
- 6.6.2.1.3 If tables or graphs are used in the regular document, a summary of the table or graph shall be provided in the Braille document.

- 6.6.2.2 In order to create a Braille document:

MassDOT/MBTA's Central Planning Transportation Services (CTPS) currently owns and operates a Braille printer.

Contact:

Janie Guion, CTPS

617-973-7507 or jguion@ctps.org

6.6.3 Audible Version

6.6.3.1 Public meeting material that is recorded audibly shall:

6.6.3.1.1 Have the same information that's printed on the original handout.

6.6.3.1.2 Be spoken clearly.

6.6.3.1.3 Shall describe images used in the original handout.

6.6.3.1.4 Shall provide an explanation of any table or graph is used in a meeting document. The meeting planner shall ensure that the audible explanation of the table/graph is clearly explained and represents the table or graph on the printed document.

6.7 Sample meeting posting (in an MBTA context)

Meeting Date	September 21, 20__
Meeting Time	1:00 P.M.-3:00 P.M.
Subject of Meeting	Judge Patrick King's Update on MBTA/BCIL Settlement Agreement
Location	State Transportation Building, 2nd Floor, Conference Rooms 2-3
MBTA Attendees	Department of System-Wide Accessibility

Sample Text

Meeting Purpose - Judge Patrick King will be hosting a public meeting to discuss his assessment of the MBTA's progress towards compliance with the MBTA/BCIL settlement agreement. Please come to share your questions and comments regarding accessibility at the T.

Notice: This location is accessible to people with disabilities. MassDOT/MBTA provides reasonable accommodations and/or language assistance free of charge upon request (including but not limited to interpreters in American Sign Language and languages other than English, open or closed captioning for videos, assistive listening devices and alternate material formats, such as audio tapes, Braille and large print), as available. For accommodation or language assistance, please contact MassDOT/MBTA's Chief Diversity & Civil Rights Officer by phone at (857) 368-8580, TTD/TTY at (857) 266-0603, fax (857) 368-0602 or by email to MASSDOT/MBTA.CivilRights@dot.state.ma.us. Requests should be made as soon as possible prior to the meeting, and for more difficult to arrange services including sign-language, CART or language translation or interpretation, requests should be made at least ten business days before the meeting.

(Note: This notice should be translated into the languages other than English that are identified to be necessary for the Limited English Proficient populations represented in the area of the project or initiative to be invited to participate.)

6.8 Resources for adding closed captioning and/or described narration to your video

- WGBH - <http://main.wgbh.org/wgbh/pages/mag/services/captioning/>
- 3 Play Media - <http://www.3playmedia.com/>
- Line 21 - <http://www.line21.tv/>
- TelePrint Digital Media - <http://www.tele-print.com/>
- Broadcast Captioning & Consulting Services - <http://www.closedcaptioning.com/>

6.9 Document History (Reserved)

4. Public Participation during the Fare Change process

4.1 Public Process for Fare Increase

The MBTA followed its most recent Policy on Public Process for Fare Increases, updated in 2009.

“Proposed changes to a fare restructuring, and/or a fare increase will be developed with significant public input and will be adopted after consultation with the Rider Oversight Committee, public workshops, public comment and at least one designated public hearing, and MBTA Board of Directors approval³. In addition, this public process shall be followed, to the extent applicable, for proposed major service reductions, defined as a systemwide reduction of 10% or more, as measured by typical daily usage. Proposed changes in fares and service reductions may be consolidated for purposes of this public process⁴

The public process shall include (but is not limited to) the following steps:

1. The MBTA will provide public notification of proposals of any of the following types:

- Changes to the fare structure
- A fare increase
- Major service reductions.

At the time of notification, the MBTA will issue a schedule for a public outreach process, provide background information on the reasons for the proposed changes, and provide preliminary summary documents (including preliminary and summary impact analyses that address revenue and ridership).

2. The MBTA will hold public workshops to discuss the proposed changes and solicit direct input from the public. For major changes to the fare structure, or a system wide fare increase of 10% or more (or a system-wide fare increase of less than ten percent that results in a cumulative increase

³ The MBTA may, without action by the MBTA Board of Directors, determine and, from time to time, adjust or suspend fares for occasional, short-term service related to special events, to promote the use of a particular service, or where, in the judgment of the General Manager, such action is required by considerations of the public safety or convenience. The MBTA may also provide pilot programs to test the effectiveness of different types of fare discounts before seeking Board approval for permanent implementation.

⁴ The Public Process described herein is intended to apply primarily to service reductions that may be proposed and/or considered in conjunction with changes in fare levels or fare structure. Nothing herein is intended to alter the process applicable to general service planning as described in the MBTA's Service Delivery Policy, adopted January 14, 2009.

of ten percent or more within a three year period)⁵, at least ten workshops will be held in the following areas:

- Downtown Boston – 2 meetings
- Metropolitan Urban Neighborhoods – 3 meetings
- Metropolitan Suburban Communities – 4 meetings
- I-495 corridor – 1 to 3 meetings

For minor changes to the fare structure, or for a fare increase of less than 10%, the MBTA will hold up to five public workshops, to be located where feasible in areas most affected by the changes. The public workshops will be followed by a public comment period, during which the public can submit feedback in writing via mail, email or the MBTA website. The MBTA may designate one or more of the public workshops as a public hearing or hearings for purposes of 3.

3. As part of the public process, the MBTA will make available via the MBTA website its most recent § 11 reports to the Governor, Legislature, and Advisory Board, as well as any draft report or analysis addressing revenue, ridership, air quality, and environmental justice impacts. Following the availability or posting of such materials, the MBTA will hold at least one public hearing, which shall be held in a central location or locations within the MBTA service district. At any such hearing, the MBTA will make a formal presentation regarding the proposed changes, and the public will have the opportunity to provide testimony on the proposals for the public record.

4. Following the public workshops and hearing(s), the MBTA may make revisions to the draft documents, based on the comments received through the public workshops, comment period and hearing(s). The revised drafts and a summary of the public comments will be submitted to the MBTA Advisory Board and Board of Directors for review. The summary of comments, with MBTA responses, will be made available to the public on the MBTA website.

5. In connection with a proposed system-wide fare increase of ten percent or more, the MBTA Board of Directors will make environmental findings. Such findings will include: the purpose and need of a fare increase; actions taken to avoid a fare increase; the impacts of the fare increase, including economic, transportation, air quality, and environmental justice; alternatives to a fare increase, including impacts of no fare increase; and measures to reduce impacts. Environmental consideration of major service reductions shall be conducted in accordance with applicable law.

⁵ The percent of fare increase represents the percent of additional fare revenue realized by the MBTA as a result of increased fares. Thus, with a system-wide fare increase of ten percent, riders on some services may experience an increase of more than ten percent and others less.

6. The Board of Directors will make a final vote on the proposed changes after considering the overall financial condition of the MBTA, the ridership and revenue implications of the changes, the staff's summary of public comments, the air quality and environmental justice analyses, and comments from the MBTA Advisory Board. Except where the Board of Directors determines that the condition of the MBTA requires prompt action, the Board of Directors vote will not take place until at least 15 days after the summary of public comments has been made available.

Public notifications will be placed in citywide and community newspapers, on the MBTA website, on transit vehicles, and via station signage. Documents will be made available electronically on the MBTA website (formatted for easy download) and in hard copy at local libraries throughout the service area. Reasonable measures will be taken to assure that notifications are made to appropriate groups of persons with limited English proficiency (LEP).

Public workshops and hearing(s) will be scheduled Monday – Thursday, will be held at times that are convenient for commuters and transit dependent riders, and will take place at locations that are within walking distance of MBTA services.

5. Public Participation during the Capital Project Development and Design Process

5.1 Project Development

The project development process covers a range of activities extending from the identification of a project need to a finished set of contract plans, through construction and project completion. The sequence of decisions made through the project development process progressively narrows the project focus and, ultimately, leads to a project that addresses the identified needs. The MBTA coordinates all project planning with the Office of Transportation Planning (OTP).

The MBTA is committed to providing ample opportunities for public participation throughout the entire project development process. This work and coordination follow the planning phase to take advantage of research already conducted on the communities impacted by a project and the level of public support, measured through the public participation process.

The procedures MassDOT/MBTA has adopted for project development are intended to be implemented in conformity with the MassDOT/MBTA Title VI and Americans with Disabilities Act protocols, policies and procedures for inclusive and accessible public participation provided in this document.

5.1.1 Need Identification

The project development process is initiated in response to an identified need in the transportation system. This need can result from suggestions or concerns about a regularly maintained asset or by the operation of a performance-management system, such as MassDOT/MBTA's bridge management system, or a recent corridor or area planning process. Problem, need, or opportunity identification can also occur through the regional planning initiatives of a planning organization or arise from community, legislative, or citizen input.

The development of solutions to address identified needs often involves input from transportation planners, community leaders, citizens, environmental specialists, landscape architects, natural resource agencies, local public works officials, permitting agencies, design engineers, financial managers, and agency executives. Solutions might target a single mode of transportation, or address the range of road users including pedestrians, bicyclists, transit operators, automobile drivers, and truckers moving freight and goods. It is important to engage from the beginning of project development.

Transportation decision making is complex and can be influenced by legislative mandates, environmental regulations, financial limitations, agency programmatic commitments, and partnering opportunities. Decision makers and reviewing agencies, when consulted early and often during the project development process, can ensure that all participants understand the potential impact these factors can have on project implementation.

5.1.2 Project Planning

Upon identification of a transportation improvement need, the planning process commences. As part of the planning process, the project proponent must conduct a public participation outreach and involvement program, provide information regarding the project, and decide, based on the totality of information gathered during the planning process as well as public input, whether to continue the project development process.

In the planning phase, the proponent identifies issues, impacts, and potential required approvals in order to determine which design and permitting processes are called for. This phase also helps to define project responsibilities and benefits.

Public participation in a project should begin early in project planning and before there is a recommended course of action. Consultation with public involvement specialists on early and long-term efforts is recommended wherever a broad-based public involvement effort is planned and

implemented. The initial public outreach process starts with an early informational meeting and continues at strategic milestones during the planning process. Substantial effort should be made to reach a broad spectrum of interested parties at this early project stage and throughout the project.

Public meetings are conducted during the planning phase in order to relay information to the general public and to solicit input to the project. The public meetings serve as forums at which MassDOT/MBTA can learn about and respond to community concerns. A public meeting typically begins in an open house format to allow individuals to speak one-on-one with MassDOT/MBTA staff regarding their concerns and questions with respect to the project, and then formal presentations are made to share information and elicit public comments and suggestions.

During the scoping of projects, MassDOT/MBTA coordinates with the affected metropolitan planning organizations (MPOs), regional planning agencies (RPAs), regional transit authorities (RTAs), and municipalities to determine the amount and type of public outreach that will be required for the project. These entities maintain Public Participation Plans of their own and should be contacted directly for a copy of said plans.

Following review by all constituents and by environmental agencies of the alternatives and proposed project, the Project Planning Report can be completed and made ready for review. The report documents the need for the project, existing and future conditions, alternatives considered, public participation outcome, and solution recommended.

5.1.4 Construction

After a construction contract is awarded, the proponent and the contractor will need to develop a construction management plan. The permitting agencies, local authorities, businesses, and affected members of the general public need to be informed of the plan. These entities should also be notified as changes in detours, traffic operations, and construction areas and activities occur throughout the project.

Before construction activities begin, the proponent and construction manager must determine the appropriate type of public notification and participation needed. Different projects result in different types of disruption to transportation and other nearby activities. For simple projects, including resurfacing, a minimal degree of public participation may be needed. For these projects, the proponent should, at a minimum, notify abutters (in languages other than English, if appropriate) of the impending construction activity.

For complex projects, the proponent may need to schedule a construction management plan meeting with abutters and other project participants (local boards, interest groups, business associations, etc.). At this meeting, the proponent can describe the types of construction activity needed, construction phasing, and durations. Issues and concerns associated with the construction period can be identified and adjustments made to the construction management program to minimize community impacts.

It is critical to remain in contact with stakeholders, neighbors, abutters, legislators, and municipal officials throughout the duration of a project, including the construction phase. Monthly or quarterly stakeholder and abutter meetings should be held when the size or location of a project calls for them. In addition, MassDOT/MBTA will utilize the following communication tools to share project information and receive feedback.

- **MassDOT/MBTA website:** By the time construction is underway, many projects already have their own project page on the MassDOT/MBTA website. The project page should be a clearinghouse for accurate, up-to-date information. It is important that the Project Manager or a Public Affairs staff person assigned to the project page update the content regularly throughout the duration of the project. In addition, any public meetings scheduled for a project should always be posted in the MassDOT/MBTA website calendar.
- **Media:** MassDOT/MBTA utilizes press releases, advisories, alerts, and other traditional forms of media outreach.
- **Social media tools:** MassDOT/MBTA currently uses Twitter, MassDOT blog, Flickr, email distribution lists, and other new media venues for project updates, traffic advisories, and notices of upcoming project meetings.
- **Public Affairs email account:** MassDOT/MBTA has an email account that is used to send meeting notices and traffic advisories to the project contact lists and to receive public input.

6. Public Participation Process for Service Planning & Operations

6.1 Service Planning/ Operations

The MBTA Board of Directors adopted the *Service Delivery Policy* in September 1996. This policy defined service standards and outlined a process to evaluate and modify service. Standards relate to:

- Span of Service
- Frequency of Service
- Vehicle Loading
- Schedule Adherence
- Net Cost per Passenger

6.2 Service Planning Outreach Process

After the MBTA releases its draft proposal for service changes, the MBTA holds a series of meetings to solicit feedback and comments on the proposed changes. In addition, the MBTA has established an e-mail (serviceplanning@mbta.com) to receive public comment on proposed service plans. The first Service Plan was implemented in 1998, and since then major service changes have been implemented in 2002, 2004, 2006 and 2009, using the same Service Plan process. The Service Delivery Policy itself has also been refined since 1996, as a part of the process.

Public participation in the service planning process varies somewhat by mode and occurs as both an on-going process and as a Service Plan specific process. The purpose of public involvement in the service planning process is to promote a regular dialogue with existing and potential riders, elected officials, and communities regarding their ever-changing service needs

On-Going Public Outreach

The MBTA provides avenues for on-going communication through the MBTA's website, as well as the customer complaints phone line and comments sent to individual MBTA officials. Service related comments/requests are directed to the appropriate department for consideration and response. Upon request, MBTA staff also attend public meetings held by municipalities and meetings with public officials to address specific service issues. In addition, from time to time, the MBTA may conduct specific market or route-based surveys to gather direct input on a major service change or potential new service.

Biennial Service Plan Public Outreach

Service Plan outreach efforts are intended to provide members of the public with the opportunity to submit service requests to the MBTA for consideration in development of the Biennial Service Plan. To this end, the MBTA solicits ideas for service changes through written comments (submitted on-line or via the mail), as well as through public meetings throughout the service area, before a draft plan is written.

Upon completion of the draft biennial Service Plan, the MBTA schedules a second round of public meetings in appropriate locations. At these open meetings the MBTA presents the analysis and issues behind the proposed service changes and solicits public comments on them. In addition, at least one Public Hearing is held to receive formal public comments on the draft Biennial Service Plan. MBTA staff then assess and analyze the suggestions made through the public comments and, as appropriate, incorporate them into the final recommendations that go to the MBTA Board of Directors for approval before implementation.

All Service Plan public notifications, meetings, and hearings will conform to the requirements of the Americans with Disabilities Act, Title VI of the Civil Rights Act of 1964, and MBTA policies associated with these laws.

APPENDIX 1

Federal Public Participation Mandates

23 CFR 450

The federal regulations concerning public participation in statewide transportation decision making are specified in Title 23, Section 450.210, of the Code of Federal Regulations (CFR). These regulations require that public involvement processes be proactive and provide complete information, timely public notice, full public access to key decisions, and opportunities for early and continuing involvement; they leave the choice of methods for facilitating participation to the discretion of each state. The regulations specify that participation processes must provide:

- Early and continuing opportunities for public involvement
- Timely information on transportation issues and decision-making processes
- Reasonable access to technical and policy information
- Electronically accessible public information on the Web
- Adequate notice of involvement opportunities and time for review and comment at key decision points
- Procedures for demonstrating explicit consideration of and responses to public input
- A process for soliciting and considering the needs of traditionally underserved populations
- Periodic review and evaluation of the participation process
- Public meetings at convenient and accessible locations and convenient times
- Visualization techniques to describe the proposed plans and studies
- 45 calendar days for public review of and written comment on public participation procedures in the development of the Long-Range Statewide Transportation Plan (LRSTP) and the Statewide Transportation Improvement Program (STIP) before new procedures and any major revisions to existing procedures are adopted

Title 23, Section 450.212, specifies the public participation requirements for systems-level, corridor, and subarea planning studies.

Title 23, Section 450.214, specifies the public participation requirements for development of the Long-Range Statewide Transportation Plan.

Title 23, Section 450.216, specifies the public participation requirements for development of the Statewide Transportation Improvement Program.

Title 23, Section 450.218, specifies that the transportation-planning process is to be carried out in accordance with all of the applicable requirements of:

- 23 USC 134 and 49 USC 5303 regarding metropolitan transportation planning, 23 USC 135 and 49 USC 5304 regarding statewide transportation planning, and 23 CFR 450 regarding planning assistance and standards.
- Title VI of the Civil Rights Act of 1964, as amended (42 USC 2000d–1), and 49 CFR part 21 regarding nondiscrimination in federally-assisted programs of the Department of Transportation.
- 49 USC 5332, prohibiting discrimination on the basis of race, color, creed, national origin, sex, or age in employment or business opportunity
- Section 1101(b) of SAFETEA-LU (Pub. L. 109–59) and 49 CFR part 26, regarding the involvement of disadvantaged business enterprises in U.S. DOT–funded projects
- 23 CFR part 230, regarding implementation of an equal employment opportunity program on federal and federal-aid highway construction contracts
- Americans with Disabilities Act of 1990 (42 USC 12101 *et seq.*) and 49 CFR parts 27, 37, and 38
- In states containing air pollutant nonattainment and maintenance areas, Sections 174 and 176 (c) and (d) of the Clean Air Act, as amended (42 USC 7504, 7506 [c] and [d]) and 40 CFR part 93
- Older Americans Act, as amended (42 USC 6101), prohibiting discrimination on the basis of age in programs or activities receiving federal financial assistance
- Section 324 of Title 23 USC, regarding the prohibition of discrimination based on gender
- Section 504 of the Rehabilitation Act of 1973 (29 USC 794) and 49 CFR part 27, regarding discrimination against individuals with disabilities

Americans with Disabilities Act of 1990 (ADA)

The Americans with Disabilities Act of 1990 (ADA) states that “no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of services, programs, or activities of a public entity, or be subjected to discrimination by any such entity.” Therefore, ADA requires that locations for public participation activities, as well as the information presented, must be accessible to persons with disabilities.

ADA requires specific public participation efforts for the development of paratransit plans:

- Hold a public hearing
- Provide an opportunity for public comment
- Consult with disabled individuals

Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1964, together with related statutes and regulations, provides that “no person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.” The entire institution, whether educational, private or governmental, must comply with Title VI and related Federal civil rights laws, not just the program or activity receiving federal funds.

FTA C 4702.1A, Title VI and Title VI-Dependent Guidelines for Federal Transit Administration Recipients, provides guidance on promoting inclusive public participation. This circular recommends the seeking out and consideration of the viewpoints of minority, low-income, and LEP populations when conducting public outreach and involvement activities. It identifies the following effective practices for fulfilling the inclusive public participation requirement:

- Coordinate with individuals, institutions, or organizations and implement community-based public involvement strategies to reach out to members of the affected minority and/or low-income communities.
- Provide opportunities for public participation through means other than written communication, such as personal interviews or use of audio or video recording devices to capture verbal comments.

- Use locations, facilities, and meeting times that are convenient and accessible to low-income and minority communities.
- Utilize different meeting sizes or formats or vary the type and number of news media used to announce public participation opportunities, tailoring communications to the particular community or population.
- Implement DOT's policy guidance concerning recipient's responsibilities to LEP persons to overcome barriers to participation.

Executive orders regarding environmental justice and outreach to persons with limited English proficiency are also regulated under Title VI of the Civil Rights Act:

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 1994

This executive order states that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." Traditionally underserved groups such as low-income and minority populations must be identified and given increased opportunity for involvement in order to ensure effective participation.

Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, 2000

This executive order requires that recipients of federal financial aid ensure that their programs and activities that are normally provided in English are accessible to persons with limited English proficiency.

23 USC 109(h)

The U.S. Secretary of Transportation is required by 23 USC 109(h) to promulgate guidelines to ensure that possible adverse economic, social, and environmental effects relating to any proposed project on any federal-aid system have been fully considered in developing such project, and that the final decisions on the project are made in the best overall public interest, taking into consideration the need for fast, safe, and efficient transportation, public services, and the costs of eliminating or minimizing such adverse effects as the following:

- Air, noise, and water pollution

- Destruction or disruption of manmade and natural resources, aesthetic values, community cohesion, and the availability of public facilities and services
- Adverse employment effects, and tax and property value losses
- Injurious displacement of people, businesses, and farms
- Disruption of desirable community and regional growth

23 CFR 771

The joint FHWA/FTA regulations of 23 CFR 771 prescribe the policies and procedures for implementing the National Environmental Policy Act of 1969 as amended (NEPA) and the Council on Environmental Quality (CEQ), 40 CFR 1500-1508. It sets forth all FHWA, FTA, and U.S. DOT requirements under NEPA for the processing of highway and urban mass transportation projects and sets forth procedures to comply with 23 USC 109(h), 128 and 138, and 49 USC 303, 1602(d), 1604(h), 1604(i), 1607a, 1607a-1, and 1610.

Section 771.111 discusses early coordination, public involvement, and project development.

Section 771.111 (h) specifies (for the federal-aid highway program) that each state must have procedures approved by the FHWA to carry out a public involvement/public hearing program pursuant to 23 USC 128 and 40 CFR parts 1500 through 1508.

State public involvement/public hearing procedures must provide for:

- Coordination of public involvement activities and public hearings with the entire NEPA process.
- Early and continuing opportunities during project development for the public to be involved in the identification of social, economic, and environmental impacts, as well as impacts associated with relocation of individuals, groups, or institutions.
- One or more public hearings or the opportunity for hearing(s)⁶ to be held by the state highway agency at a convenient time and place for any federal-aid project that requires significant amounts of right-of-way, substantially changes the layout or functions of connecting roadways or of the facility being improved, has a substantial adverse impact on

⁶ An “opportunity for hearing(s)” is when the public is given the opportunity to request that one or more hearings be held so that members of the public can give formal comments on the public record.

abutting property, otherwise has a significant social, economic, environmental, or other effect, or for which the FHWA determines that a public hearing is in the public interest.

- Reasonable notice to the public of either a public hearing or the opportunity for a public hearing. Such notice will indicate the availability of explanatory information. The notice shall also provide information required to comply with public involvement requirements of other laws, executive orders, and regulations.

49 CFR 24.8(b)

This section requires that the implementation of uniform relocation assistance and real property acquisition for federal and federally-assisted programs is in compliance with Title VI of the Civil Rights Act of 1964.

APPENDIX 2

The development of an effective public participation program for a transportation plan, program, or project is a strategic effort that requires techniques designed to meet the particular needs involved. MassDOT/MBTA has considered and based its public participation approaches on the following guidance from the United States Department of Transportation, to systematically set up and implement a public participation program for a specific plan, program, or project:

1. **Set goals and objectives for your public participation program.** *The goals and objectives derive from the specific circumstances of a given transportation plan, program, or project. What decisions, formal or informal, are to be made? When? By whom? What public input is needed? Public input can be in the form of a consensus on a plan or a buildable project. Consensus does not mean that everyone has to agree enthusiastically but that all influential groups and individuals can live with a proposal. Public input can be in the form of information used by staff or decision makers. Agencies use the objectives to form the public involvement program. The more specific the objectives, the better they will guide the involvement program.*
2. **Identify the people to be reached.** *The general public and those directly affected, such as abutting property owners, are some of those who should be reached. If the public is not included or there is no proof of our attempt to reach out, there may be grounds for concerned individuals to challenge the fairness of a project development process. Review who is affected directly and indirectly, as well as those who have shown past interest. Look for people who do not traditionally participate, such as minorities and low-income groups. What information do they need to participate? What issues or decisions affect which specific groups or individuals? How can their ideas be incorporated into decisions? New individuals and groups appear throughout a public involvement program; there should be a way to identify and involve them. Conceptualize the public as a collection of discrete groups, individuals, and the general public; each has different interests and different levels of energy for participation. Most importantly, we must be clear that every member of the public we serve has a right to be part of any transportation planning process, and we are obligated to create real opportunities in support of that right.*

Usually, setting the goals and objectives for a public participation program and identifying the people to be reached should interact and are conducted simultaneously. In addition to brainstorming and analysis by agency staff, MassDOT/MBTA staff should ask members of the public for their input on goals, objectives, and names of people who might be interested. This can be done through key person interviews or focus groups or public opinion surveys.

3. **Develop a general approach or set of general strategies that are connected to the goals and objectives of the participation program and the characteristics of the target audiences.** For example, if an objective is to find out what people think about a proposal, use several techniques for eliciting viewpoints. Strategies fit the target audience in terms of what input is desired and the level of interest or education. General approaches respect agency resources of time, money, and staff. A general approach can be visualized in terms of a principal technique; for example, a civic advisory committee. It could be visualized as a stream of different activities connected to specific planning or project decisions. Alternatively, a general approach could be viewed as a focus on one or more public groups or interests. Be sure to check with members of the public for ideas on your general approach and whether the public to be reached finds the approach acceptable.
4. **Flesh out the approach with specific techniques.** Consult past experience for what works and does not work. Look at manuals of techniques, such as Public Involvement Techniques for Transportation Decision-Making (<http://www.fhwa.dot.gov/reports/pittd/cover.htm>) and the International Association for Public Participation's Public Participation Toolbox (provided in Appendix A). Choose techniques that fit your specific purpose and your public. Target individual groups with appropriate techniques. Approaches that fit the general public often do not fit specific groups well and result in lack of attendance at meetings. Do not isolate groups; provide a way for them to come together and for the general public to review what groups have contributed. This linkage can be essential for building consensus, when needed.
5. **Assure that proposed strategies and techniques aid decision-making to close the loop.** Ask agency staff the following questions: Are many people

participating with good ideas? Are key groups participating? Is the public getting enough information as a basis for meaningful input? Are decision-makers getting adequate public information when it is needed? If a consensus is needed for decision-making, consensus-building techniques like negotiation and mediation or collaborative task forces may be useful. Ask participants who is missing from the participation process. How can missing participants be attracted? Do participants think discussion is full and complete? Do they think the agency is responsive? Is participation rewarding? If not, why not? Continually evaluate and make mid-course corrections.



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Appendix D

Community

Organization

Distribution List

for Fare Increase

Brochure



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Community Organization List

Organization Name	Address	City	State	ZIP Code	E-mail Address
ABCD North End/West End Neighborhood Svc. Center	1 Michelangelo St.	Boston	MA	02113	
Allston-Brighton CDC	20 Linden St., Suite 288	Allston	MA	02134	info@allstonbrightoncdc.org
Arbour Counseling Services	14 Fordham Rd.	Allston	MA	02134	
Asian American Civic Association	87 Tyler St.	Boston	MA	02111	info@aaca-boston.org
Asian American Service Association, Inc.	550 Hancock St.	Quincy	MA	02170	info@aasa-ma.org
Boston Center for Independent Living	60 Temple Place	Boston	MA	02111	
Boston Centers for Youth & Families	1483 Tremont St.	Boston	MA	02120	BCYF@cityofboston.gov
Boston Chinatown Neighborhood Center	38 Ash St.	Boston	MA	02111	anna.fan@bcnc.net
Boston Public Health Commission	1010 Massachusetts Ave., 2nd	Boston	MA	02118	info@bphc.org
Boston Public Library Central Branch	700 Boylston St.	Boston	MA	02116	mfobrien@bpl.org
Cambodian Buddhist Inc.	P.O. Box 8306	Lowell	MA	01853	narong@CambodianBuddhist.org
Casa Myrna Vasquez	P.O. Box 180019	Boston	MA	02118	info@casamyrna.org
Casa Nueva Vida	53 Glen Rd.	Jamaica Plain	MA	02130	manuel.duran@casanuevavida.org
Centro Latino de Chelsea	267 Broadway	Chelsea	MA	02150	info@centrolatina.org
Centro Presente	17 Inner Belt Road	Somerville	MA	02143	centro@cpresent.org
Chelsea Human Services Collaborative	300 Broadway	Chelsea	MA	02150	mail@chelseacollab.org
Children's Services of Roxbury, Inc.	520 Dudley St.	Roxbury	MA	02119	info@csrox.org
Chinese Progressive Assoc.	28 Ash St.	Boston	MA	02111	justice@cpaboston.org
Chinese Progressive Association	1 Nassau St.	Boston	MA	02111	
City Life/Vida Urbana	284 Armory St.	Jamaica Plain	MA	02130	info@clvu.org
Codman Square CDC	587 Washington St.	Dorchester	MA	02124	info@csndc.com
Community Minority Cultural Center	298 Union St.	Lynn	MA	01902	
Dante Alighieri Cultural Center	41 Hampshire St.	Cambridge	MA	02139	
Dimock Health Center	55 Dimock St.	Roxbury	MA	02119	info@dimock.org
Dorchester Bay Economic Development Corp.	594 Columbia Road	Dorchester	MA	02125	ddsantis@dbedc.org
Dudley Street Neighborhood Initiative	504 Dudley St.	Roxbury	MA	02119	urbanvillage@dsni.org
East Boston Ecumenical Community Center (EBECC)	50 Meridien St., Suite B1	East Boston	MA	02128	ebecc.admin@verizon.net
East Boston Social Center	60 Central Square	East Boston	MA	02128	jkelly@ebsoc.org
East Boston Social Center	68 Central Square	East Boston	MA	02128	
East End House	105 Spring St.	Cambridge	MA	02141	info@eastendhouse.org
Elizabeth Peabody House	277 Broadway	Somerville	MA	02145	info@elizabethpeabodyhouse.org
FIERI Boston		East Boston	MA		
Galerie Haitienne WNTN 1550 AM	143 Rumford Ave.	Auburndale	MA	02466	
Haitian American Public Health Initiative	10 Fairway St.	Mattapan	MA	02126	jeanmarc.jnbaptiste@haphi.org
Harborside Community Center - East Boston Latino Coalition	312 Border St.	East Boston	MA	02128	hside00@verizon.net
Harvard Street Neighborhood Health Center	632 Blue Hill Avenue	Dorchester	MA	02121	harvardstreet@bmc.org
HOPE (Hispanic Office of Planning & Evaluation)			MA		
Hyde Square Task Force	375 Centre St.	Jamaica Plain	MA	02130	david@hydesquare.org
Inquilinos Boricuas en Acción (IBA)	405 Shawmut Ave.	Boston	MA	02118	info@iba-etc.org
Italia Unita	35 Bennington St.	Boston	MA	02128	italiaunita@verizon.net
Italian American War Veterans	61 Lucia Ave.	Revere	MA	02151	
Italian American WW Veterans	40 Oakland Rd.	Malden	MA	02148	
Italian Benevolent Society	31 Jackson St.	Newton	MA	02459	
Massachusetts Alliance of Portuguese Speakers	1 Stoughton St.	Dorchester	MA	02125	imorais@mapsinc.org
Massachusetts Alliance of Portuguese Speakers	1046 Cambridge Street	Cambridge	MA	02139	
Massachusetts Alliance of Portuguese Speakers	24 Union Ave., Suites 8 & 10	Framingham	MA	01702	
Massachusetts Alliance of Portuguese Speakers	92 Union Square	Somerville	MA	02143	
Mayor's Office of New Bostonians	1 City Hall Square, Room 803	Boston	MA	02201	NewBostonians@cityofboston.gov
North End Community Health Center	332 Hanover St.	Boston	MA	02113	
Nuestra Comunidad Development Corp.	56 Warren St. Suite 200	Roxbury	MA	02119	info@nuestracdc.org
Russian American Cultural Center	78 Tyler St.	Boston	MA	02111	raccbostonma@aol.co

Community Organization List

Russian Community Association, Inc.	215 Harvard Ave., Suite B	Allston	MA	02134	rcam@comcast.net
Saint Anthony's Parish	400 Cardinal Medeiros Avenue	Cambridge	MA	02141	
Sanghikaram Wat Khmer/Khmer Theravada Buddhism	109-110 Chestnut St. and '10 S	Lynn	MA	01902	
The Log School	222 Bowdoin St.	Dorchester	MA	02122	
The Ukrainian Center	1056 East Dedham St.	Dedham	MA	02026	uke@ukrainiancenter.org
Travelers Aid	727 Atlantic Ave.	Boston	MA	02111	
Ukrainian-American Organization	16 Newhall Street, Suite 4	Lynn	MA	01902	
Urban League of Eastern Mass.	88 Warren St.	Roxbury	MA	02119	
Vietnamese American Initiative for Development, In	42 Charles St., Suite E	Dorchester	MA	02122	
Vietnamese-American Civic Association, Inc.	1452 Dorchester Ave., 3rd floor	Dorchester	MA	02122	

Appendix E

South Coast Rail
Brochure in

English, Spanish,
and Portuguese



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South Coast Rail

The South Coast Rail project will restore passenger transit service between Boston and Fall River and New Bedford. The cities of Taunton, Fall River and New Bedford are the only communities within 50 miles of Boston that are not served by commuter rail. South Coast Rail will provide a new, convenient travel option that will be cheaper than driving.

We expect the project will also bring other benefits, too. Public transportation will help improve the economy in Southeastern Massachusetts, creating new jobs and a new way for people to access these jobs. This project will help revitalize communities struggling with unemployment and few investments. The new transit system will help minimize emissions from vehicles into the environment. The South Coast Rail project will bridge the gap between Boston and the South Coast for many people who have faced challenges traveling between the two areas. The project will help unlock the economic potential of the region. The associated Corridor Plan will work to preserve the South Coast's natural resources by protecting farms, forests, and fields from sprawl development.

The Massachusetts Department of Transportation (MassDOT) is the sponsor of the project, which will be built and operated by the MBTA.

Smart Growth and the Corridor Plan

Smart growth is an approach that combines transportation access, economic development and environmental goals within communities. The South Coast Rail project will help to bring new jobs, homes and businesses to the region. New growth can also bring unwanted changes, however, including loss of farmland, fields and forests. With this new growth, it is also important to preserve valuable historic villages and cities that make the South Coast so special. The scale and geographic reach of the South Coast Rail project offer valuable opportunities to welcome new growth, including employment and housing, while protecting the community and environment. This approach is often called smart growth. Smart growth is an important part of the project. This approach will ensure we plan ahead to preserve the global competitive advantages of the region — the people who live and work on the South Coast, the abundant water supply and the traditional village and city high energy development patterns.



To incorporate a smart growth approach, the team worked closely with each community potentially affected by South Coast Rail to develop a smart growth plan. The result is the *South Coast Rail Economic*



Development and Land Use Corridor Plan. The Corridor Plan is a blueprint for economic and residential development, job creation and environmental preservation.

MassDOT partners with the Executive Office of Housing and Economic Development (EOHED), the Southeastern Regional Planning and Economic Development District (SRPEDD), the Old Colony Planning Council (OCPC) and the Metropolitan Area Planning Council (MAPC) to provide Technical Assistance grants (known as TA). MassDOT and EOHED have awarded grants ranging in size from \$5,000 to \$25,000 over the last five years. The program provides cities and towns with financial assistance to realize goals for priority protection and priority development in 31 cities and towns covered by the Corridor Plan.

This preparation includes developing new zoning around potential train stations, enhancing village centers with businesses and storefronts, creating action plans to preserve natural resources, farms and open space, assessing bicycle and pedestrian connections between employment and residential centers, and other changes. The result of these efforts will be a model for growth and preservation developed by the South Coast communities for their benefit.

You can find more information on the program and designs and plans on the project website.

Project Update: Where We Are Now

The South Coast Rail project is going through an in-depth analysis to evaluate the impact of the project on the human and natural environment, as well as historic resources. We are currently in phase two in this environmental review process. The project team has analyzed alternatives in detail and developed technical information on the impacts of the project, how the service will operate, what the travel time will be and where the stations will be located. These technical materials were submitted to the U.S. Army Corps of Engineers (the Corps), the federal agency that is leading review of the project. This environmental review phase will also lay the groundwork for obtaining the necessary permits for building South Coast Rail.

In February 2011, the Corps released a combined state and federal draft environmental document. After public review of the material, the Secretary of Environmental Affairs issued the Certificate on June 30, 2011, and directed MassDOT to prepare a final report on the Stoughton rail alternative. The Corps outlined its own set of requirements for a final environmental report. Work is underway on the final technical reports, as directed.



The final environmental document, a combined state and federal environmental review, will be released for public comment in summer 2013. The Corps will announce its final preference for a route, type of service and related facilities in the Final Environmental Impact Statement. Then permitting and final design can begin. Project updates, related documents and reports are posted on the website at www.mass.gov/southcoastrail. Contact MassDOT's Project Manager, Jean Fox (Jean.Fox@state.ma.us) with requests for accessible materials.

Get Involved!

MassDOT encourages interested residents to attend and speak at public meetings as well as submit comments. Your participation will help make the South Coast Rail a better project for your community and region. If you would like more information about the project or to be added to the project distribution list for email notifications of meetings and other updates, please contact Jean Fox, Manager of South Coast Rail, at Jean.Fox@state.ma.us or (857) 368-8853. Project information and updates are posted on the project website at www.mass.gov/southcoastrail.

Este folleto está disponible en español.

Este folheto está disponível no português.





South Coast Rail

El proyecto de South Coast Rail (Ferrocarril de South Coast) restablecerá el transporte de pasajeros a los ramales de Fall River y New Bedford hasta Boston. Las ciudades de Taunton, Fall River y New Bedford son las únicas comunidades dentro del radio de 80 km (50 millas) de Boston que no cuentan con un tren suburbano. El South Coast Rail brindará una opción de viaje nueva y conveniente que será más económica que realizar el trayecto en automóvil.

Se espera que el proyecto incluya además otros beneficios. El transporte público será un aporte para mejorar la economía del sudeste de Massachusetts, cuya realización producirá nuevos puestos de trabajo así como una nueva vía para acceder a ellos. También será una manera de revitalizar las comunidades que luchan contra el desempleo y la poca inversión. El nuevo sistema de transporte ayudará a minimizar las emisiones de los vehículos al medio ambiente trazando un puente entre Boston y South Coast cuyo tránsito facilitará la movilidad de mucha gente que antes tenía problemas para comunicarse entre las dos zonas. Además, fomentará el potencial económico de la región. El Plan del corredor, asociado al proyecto, preservará los recursos naturales de South Coast, ya que protegerá las granjas, los bosques y los campos del desarrollo descontrolado.

El Departamento de transporte de Massachusetts (MassDOT, Massachusetts Department of Transportation) patrocina el proyecto, que será construido y operado por la MBTA.

Desarrollo inteligente y el Plan del corredor

El desarrollo inteligente es un enfoque que combina el acceso al transporte, el desarrollo económico y las metas ambientales dentro de una comunidad. El proyecto de South Coast Rail impulsará la creación de nuevos trabajos, viviendas y negocios en la región. Sin embargo, este nuevo desarrollo puede conllevar cambios indeseados como, por ejemplo, la pérdida de terrenos de cultivo, campos y bosques. De igual modo se debe tener en cuenta la importancia de preservar los pueblos y ciudades que son patrimonio histórico y hacen que South Coast sea tan especial. La escala y el alcance geográfico de este proyecto ofrecerán oportunidades valiosas para recibir más beneficios del progreso, como empleo y vivienda, a la vez que se protegen la comunidad y el medio ambiente. Generalmente, se conoce este enfoque como desarrollo inteligente, cuya contribución es fundamental para el proyecto. Este enfoque consolidará la planificación a largo plazo para preservar las ventajas competitivas globales de la región, es decir, la gente que vive y trabaja en South Coast, el suministro de agua abundante y los patrones de desarrollo energético avanzado de los pueblos y las ciudades tradicionales.

Con el objetivo de asegurar la incorporación del enfoque de desarrollo inteligente al proyecto, el equipo trabajó estrechamente ligado con cada comunidad que potencialmente podría verse



afectada por el South Coast Rail para desarrollar un plan de desarrollo inteligente. El resultado es el Plan del corredor para el desarrollo económico y uso territorial de South Coast Rail (South Coast Rail Economic Development and Land Use Corridor Plan). Este plan es un modelo para el desarrollo económico y residencial, la creación de trabajos y la preservación del medio ambiente.

El MassDOT se asocia con la Oficina ejecutiva de vivienda y desarrollo económico (EOHED, Executive Office of Housing and Economic Development), el Distrito de desarrollo económico y planificación de la región sudeste (SRPEDD, Southeastern Regional Planning and Economic Development District), el Consejo de planificación de Old Colony (OCPC, Old Colony Planning Council) y el Consejo de planificación de la zona metropolitana (MAPC, Metropolitan Area Planning Council) para otorgar subvenciones de asistencia técnica (por su sigla en inglés, TA) a las comunidades de South Coast a fin de implementar el Plan del corredor. MassDOT y EOHED otorgaron subvenciones que van de los USD 5000 a los USD 25 000 en los últimos cinco años. Este programa brinda ayuda financiera a las ciudades y pueblos para que puedan alcanzar las metas de protección y desarrollo prioritario en las 31 localidades incluidas en el Plan del corredor.

Estos preparativos incluyen el desarrollo de nuevas zonas alrededor de las potenciales estaciones de tren, la mejora de los negocios y las fachadas de los centros urbanísticos, la creación de planes para preservar los recursos naturales, las granjas y los espacios abiertos, la

evaluación de ciclovías y caminos peatonales entre los centros residenciales y el lugar de trabajo, entre otros. Estos esfuerzos traerán como resultado un modelo de crecimiento y preservación desarrollado por las comunidades de South Coast en su propio beneficio.

Puede obtener más información sobre el programa y los planes en el sitio web del proyecto.

Actualización del proyecto: Dónde nos encontramos

El proyecto de South Coast Rail se está analizando en profundidad para evaluar su impacto en los ambientes artificiales y naturales, así como en los patrimonios históricos. Actualmente, nos encontramos en la segunda fase del proceso de inspección ambiental. El equipo del proyecto analizó las alternativas detalladamente y produjo informes técnicos sobre el impacto, el funcionamiento del servicio, la duración de recorrido y la ubicación de las estaciones. Estos materiales técnicos se entregaron al Cuerpo de ingenieros del Ejército de los EE. UU. ("The Corps"), la agencia federal que dirige la inspección del proyecto. Además, esta fase de inspección ambiental establecerá las bases con el objetivo de obtener los permisos necesarios para la construcción del South Coast Rail.

En febrero de 2011, el cuerpo de ingenieros emitió un anteproyecto ambiental de los gobiernos estatal y federal. El 30 de junio de 2011, después de revisar el material, la Secretaria de asuntos ambientales emitió la certificación e instruyó al MassDOT para que prepare el informe final sobre la alternativa ferroviaria a Stoughton. El cuerpo de ingenieros señaló sus propios requisitos para redactar un informe ambiental final. El trabajo de redacción de los informes técnicos está en marcha, como se ordenó.

El documento ambiental final, una inspección ambiental de los gobiernos estatal y federal, se divulgará en el verano del 2013, para el escrutinio público. El cuerpo de ingenieros anunciará su elección final sobre la ruta, el tipo de servicio y las instalaciones relacionadas en la Declaración final sobre el impacto ambiental. Entonces se podrán tramitar los permisos y se podrá comenzar el proyecto final. Las actualizaciones del proyecto y los documentos e informes relacionados se publican en el sitio web en www.mass.gov/southcoastrail.

¡Involúcrese!

MassDOT alienta a los residentes que estén interesados a asistir y participar de las reuniones públicas, así como a enviar comentarios. Su participación promoverá mejoras al proyecto de South Coast Rail que beneficiarán a su comunidad y región. Si desea obtener más información sobre el proyecto o que se lo incluya en la lista de correo del proyecto para recibir notificaciones de las reuniones y otras noticias, contáctese con Jean Fox, gerente del South Coast Rail, a Jean.Fox@state.ma.us o (857) 368-8853.

La información y las noticias sobre el proyecto, como novedades y las próximas reuniones, se publican en el sitio web: www.mass.gov/southcoastrail.

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South Coast Rail

O projeto South Coast Rail (transporte ferroviário de South Coast) restabelecerá o serviço de transporte de passageiros entre Boston, Fall River e New Bedford. As cidades de Taunton, Fall River e New Bedford são as únicas comunidades em um raio de 80 quilômetros (50 milhas) de Boston sem acesso ao sistema ferroviário metropolitano. O South Coast Rail oferecerá uma nova e prática opção de transporte, mais econômica do que percorrer o trajeto de carro.

Acreditamos que o projeto também trará outros benefícios. O transporte público ajudará a impulsionar a economia da região sudeste de Massachusetts, criando novos empregos e uma nova forma da população se deslocar até eles. Esse projeto ajudará a revitalizar comunidades que estão enfrentando dificuldades relacionadas ao desemprego e à falta de investimentos. O novo sistema de transporte ajudará a reduzir as emissões de gases no meio ambiente provocadas pelo tráfego de veículos. O projeto South Coast Rail preencherá a lacuna entre Boston e South Coast, ajudando muitas pessoas com dificuldades de deslocamento entre as duas áreas. O projeto ajudará a região a atingir seu potencial econômico. Associado ao South Coast Rail, o Plano de Corredor terá como objetivo preservar os recursos naturais de South Coast, protegendo fazendas, florestas e campos do desenvolvimento urbano.

O Departamento de Transportes de Massachusetts (MassDOT, Massachusetts Department of Transportation), é o patrocinador do projeto, que será construído e operado pela MBTA.

Crescimento inteligente e o Plano de Corredor

O crescimento inteligente é uma abordagem que combina acesso ao transporte, desenvolvimento econômico e os objetivos ambientais das comunidades. O projeto South Coast Rail ajudará a trazer novos empregos, residências e empresas para a região. Por outro lado, o novo crescimento também pode trazer mudanças indesejadas, incluindo a perda de terras, campos e florestas. Com esse crescimento, também é importante preservar os preciosos vilarejos e cidades históricos que tornam South Coast tão especial. A proporção e o alcance geográfico do projeto South Coast Rail oferecem oportunidades valiosas para acolher o novo crescimento, incluindo empregos e moradias, protegendo, ao mesmo tempo, a comunidade e o meio ambiente. Essa abordagem costuma ser chamada de crescimento inteligente. E o crescimento inteligente é uma parte importante do projeto. Essa abordagem assegurará um planejamento prévio a fim de preservar as vantagens competitivas globais da região: as pessoas que moram e trabalham em South Coast, os abundantes recursos hídricos e os tradicionais modelos de desenvolvimento de alta energia dos vilarejos e cidades.

Para garantir a integração dessa abordagem ao projeto, a equipe trabalhou em estreita colaboração com cada comunidade



potencialmente afetada pelo South Coast Rail, a fim de desenvolver um plano de crescimento inteligente. O resultado é o Plano de Corredor para o Desenvolvimento Econômico e o Uso de Terras do South Coast Rail (South Coast Rail Economic Development e Land Use Corridor Plan). O Plano de Corredor é um modelo de desenvolvimento econômico e residencial, criação de empregos e preservação ambiental.

O MassDOT, em parceria com o Gabinete Executivo para o Desenvolvimento Residencial e Econômico (EOHED, Executive Office of Housing and Economic Development), o Distrito de Planejamento Regional e Desenvolvimento Econômico do Sudeste (SRPEDD, Southeastern Regional Planning and Economic Development District), o Conselho de Planejamento de Old Colony (OCPC, Old Colony Planning Council) e o Conselho de Planejamento da Área Metropolitana (MAPC, Metropolitan Area Planning Council), concederá subsídios de assistência técnica (chamados de TAs) às comunidades de South Coast para a implantação do Plano de Corredor. Nos últimos cinco anos, o MassDOT e o EOHED concederam subsídios que variaram entre US\$ 5.000 e 25.000. O programa oferece auxílio financeiro para o cumprimento de objetivos prioritários de proteção e desenvolvimento em 31 cidades e povoados abrangidos pelo Plano de Corredor.

Esse trabalho de preparação inclui a criação de novos zoneamentos em torno de possíveis estações ferroviárias, o desenvolvimento do centro dos vilarejos com novas empresas e lojas, a criação de planos de ação para preservar os

recursos naturais, fazendas e espaços abertos, a avaliação das conexões para ciclistas e pedestres entre os centros empresariais e residenciais, entre outras mudanças. O resultado dessas iniciativas será um modelo de crescimento e preservação desenvolvido pelas comunidades de South Coast e que as trará benefícios.

Para encontrar mais informações sobre o programa, além de esboços e planos, visite o site do projeto.

Novidades sobre o projeto: o estágio atual

O projeto South Coast Rail está passando por uma profunda análise para avaliar o seu impacto nos ambientes humanos e naturais, bem como nos recursos históricos. No momento, estamos na segunda fase desse processo de avaliação. A equipe do projeto analisou detalhadamente alternativas e coletou informações técnicas sobre os seus impactos, como o serviço será operado, qual será o tempo de viagem e onde ficarão as estações. Esse material técnico foi enviado para o Corpo de Engenheiros do Exército dos Estados Unidos ("The Corps"), a agência federal que está comandando a análise do projeto. A fase de análise ambiental também criará as bases para a obtenção das permissões necessárias para a construção do South Coast Rail. Sugestões, preocupações e opiniões do público são bem-vindas em todas as fases do projeto.

Em fevereiro de 2011, o Corpo de Engenheiros divulgou um esboço do documento ambiental estadual e federal combinado. Após a análise pública do material, o Secretário do Meio Ambiente emitiu o certificado em 30 de junho de 2011 e determinou que o MassDOT preparasse um relatório final sobre a alternativa da estação de Stoughton. O Corpo de Engenheiros delineou suas próprias exigências para um relatório ambiental final. Conforme

determinado, a elaboração dos relatórios está em andamento.

O documento ambiental final, uma análise estadual e federal combinada, será divulgado para debate público na verão de 2013. O Corpo de Engenheiros anunciará sua preferência final de rota, tipo de serviço e instalações relacionadas no Estudo Final de Impacto Ambiental. A partir daí, a obtenção de permissões e a concepção do design final podem ser iniciadas. Notícias, documentos relacionados e relatórios do projeto são publicados no site www.mass.gov/southcoastrail.

Participe!

O MassDOT incentiva os moradores interessados a comparecerem e manifestarem-se nas reuniões públicas, além de enviarem comentários. Sua participação nos ajudará a tornar o South Coast Rail um projeto melhor para sua comunidade e região. Se você deseja obter mais informações ou ser adicionado à lista de distribuição do projeto para receber notificações por e-mail sobre reuniões e outras notícias, entre em contato com Jean Fox, Gerente do South Coast Rail, enviando um e-mail para Jean.Fox@state.ma.us ou ligando para (857) 368-8853. Informações e atualizações sobre o projeto, incluindo novidades e futuras reuniões, são publicadas em seu site: www.mass.gov/southcoastrail.

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Appendix F

Public Participation Plan for Green Line Extension Project



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6

Public Involvement Plan

6.1 Requirements of the Secretary's Certificate

MassDOT and the MBTA are committed to active engagement with the public during completion of the Green Line Extension, through engineering, into construction and eventual Project completion. The Secretary's Certificate on the DEIR requires development of a PIP for the Project:

- To facilitate collaborative land use planning, review of advanced Project design elements (notably station design), and implementation of mitigation measures.
- To clearly outline how a broad range of participants (i.e., representatives of regional planning agencies, local government, business interests, community groups, representatives of environmental justice areas and the disabled community, abutters, and bicyclist and pedestrian groups) would continue to provide meaningful community involvement throughout the duration of the entire Project, including detailed design, engineering, construction phases.
- To build on the lessons learned from the previous Advisory Groups convened in association with the Project, to consider ideas presented as part of the Community Corridor Planning Project, to reflect on comments received on the DEIR, and to represent a serious commitment by both MassDOT and the MBTA to actively engage the public upon completion of MEPA review.
- To provide not only a plan for procedural engagement of the various participants, but that it would also outline the primary substantive topics that are anticipated to be addressed through the PIP process.

This chapter lays out strategies and tools for accomplishing MassDOT's goals and complying with the Secretary's Certificate.

6.1.1 Overview

MassDOT developed and implemented a robust program of community involvement during previous stages of planning for the Green Line Extension Project. The Project has benefitted from strong interest and involvement in Cambridge, Somerville and Medford, as well as neighboring communities. Local government officials, planners, community organizations, neighborhoods and hundreds of individuals have participated in the Project. They have shared their time, ideas and concerns at meetings, in letters and emails, on websites and in newspaper articles.

In partnership with the MBTA, MassDOT would continue this outreach through the design, engineering and construction of the Green Line Extension. This chapter lays out the elements of the PIP that would guide that outreach through the remaining phases of the Green Line Extension Project.

Public outreach for the Green Line Extension has four principal goals:

- To provide an interactive, collaborative and credible public process;
- To equip the design team with ideas and recommendations from the public that would inform the design of the Green Line Extension;
- To solicit input from local residents and businesses, local and regional government agencies and interest groups; and
- To provide methods to keep residents, business owners and municipal officials informed about construction, its potential impacts and schedule, and to lessen those impacts as much as possible.

The team has consulted with the corridor municipalities, community groups and many others in developing this plan. Suggestions made in the DEIR/EA comment letters were strongly considered, as were lessons learned from the public process undertaken during preparation of the DEIR/EA. While this plan outlines a set of approaches and topics, it is a flexible and evolving document. MassDOT plans to periodically update the PIP, to assess successes and/or challenges associated with the outreach and consider suggestions for changes or improvements.

6.1.2 Public Involvement Background and Lessons Learned

MassDOT established a public involvement process for the environmental review/conceptual engineering phase of the Green Line Extension Project in September 2007. This effort was, in some sense, a continuation of the work begun in 2004 during the *Beyond Lechmere Major Investment Study/Alternatives*

Analysis process. MassDOT formed a Green Line Extension Advisory Group (which included some participants from the *Beyond Lechmere* process), conducted public meetings and coordinated with staff and elected officials of Cambridge, Somerville and Medford, as well as other stakeholders and neighborhood interest groups along the corridor.

The public involvement effort during the environmental review/conceptual engineering phase included:

- Eleven Advisory Group meetings (between September 2007 and March 2009);
- Two rounds of public meetings (two meetings in January/February 2008 and two in March 2009, of which one round included more than 600 people);
- Five station workshops in January and February 2008; and
- Participation in numerous community and neighborhood briefings.

In response to public requests, the Green Line Extension team held technical tutorials on ridership modeling; conducted a technical tutorial and tour of the Green Line Riverside vehicle maintenance and storage facility; and in response to public concerns, produced a full study of the maintenance facility site selection process and added several new sites to the evaluation process. In response to suggestions from the public, MassDOT studied the possibility of constructing tunnel segments for the Green Line Extension. Also based on public concern about construction impacts, the Green Line Extension team developed a construction staging plan to help minimize potential future impacts, which would continue to be updated throughout the next phases of Project development.

MassDOT translated materials into languages spoken in the Project area, provided interpreters as requested and prepared audiotapes and large-print documents. An electronic and postal mail database was maintained and frequently updated. Email blasts updated the public on meetings and other Project-related activities; postal mail was used for people who do not use email.

The Project website provided and continues to provide easy access to current and archived documents, meeting notices and summaries, and reference materials; it also provides a way to sign up for the Project mailing list and to send questions to the Project Team. Between November 2007 and March 2009, the site attracted more than 23,000 new visitors and had a total of more than 145,775 page views.

Based on public comments received during the DEIR process, MassDOT understands that the next phase of public involvement should build upon past experiences and gained knowledge to meet the goals we have now set out. Furthermore, the Green Line Extension Project is now entering a fundamentally

new phase – one with a focus on physical and site-specific design rather than large-scale planning issues – requiring a different kind of public involvement process. In particular:

- Meetings of the Project Design Working Group should be scheduled on a regular and predictable basis so participants can plan in advance and have their time and commitments respected;
- Disagreements or conflicts should be addressed promptly and solutions or agreements shared publicly;
- Participants in the Design Working Group should be committed to and supportive of the planning process for the Green Line Extension Project;
- Topics raised and covered by the Design Working Group should be generally germane to the Green Line Extension Project as it has been defined and must not claim resources of the Project and the Design Working Group that could be better dedicated to pertinent and pressing issues;
- Options for mitigation must be understood and described effectively (mitigation is provided to prevent or remediate negative impacts caused by the Project); and
- MassDOT and the MBTA must be full partners in the process, with support from the corridor communities.

6.2 Topics

While it is not possible to predict all of the issues the corridor communities, residents and businesses would be interested in during the upcoming phases, the list below is based on the Green Line Extension planning process to date, DEIR comments and feedback from reviewers, comments on the process and documents and experience with transportation engineering and construction.

Before listing the primary topics on which MassDOT would be seeking public input during the upcoming phases of the Green Line Extension Project, it must be noted that special attention should be paid to the topic of mitigation, which has been cited frequently as a topic of interest. While the Green Line Extension Project is in general a low-impact project, the Green Line Extension team would outline avoidance or mitigation policies, construction mitigation, and mitigation for long-term operation of the system to the extent possible. These strategies would include vehicular, bicycle and pedestrian mitigation; traffic mitigation; and construction management and detour plans. Mitigation decisions would be made both on a corridor-wide basis (i.e., construction of sound walls) and an individual property basis (when there are impacts to be mitigated). The MBTA has existing policies on mitigation, which would be followed for the Green Line

Extension. MassDOT has pledged to work with the corridor municipalities to develop station-area parking enforcement plans as appropriate, although ultimate establishment and enforcement would be local responsibilities. Plans to mitigate noise and vibration would be presented to the public, with adherence to existing standards (in accordance with the FTA guidance) to serve as the goal. The design documents would detail how MassDOT would evaluate, monitor and compensate affected parties along the corridor with respect to noise and vibration and other impacts. FEIR Chapter 8 outlines Section 61 mitigation commitments as required by the FTA and state regulatory programs.

The following topics represent other key subject areas where MassDOT expects that members of the public are likely to comment. While MassDOT welcomes this input, topics related to building and operating the transit system safely must remain in the purview of MassDOT and the MBTA.

The sub-topics listed below are representative but not necessarily exhaustive. MassDOT and the MBTA would present them in the context of the financial, operational and program constraints within which the agencies operate.

6.2.1 Preliminary Engineering Topics

The Project Team anticipates that the topics listed below would be of interest to Project constituencies. While this interest is welcome, final determination of many elements of the transit system would be guided by regulation and established practice. In these cases, the Project Team would provide relevant explanations for policies and decisions.

Design

- Design, approaches to and use of each station in the corridor, including the look and feel of the stations (to be the subject of workshops in the communities);
- Access to each station, traffic management and approaches to the stations, safety, connectivity – for all modes;
- Accessibility (stations and the Community Path);
- Connectivity with bus service;
- Pedestrian access and safety;
- Bicycle approaches and storage;
- Design of the Community Path;
- Design of the Maintenance Facility, layover storage and yard layout;

- Mitigation of operations, noise, safety; and
- Bridge redesign.

Land Use

- Land use planning in the station areas: the topic of the first round of Green Line Extension Workshops; the results would be presented to the corridor municipalities for their use in local planning and zoning;
- Connections to the Community Path and other local destinations; and
- Siting and land acquisitions for stations and maintenance facility.

Operations and Maintenance

- MBTA station program elements and operation;
- Maintenance of stations;
- Protective fencing;
- Community Path maintenance and safety;
- Maintenance facility and yard use; and
- Mitigation of noise and vibration (noise walls, vibration mats and other mitigation).

Final Design, Construction Impacts and Testing

- Communication: Project schedule and updates, construction office and access to staff, progress updates, emails and notices to media;
- Management of right-of-way issues: noise, construction equipment and dust/dirt, safety;
- Permit management and compliance;
- Traffic management and detours; communication about detours and closings;
- Business operations (maintaining deliveries and customer access);
- Parking impacts;
- Effects on commuter rail (regional issue);
- Effects on bus travelers, pedestrians and bicyclists, if impacted by traffic detours; and

- Startup and operations.

Stakeholders and Constituencies

The Green Line Extension Project has benefitted from extraordinary public interest and support. The Secretary of the EEA received hundreds of comment letters and petitions expressing opinions on the Project during the DEIR phase. Almost all of the commenters supported the Proposed Project and had suggestions for improvements, enhancements or changes. The major stakeholders include:

- The FTA;
- The MBTA;
- The cities of Cambridge, Somerville and Medford, their municipal governments, elected officials and staff;
- Residents, businesses and property owners near the stations, maintenance facility and Community Path;
- Interested members of the general public;
- MBTA users; and
- Environmental justice populations in Cambridge, Somerville and Medford.

Throughout the Project, MassDOT has worked with and would continue to work with various local environmental justice community groups, including but not limited to:

- Affordable Housing Organizing Committee of Somerville
- Assembleia De Deus
- Bethel Evangelical Church
- Cambridge Council on Aging
- Cambridge East End House
- Cambridge Housing Authority
- Catholic Center at Tufts
- City of Medford Office of Human Diversity
- City of Somerville Multi-Cultural Commission
- Community Action Agency of Somerville
- Comunidade Evangelica Pentecostal Church
- Concilio Hispano, Inc.
- East Cambridge Planning Team
- East Somerville Main Streets
- East Somerville Neighborhood Association
- East Somerville Organizing Initiative
- First Church of Somerville

- Friends of the Community Path
- Green Line Advisory Group of Medford
- Groundwork Somerville
- Holy Cross Polish Church
- Igreja Presbiteriana De Boston
- Just a Start Corporation
- Latino Coalition of Somerville
- Massachusetts Alliance of Portuguese Speakers
- Medford Council on Aging
- Medford Green Line Neighborhood Association
- Medford Housing Authority
- Mission Church of Our Lord Jesus Christ
- Mystic Learning Center, Inc.
- Mystic Valley Elder Services
- Saint Ann's Parish
- SCM Community Transportation
- Somerville Climate Action
- Somerville Community Corporation
- Somerville Council on Aging
- Somerville Housing Authority
- Somerville Immigrant Service Providers Group
- Somerville Living Wage Committee
- Somerville Transportation Equity Partnership
- Somerville/Cambridge Welfare and Housing Coalition
- Somerville-Cambridge Elder Services
- Saint Clements Parish, Medford
- Saint Francis of Assisi Church
- Saint Joseph's Church
- Tri-City Community Action Program, Inc.
- Unity Church of God
- West Medford Community Center
- Zion Christian Fellowship Church

The Community Path

MassDOT has committed to completing 100-percent of the planning, design, and engineering for the proposed extension of the Somerville Community Path between Lowell Street and Inner Belt Road as part of the final design of the Green Line Extension Project (as described in the Secretary's Certificate, page 9). Planning for the Community Path would be part of the overall Green Line Extension outreach efforts, including:

- Focusing on connections between the stations and the Community Path at the public design workshops;

- Considering materials and design elements;
- Highlighting planning and design challenges (“pinchpoints,” etc)
- Considering landscaping and “green” design components;
- Seeking input on access to the Path as a way to support pedestrian and off-road bicycle access to stations; and
- Providing information on design progress and seeking input at key milestones.

The Project Team would plan for access to bicycle parking facilities at stations (as part of the design workshops). MassDOT is committed to working with the City of Somerville, residents and businesses in the Brickbottom and Inner Belt neighborhoods, and Community Path advocates to design the Path in such a way as to create improved connectivity within the Brickbottom and Inner Belt neighborhoods and between the Community Path and the Green Line Extension. MassDOT notes Somerville’s goal to secure funding for the simultaneous construction of the Community Path and the Green Line Extension. MassDOT is not able at this point to commit to funding the construction of the Community Path. However, MassDOT will continue to work with the City of Somerville to identify potential state and Federal funding opportunities for the construction of the Community Path.

6.3 Public Outreach Strategies

MassDOT and the MBTA share the goal of maintaining a collaborative relationship with the Green Line Extension stakeholders and municipalities during the upcoming engineering and construction phases. The agencies plan to continue and enhance effective outreach strategies and hope to involve new stakeholders and interests in the design review. During construction, the outreach approach would shift to providing frequent and accurate public information on construction progress, schedule, traffic and pedestrian detours, and other pertinent issues.

The methods for this engagement are described in this section. They include public information meetings; community briefings, meetings and presentations; formation of a Design Working Group; Design Public Workshops; maintenance of a website; production of Project fact sheets and information materials; email notices and communication; media outreach; coordination with ongoing projects; and outreach to environmental justice populations.

6.3.1 Public Information Meetings

MassDOT would host a number of public information meetings (with open houses before the formal meetings) to share milestone information and collect public comments and suggestions. These meetings are scheduled for non-work hours, in locations that are accessible and near public transportation. The meetings typically move among locations in Somerville, Cambridge and Medford and have attracted strong participation. The meetings would be held:

- To kick off the Preliminary Engineering work and introduce the MBTA's Station Design Program;
- Between the Schematic Design Update and Intermediate submittals (before designs are finalized for the facilities);
- Between the Intermediate and Pre-final Final submittals (when there are draft final materials for public review); and
- After the Pre-Final Submittal, but before the Design/Build construction contractor is procured, to present the preliminary design effort.

6.3.2 Community Meetings, Briefings and Presentations

MassDOT and the MBTA would respond to requests for meetings and briefings with community, civic, business and citizen groups in Cambridge, Somerville and Medford, and other municipalities as appropriate. These would include presentations to elected and municipal officials; briefings for chambers of commerce, environmental or community groups; to residents and business owners along the right-of-way. These meetings augment larger forums and help MassDOT speak directly to stakeholders in convenient neighborhood or group settings.

6.3.3 Design Working Group

MassDOT and the MBTA would convene a Green Line Extension Design Working Group. This group would advise MassDOT and the MBTA on the planning of public design workshops, participate in the workshops, share Project information with their neighborhoods, and serve as a corridor advisory group during engineering and construction. MassDOT and the MBTA invited the public to apply for membership with the goal of having representation from all of the neighborhoods adjacent to Green Line Extension facilities (the maintenance facility, Union Square, Lechmere, Brickbottom, Lowell Street, Ball Square and College Avenue, with interest in the Community Path as well). The group would include representatives from the MBTA and from Cambridge,

Somerville and Medford. The group would convene in June 2010 and at least quarterly, but potentially more often as engineering begins.

The Design Working Group would meet approximately quarterly for the duration of Preliminary Engineering and would advise MassDOT and the MBTA on issues related to station design, general construction, and other community-related concerns. Topics expected to be discussed in the meetings are described in Section 6.2, *Topics*. Meetings of the Design Working Group would be public, with a period at the end of each meeting for public comments and questions. Meetings of the group would be scheduled in advance with public notice. Summary meeting notes would be posted on the Project website and made available in print by request. A list of the Design Working Group members would be made available on the Project website once available.

If issues arise among the members of the Design Working Group that cannot be resolved, the members may bring concerns to the leadership of MassDOT and the MBTA. MassDOT and MBTA staff would endeavor to help resolve the issues if at all possible. A Green Line Extension Project Ombudsman would address issues that arise during construction; see Section 6.4, *Public Outreach During Construction*.

6.3.4 Green Line Extension Workshops

MassDOT and the MBTA would conduct a series of public workshops to gather input on land use and facility (stations, vehicle maintenance and storage facility, Community Path) design issues. The workshops would be organized around facility locations or groups of locations. All would be well-advertised, open to the public and in accessible venues. The workshops would be held in a series format in Cambridge, Somerville and Medford and would address the following topics:

- **Workshop Series 1:** Site issues and land uses around stations, the maintenance facility and the Community Path (late Spring 2010)
- **Workshop Series 2:** Station and facility elements (September 2010)
- **Workshop Series 3:** Design of each facility (November 2010)
- **Workshop Series 4:** Final review of Preliminary Engineering facility designs and the Community Path (Spring 2011)

MassDOT and the MBTA would organize the workshops and other events in consultation with city planners from each community, the Green Line Extension Design Working Group, and professional planners on the team. The workshops would include information on each facility location, maps and draft plans,

comment and review sessions, and other features. Information on the dates, agendas, etc., would be circulated using community resources, media, emails and flyers. Venues would be chosen in consultation with the communities and the Design Working Group.

Summaries of workshop materials and notes would be available on the Project website and presented to the communities. The workshops would include facilitated discussion groups, and interpreters would be available. The goals of the workshops are: (a) to gather opinions and ideas on facility issues in advance of key design milestones, (b) to present the facility designs for public review, and (c) to submit the designs for final public review in advance of final design and construction.

6.3.5 The Green Line Extension Website

The Green Line Extension website is www.mass.gov/greenlineextension. The site includes a Project overview, history and ways to participate; stores Project documents, current and archival; announces meetings and events and new activities; welcomes comments and questions via email and invites site visitors to sign up for Project information and emails. The site is updated frequently. Notes and presentations from Project meetings, workshops and other activities are posted on the site.

6.3.6 Project Fact Sheets

MassDOT and the MBTA would produce Project fact sheets during Preliminary Engineering to provide updates on Project status, key contracts, summaries of new reports or plans, schedule information and milestone descriptions. The fact sheets would be posted on the website for easy printing (in PDF format, so they can be downloaded and/or shared electronically) and distributed at Project meetings and presentations. The fact sheets would be available at all community and public meetings and in appropriate formats. Each issue would be translated into Spanish and made available in other languages on request.

6.3.7 Email, Communication and Notices

The Green Line Extension Project team would continue to use a number of methods for communicating with the public about Project meetings, issues and publications. In addition to the website, the team maintains an electronic database with contact information for over 4,500 people who have attended meetings, requested information, signed up online, written a comment letter, talked with a staff member, or are abutting property owners to the Green Line

Extension. The database contains emails and postal addresses. Emails are used regularly for notices; postal addresses for public meetings and others. The database would be updated after meetings and events. (Emails are not used for purposes other than sharing Green Line Extension information. Individuals can unsubscribe from the list upon request.)

In addition, the Project Team would continue to use the following communication strategies:

- Sending letters to right-of-way abutters notifying them of any upcoming field work and advising them how to stay informed on the schedule of work. For the field survey and boring work conducted February to June 2010, weekly updates were also mailed or emailed (as appropriate) to the database;
- Posting meeting information on the website and including it in emails to the database;
- When appropriate, preparing and distributing flyers at Lechmere and Haymarket Stations, at Orange Line Stations or door-to-door;
- Sharing meeting and Project information with community groups, the cities in the corridor, regional planning agencies, and translating them into Spanish (and other languages on request);
- Placing ads in local and regional publications for major meetings; and
- Using the MassDOT blog (*Commonwealth Conversations: Transportation*) and the MassDOT Twitter feed.

The team also provides materials in alternate formats on request (including large print and languages other than English). The Project Team welcomes suggestions on ways to continue to broaden communication and outreach.

6.3.8 Media Outreach

MassDOT and the MBTA would provide frequent updates to local and regional media to enhance communication with residents and business owners in Cambridge, Somerville and Medford. The team would distribute media advisories/press releases for all public meetings, workshops, major document releases and events of interest. In the past, this communication has enhanced the release of Project information. The Project Team would also invite local cable television stations to film major meetings to make them more accessible to corridor residents who find it difficult to attend meetings in person.

Advisories would be distributed to the following media outlets:

Newspapers

Boston Courant
Boston Globe
Boston Herald
Boston Metro
Boston Post-Gazette
Cambridge Chronicle
Daily Medford Mercury
El Mundo
El Planeta
Medford Transcript
Somerville Journal
Somerville News
Vocero Hispano

Radio Stations

WBMX 98.5 FM
WBOS 92.9 FM
WBUR 90.9 FM
WBZ 1030 AM
WERS 88.9 FM
WGBH 89.7 FM
WHRB 95.3 FM
WMBR 88.1 FM
WMKI 1260 AM
WRBB 104.9 FM
WRKO 680 AM
WTKK 96.9 FM
WUMB 91.9 FM
WXKS 107.9 AM
WZLX 100.7 FM

TV Stations

Cambridge Community Television
TV 3 Medford
Somerville Community Access Television
WBPX TV
WBZ CBS
WCEA TV
WCVB ABC
WGBH
WHDH NBC

WLVI CW

Other

State House News Service

6.3.9 Coordination with Ongoing Projects

The MBTA and MassDOT are continually coordinating the planning and engineering of the Green Line Extension Project with other projects. This is an issue of concern to stakeholders, who often express concern about Project coordination or are interested in obtaining more information about other projects. When appropriate, the Project Team would include updates on coordination with relevant projects in the communities or corridor that might affect or be impacted by the Green Line Extension. These may include proposed transit projects, such as changes to the Orange Line, implementation of the Urban Ring, commuter rail service expansion, or roadway, projects or issues related to the bicycle and pedestrian path networks.

6.3.10 Environmental Justice Populations

The Green Line Extension would benefit environmental justice communities by improving access to public transit. The Green Line Extension is not anticipated to disproportionately affect environmental justice populations through land acquisition or other impacts. During the next phases of Project development, the Project Team would continue to target efforts to reach this population. This outreach would include activities to:

- Widely distribute Design Workshop notices in multiple languages at local bus stops and to potential abutters, door-to-door (languages include Spanish, Portuguese and Haitian Creole; other requests would be accommodated);
- Provide information to city, community and neighborhood groups on the Project, on meetings and on how to participate;
- Provide interpreters, materials and flyers in multiple languages;
- Translate the fact sheet into Spanish and provide other languages, on request, and make these materials available on the website and in print;
- Provide accommodations such as taped meetings for the visually impaired and audio equipment at meetings and workshops for the hearing impaired; and
- Meet individually with community groups to present information on the Project and collect input and comments.

6.3.11 Accessibility

MassDOT and the MBTA would conduct all of their meetings in accessible location and would provide accommodations on request for participants, including interpreters, audio equipment and large print materials. Notices would include Spanish and Portuguese text, at minimum, describing the importance of the announcement.

6.4 Public Outreach During Construction

MassDOT and the MBTA are committed to continuing a robust public involvement process during the construction of the Green Line Extension. In general, MassDOT and the MBTA are committed to strategies that would (a) inform the public of construction plans, (b) provide regular updates on construction, traffic detours and other impacts, and (c) solve problems that arise during construction. MassDOT and the MBTA would achieve these goals in part by requiring the Green Line Extension construction contractor to commit to a spectrum of outreach activities and efforts to mitigate the impacts of construction. MassDOT and the MBTA would hold the construction contractor to these obligations. Working together, agency and contractor staff members would be dedicated to implementing these communication and problem-solving strategies.

- Establishing a **Project construction office** along the right-of-way that is accessible to the general public.
- Establishing the position of **Green Line Extension Project Ombudsman**; this staff member would be employed by the construction contractor and would field all construction-period comments and complaints, coordinate with the cities, and respond to public concerns.
- Providing a **Project phone number** for inquiries and setting up a **database tracking system** to respond to concerns.
- Continuing to maintain the **Project website** to post construction updates and bulletins, changes in schedules and traffic management updates.
- Meeting quarterly with the Design Working Group, which would become the **Construction Working Group**, to review issues associated with construction (e.g., notices, schedule, traffic management) and advise MassDOT and the MBTA on solving problems that often arise from unexpected conditions, weather or construction-related challenges.
- Hosting **construction kick-off meetings** for neighborhoods along the right-of-way before construction begins to outline work, schedules, detours, construction mitigation, etc. The team would schedule periodic briefings for

elected and municipal officials and coordinate technical issues with local and state agencies.

- Producing **quarterly construction updates** for website posting, emailing and sharing with communities. MassDOT and the MBTA would provide an annual summary of Project construction progress and schedule updates.
- Developing a **business outreach plan** to assist local businesses during construction. Assign construction management staff to work with the construction contractor(s) to keep businesses open.
- Implementing the MBTA's policies on mitigating construction impacts (such as dust, rodent control, pedestrian access, road detours and support for local businesses, as mentioned above).
- Providing **regular updates** on construction work to local and regional media. Update traffic management plan information through media advisories and Project update meetings (see above).
- Participating in **Project coordination meetings** to anticipate challenges, mitigation needs and solve problems that arise during construction. Meet with officials, residents and business owners to identify and solve problems.

MassDOT and the MBTA would review these communication and outreach plans in light of comments received on this document and the final Certificate from the Secretary of EEA, new ideas or proposals from the Design Working Group, communities, or individuals, and information that arises during the Preliminary Engineering phase. As always, MassDOT and the MBTA are committed to public outreach strategies that reflect the phase of the Project, that provide all interested individuals with an opportunity to give input and ask questions, and that assist the Project Team in its plans and designs for the Green Line Extension.



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Appendix G

MBTA Language

Access Plan



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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY



LANGUAGE ASSISTANCE PLAN:

PROVIDING ACCESS TO PROGRAMS and SERVICES FOR PEOPLE WITH LIMITED ENGLISH PROFICIENCY

Revised April 2014

The MBTA has developed policies and procedures to meet the requirements of Title VI of the Civil Rights Act of 1964, specifically as it pertains to improving access to services for persons with limited English proficiency (LEP). The purpose of the MBTA's Title VI Program is to ensure that no person shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

In April 2012, the MBTA updated its LEP Four-Factor Analysis in compliance with the guidance provided at that time, which defined "Limited English Proficient (LEP) Persons" as "persons for whom English is not their primary language and who have a limited ability to speak, understand, read, or write English. It includes people who reported to the US Census that they do not speak English well or do not speak English at all."¹ In October 2012, the Federal Transit Administration (FTA) updated its Title VI Circular (FTA C 4702.1B)—Title VI Requirements and Guidelines for FTA Recipients. The updates to the circular included a revised definition of "limited English-proficient (LEP) persons." While the previous definition was limited to people who reported to the US Census that they do not speak English well or do not speak English at all, the new definition, below, includes people who speak English well:

Limited English Proficient (LEP) persons refers to persons for whom English is not their primary language and who have a limited ability to read, write, speak, or understand English. It includes people who reported to the US Census that they speak English less than very well, not well, or not at all.

The MBTA used this definition and the latest available US Census American Community Survey (ACS) to update the Language Access Plan.

The language access needs assessment, as defined by the US Department of Transportation (DOT), is based on an analysis of four factors.

1. The number and proportion of LEP persons served or encountered in the eligible service population by a program, activity, or service of the MBTA

The greater the number or proportion of LEP persons from a particular language group served or encountered in the eligible service population, the more likely language services are needed.

2. The frequency with which LEP individuals come in contact with the program, activity, or service

¹ FTA C 4702.1A: Title VI and Title VI-Dependent Guidelines for Federal Transit Administration Recipients, May 13, 2007.

The greater the frequency with which LEP individuals from different language groups come into contact with the MBTA's program, activity, or service, the more likely enhanced language services will be needed.

3. The importance to LEP persons of the program, activity, or service provided by the MBTA

The more important the activity, information, service, or program, or the greater the possible consequences of the contact with the LEP individuals, the more likely language services are needed. Importance is based on whether denial or delay of access to services or information could have serious or even life-threatening implications for the LEP individual.

4. The resources available to the MBTA and costs of providing the program, activity, or service

The level of resources and the costs imposed by an LEP policy may have an impact on the extent to which meaningful access can be provided for LEP persons. In addition, "reasonable steps" may cease to be reasonable where the costs imposed substantially exceed the benefits.

The first two of the four factors are used to identify individuals who need language assistance. The third factor determines what needs to be translated, and the fourth factor identifies translation resources and costs. The MBTA has followed FTA guidance in completing a four-factor analysis to identify and document the number and geographic distribution of potential LEP customers within the MBTA's 175-community service area and to evaluate the need for language assistance.

I. Identification of LEP individuals for whom language assistance may be needed

As stated above, the first two factors of the four factor analysis, which are the number and proportion of persons in the service population who are LEP and the frequency of contact, are used to identify individuals who may need language assistance.

Factor 1: The Number and Proportion of Persons in the Service Population Who Are LEP

The MBTA conducted quantitative analyses of data from two sources to estimate the number and proportion of people who have limited proficiency in English: the US Census and the Massachusetts Department of Education.

US Census Data

Data from the 2007–2011 five-year American Community Survey (ACS) were used to analyze the number of LEP persons living in the MBTA service area.² The total LEP population in the MBTA service area is 440,534 people, which is the sum of the LEP populations of all census tracts in the MBTA service area, including all languages, or approximately 9.67 percent of the total population above the age of five. The largest single group of LEP persons is composed of Spanish speakers, which represent 38.3 percent of the LEP population of the service area; approximately 168,834 people in the service area are limited-English Spanish speakers. The LEP populations in the service area that meet the USDOT’s “safe harbor” threshold definition of either 5 percent of the total population of the service area or 1,000 individuals, whichever is less, include speakers of the following 24 languages:

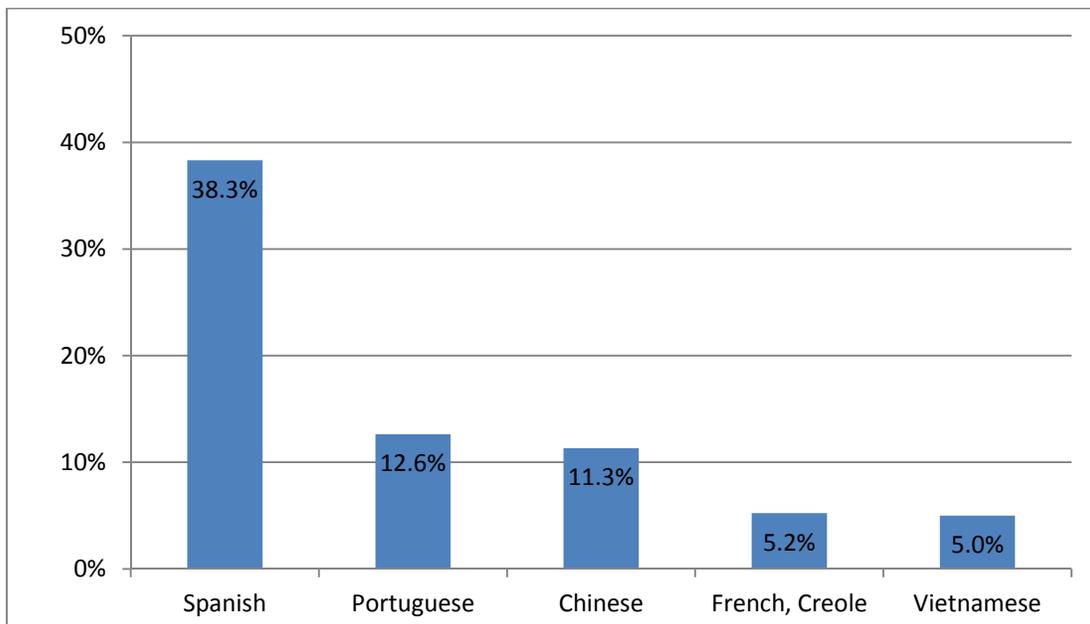
- Spanish/Creole (168,834)
- Portuguese/Creole (55,647)
- Chinese (49,849)
- French Creole (23,053)
- Vietnamese (21,982)
- Russian (14,016)
- Mon-Khmer/Cambodian (11,255)
- French (10,859)
- Italian (10,703)
- Arabic (8,764)
- Korean (7,270)
- Greek (6,018)
- Polish (3,506)
- Japanese (2,897)
- Gujarati (2,874)
- Hindi (2,808)

² The US Census tables, “Language Spoken at Home by Ability to Speak English by Census Tract” were used to estimate the number of LEP people for all census tracts within the MBTA service area. To calculate the number of people with limited English proficiency, we summed the counts of people who self-reported to speak English “not at all,” “not well,” and “well” in each census tract and for the entire service area.

- Armenian (2,137)
- Tagalog (2,117)
- Persian (1,884)
- German (1,598)
- Urdu (1,279)
- Serbo-Croatian (1,191)
- Thai (1,075)
- Hebrew (1,022)

Figure 1 presents the percentage of total LEP persons that each of the top five languages represent in the MBTA service area. Each of these top five language groups represent at least 5 percent of the LEP population, and together they represent approximately 73 percent of all LEP people in the MBTA service area.

Figure 1
Percentage of Total LEP Persons in the MBTA Service Area by Language for the Top Five Languages Spoken



The MBTA mapped the ACS data to provide a geographic representation of where concentrations of LEP persons live and to show what languages are spoken at home in those areas. Figure 2 (a and b) present the percentage of LEP persons by census tract in the MBTA service area, regardless of the language spoken at home. One version (a) of each figure displays the percentage of LEP persons for the entire MBTA service area, and a second, more detailed, version (b), magnifies the area where the majority of MBTA transit services are located. Most of the areas with the highest LEP percentages are urban areas.



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FIGURE 2a
MBTA Title VI Report

Percentage of Population with Limited English Proficiency*

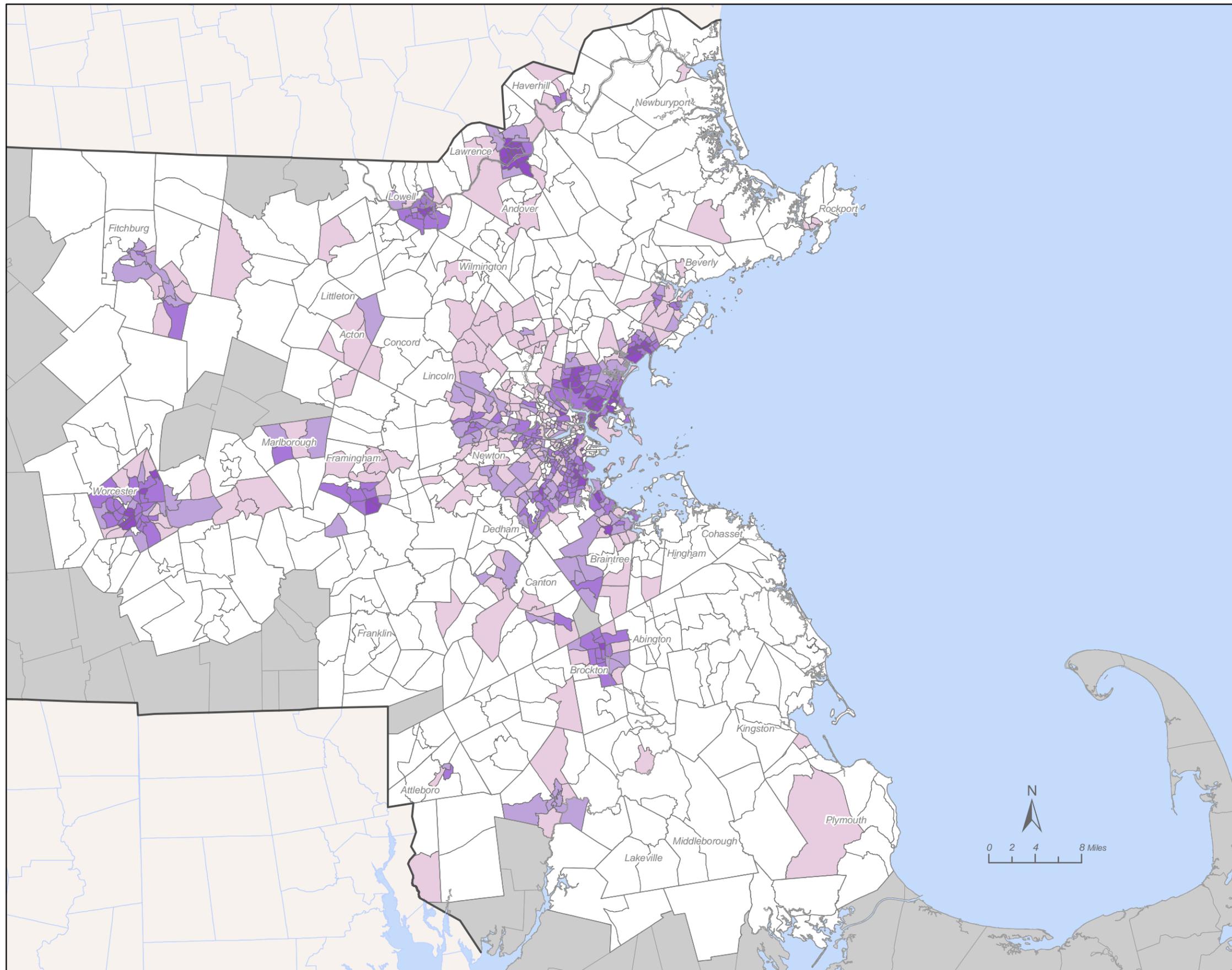
Percentage of Census Tract Residents Speaking English "less than very well"

- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent
- Town not within MBTA service area

NOTE:

Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.

*See Figure 2b for detailed map.





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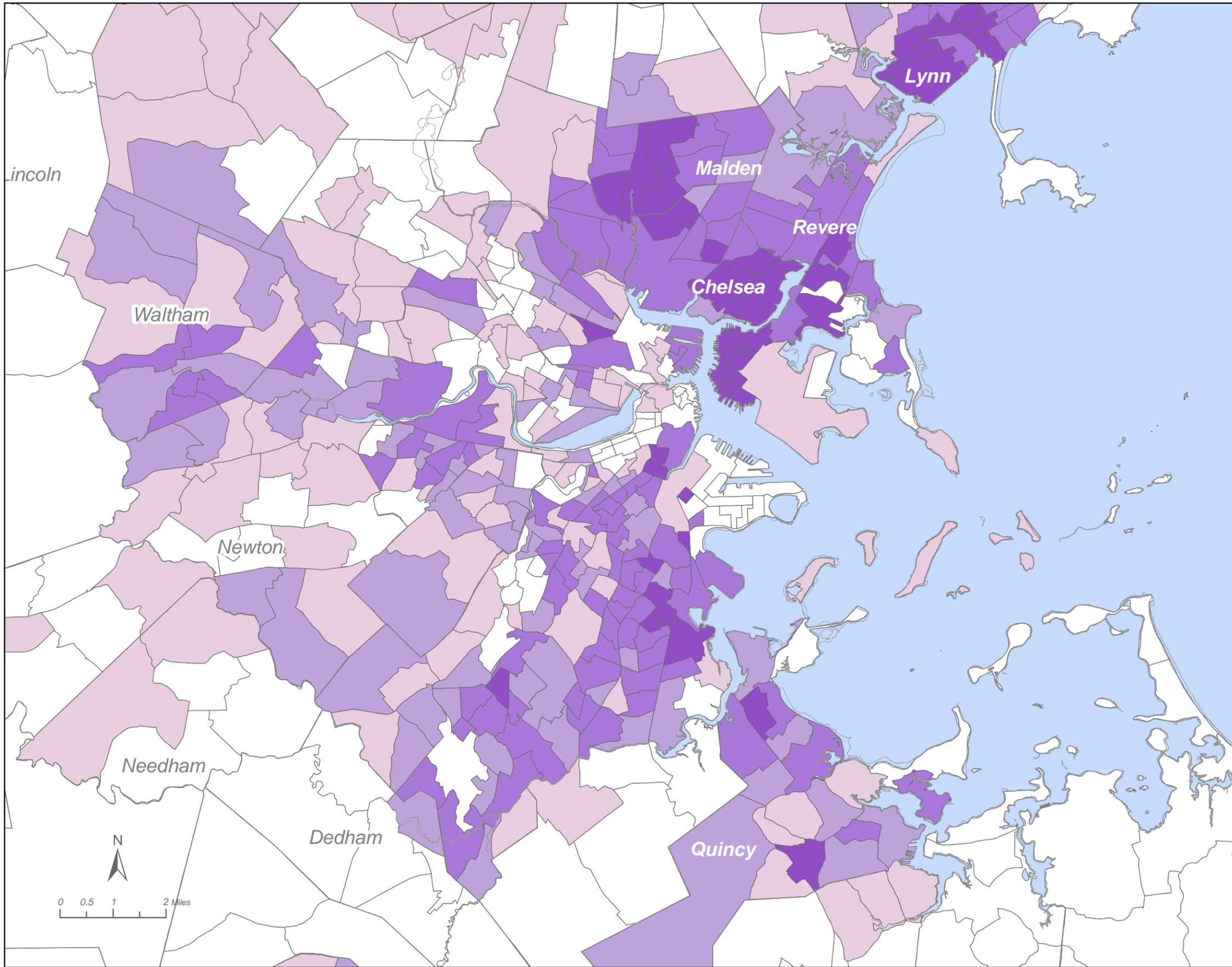


FIGURE 2b
MBTA Title VI Report

**Percentage of Population with Limited English Proficiency:
 Detailed Map**

Percentage of Census Tract Residents Speaking English "less than very well"

- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent

NOTE:

Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.



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Figures 3 (a and b) through 7(a and b) present the distributions of individuals for whom the primary language spoken at home is Spanish, Portuguese, French Creole, Chinese (all dialects), and Vietnamese, overlaid on the LEP percentages presented in Figure 2. Version (a) of each figure displays the data for the entire MBTA service area, and version (b) magnifies the area where the majority of MBTA transit services are located. These are the five languages, after English, that are reported as being the most frequently spoken at home and that show the highest levels of limited English proficiency in the MBTA service area. As the figures show, it is apparent that some languages are spoken primarily in and around Boston, while others are more broadly distributed. The areas with the largest proportions of each of the five languages are summarized below.

Spanish-Speaking LEP Populations

The Spanish-speaking population is the largest LEP population in the MBTA service area and Spanish is also the language spoken by the largest group of LEP people in many of the largest municipalities of the MBTA service area.

Table 1
Representation of the Spanish-Speaking Population by Municipality

LEP Representation	Municipality
Spanish-speakers constitute the largest group in the LEP population	Boston Chelsea Everett Fitchburg Haverhill Lawrence Lynn Revere Saugus Waltham Worcester
Spanish speakers are a significant proportion in the LEP population	Brockton Brookline Cambridge Framingham Lowell Malden Quincy Somerville



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FIGURE 3a
MBTA Title VI Report

**Limited English Proficiency:
 Spanish Speakers**

● **Spanish speakers who speak English "less than very well"**
 (1 dot = 50 speakers)

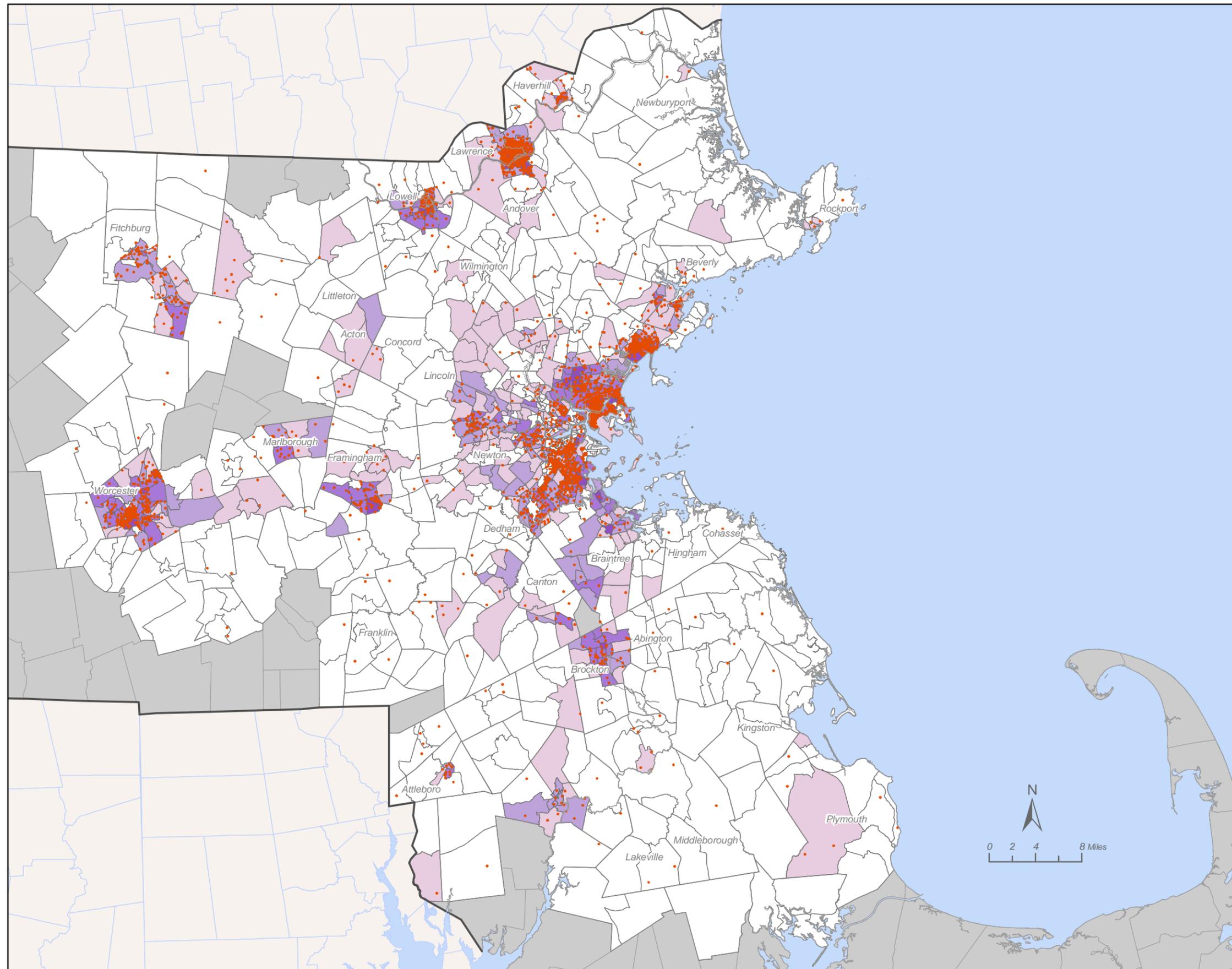
Percentage of Census Tract Residents Speaking English "less than very well"

- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent
- Town not within MBTA service area

NOTES:

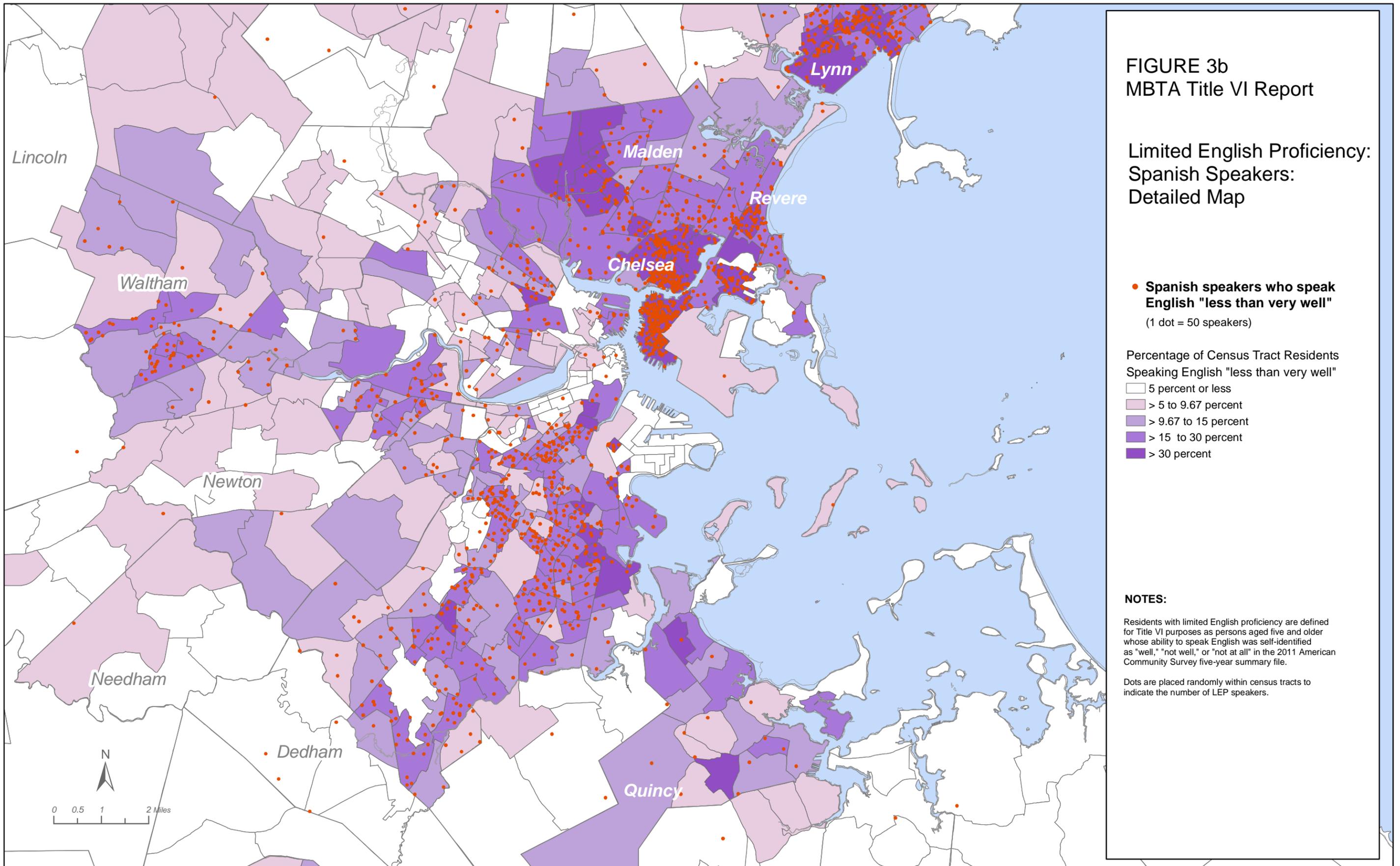
Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.

Dots are placed randomly within census tracts to indicate the number of LEP speakers.





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FIGURE 4a
MBTA Title VI Report

**Limited English Proficiency:
 Portuguese Speakers**

● **Portuguese speakers who speak English "less than very well"**
 (1 dot = 50 speakers)

Percentage of Census Tract Residents Speaking English "less than very well"

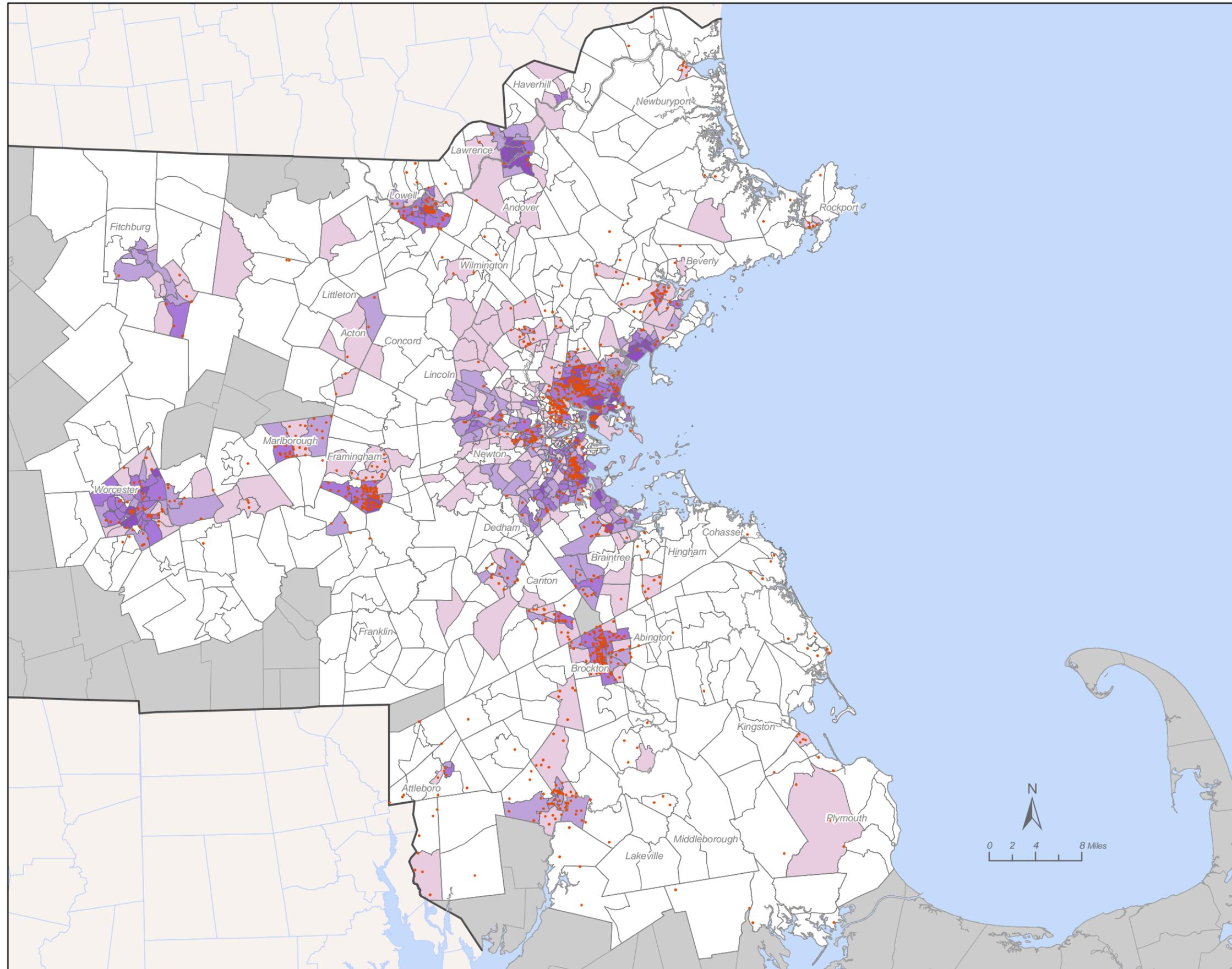
- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent

■ Town not within MBTA service area

NOTES:

Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.

Dots are placed randomly within census tracts to indicate the number of LEP speakers.





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FIGURE 4b
MBTA Title VI Report

**Limited English Proficiency:
Portuguese Speakers:
Detailed Map**

● **Portuguese speakers who speak English "less than very well"**
(1 dot = 50 speakers)

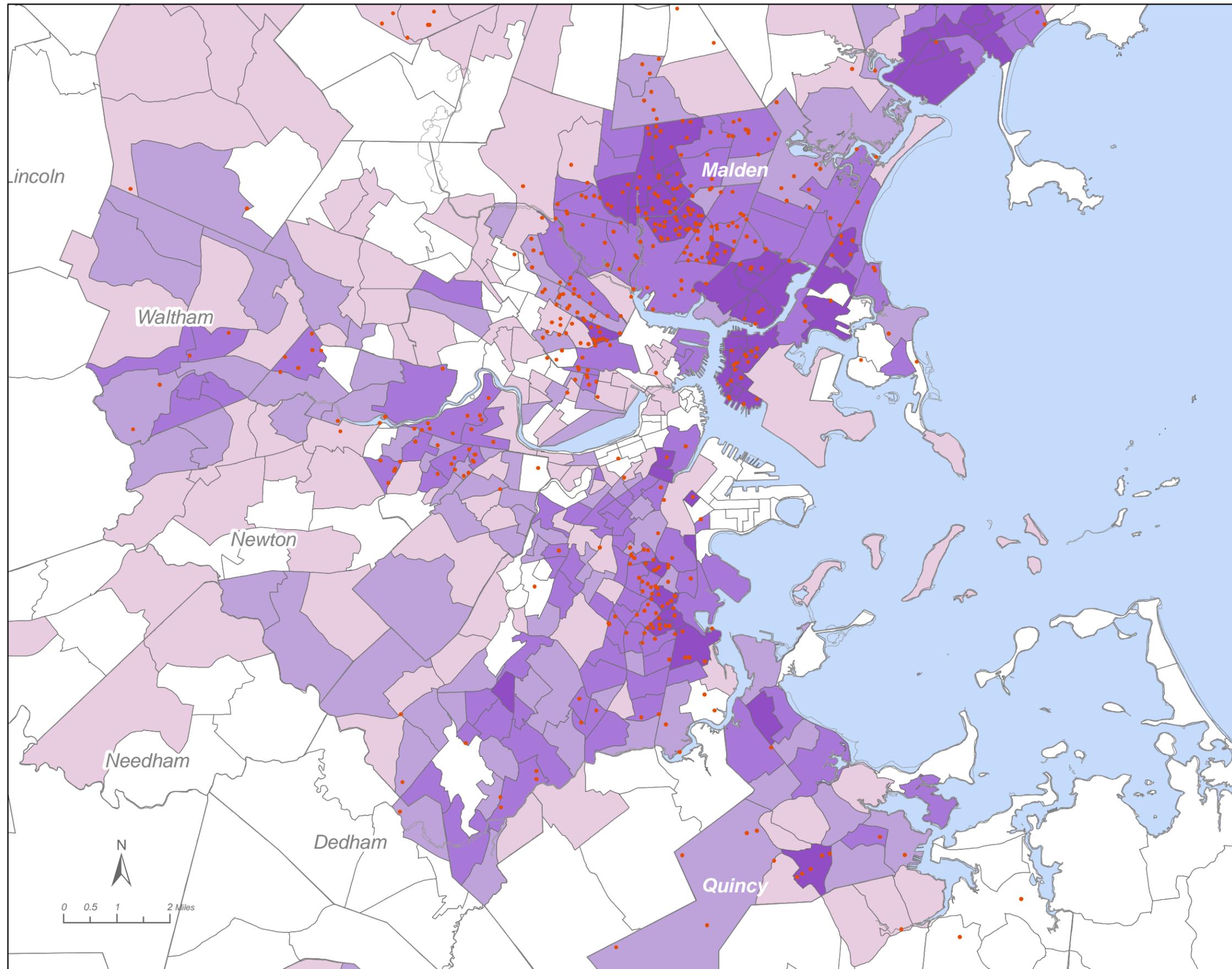
Percentage of Census Tract Residents Speaking English "less than very well"

- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent

NOTES:

Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.

Dots are placed randomly within census tracts to indicate the number of LEP speakers.





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FIGURE 5a
MBTA Title VI Report

**Limited English Proficiency:
 French Creole Speakers**

● **French Creole speakers who speak English 'less than very well'**
 (1 dot = 50 speakers)

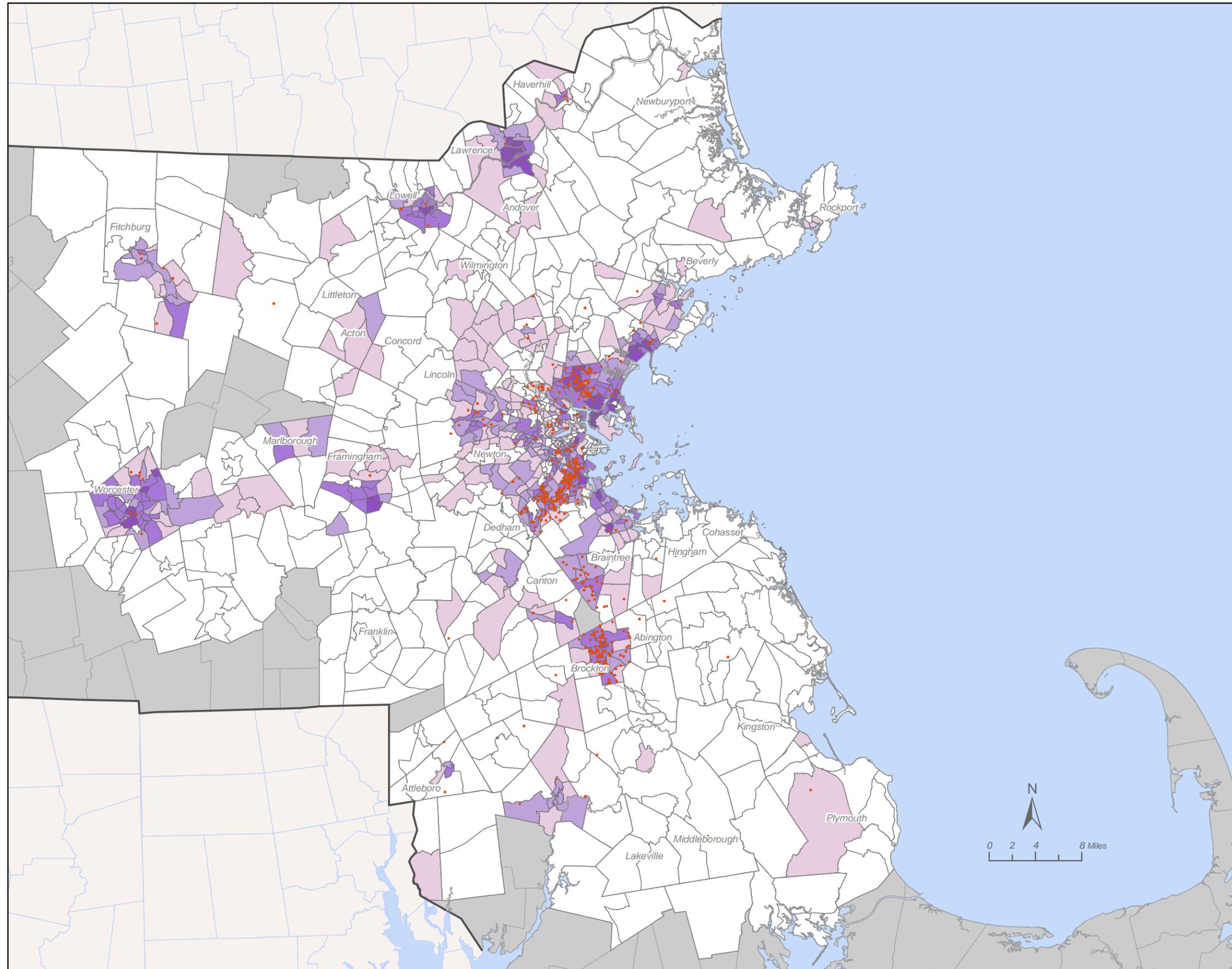
Percentage of Census Tract Residents Speaking English "less than very well"

- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent
- Town not within MBTA service area

NOTES:

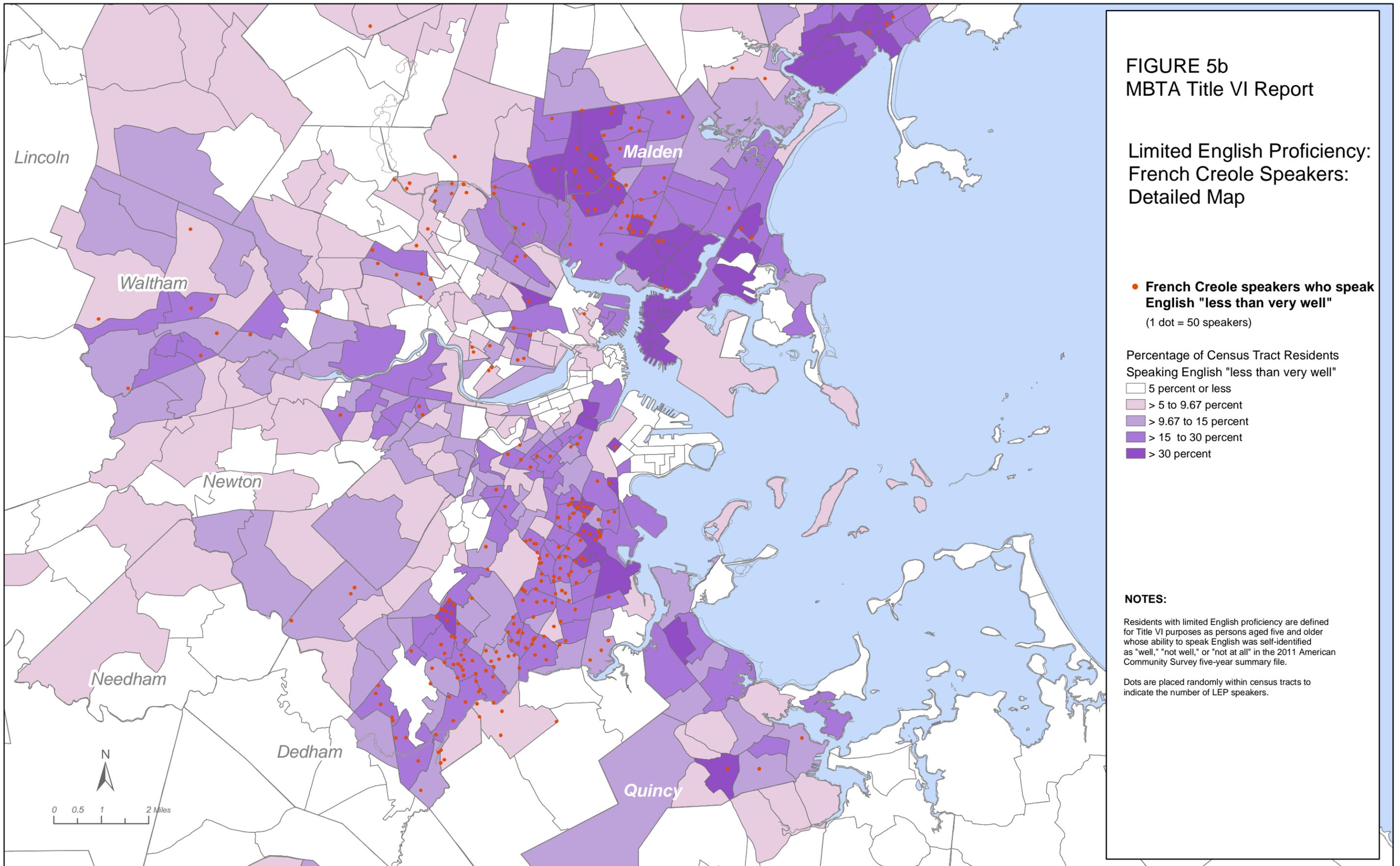
Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.

Dots are placed randomly within census tracts to indicate the number of LEP speakers.





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FIGURE 6a
MBTA Title VI Report

**Limited English Proficiency:
 Chinese Speakers**

● **Chinese speakers who speak English "less than very well"**
 (1 dot = 50 speakers)

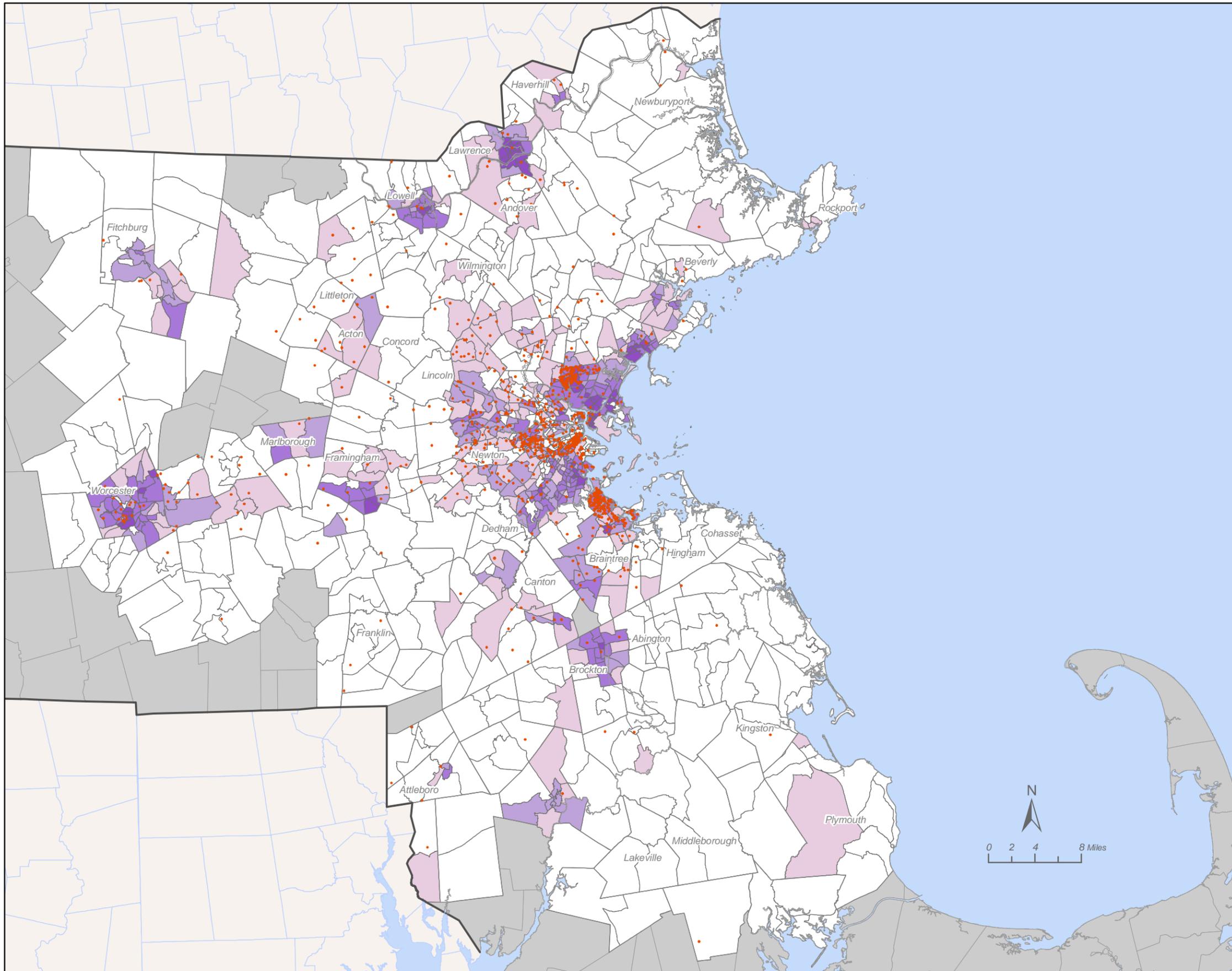
Percentage of Census Tract Residents Speaking English "less than very well"

- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent
- Town not within MBTA service area

NOTES:

Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.

Dots are placed randomly within census tracts to indicate the number of LEP speakers.





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FIGURE 6b
MBTA Title VI Report

Limited English Proficiency:
Chinese Speakers:
Detailed Map

● Chinese speakers who speak English "less than very well"
(1 dot = 50 speakers)

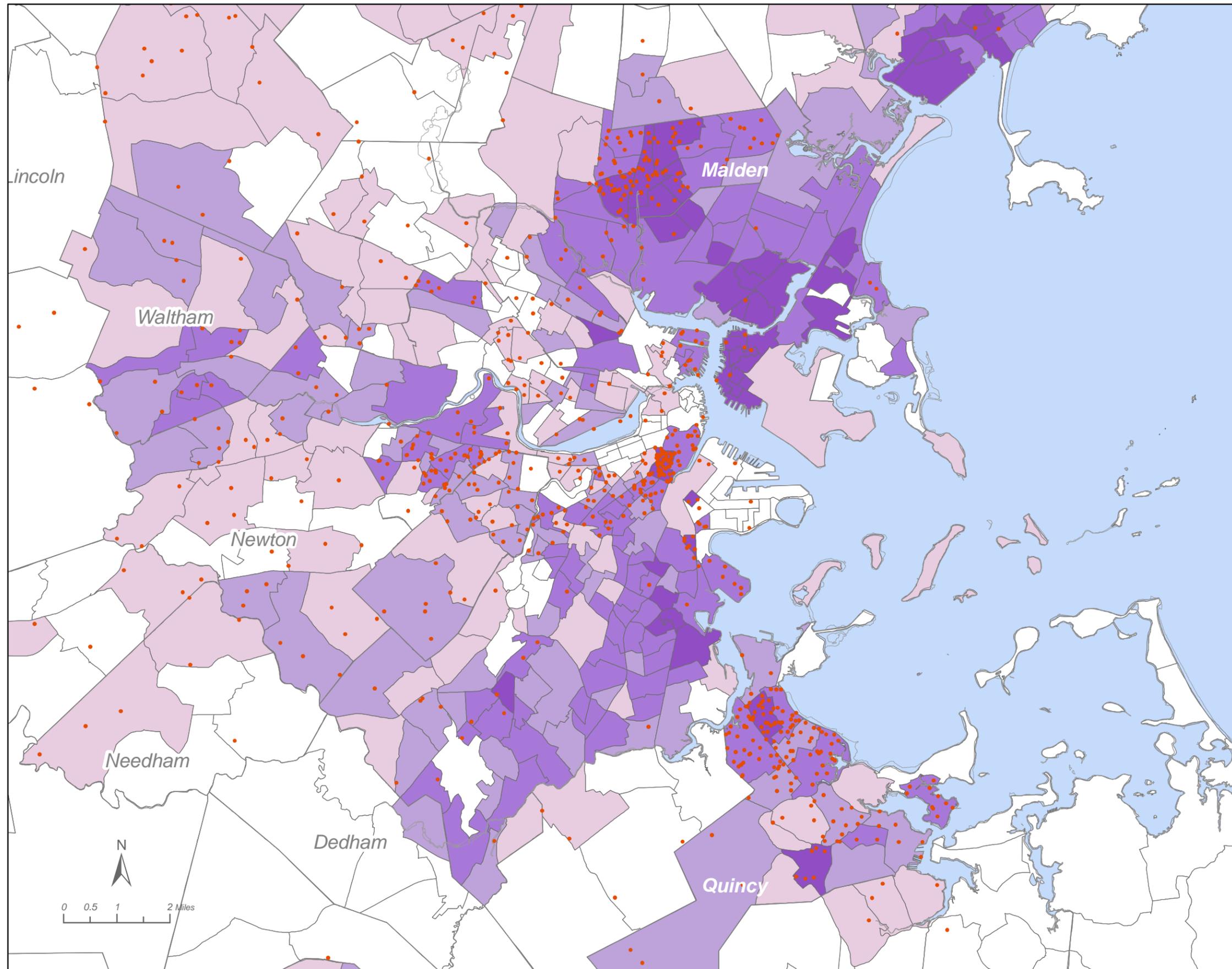
Percentage of Census Tract Residents Speaking English "less than very well"

- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent

NOTES:

Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.

Dots are placed randomly within census tracts to indicate the number of LEP speakers.





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FIGURE 7a
MBTA Title VI Report

**Limited English Proficiency:
 Vietnamese Speakers**

● **Vietnamese speakers who speak English "less than very well"**
 (1 dot = 50 speakers)

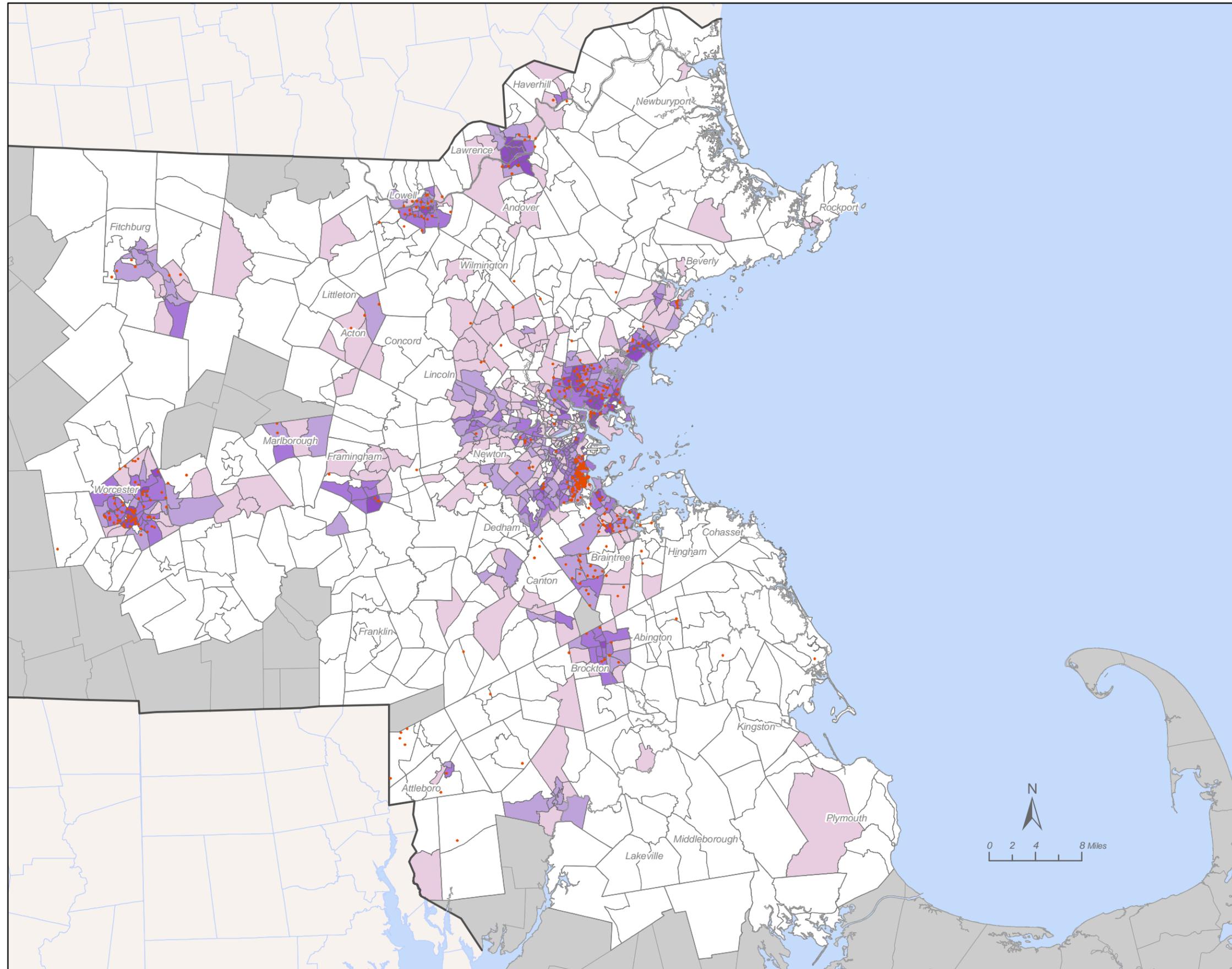
Percentage of Census Tract Residents Speaking English "less than very well"

- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent
- Town not within MBTA service area

NOTES:

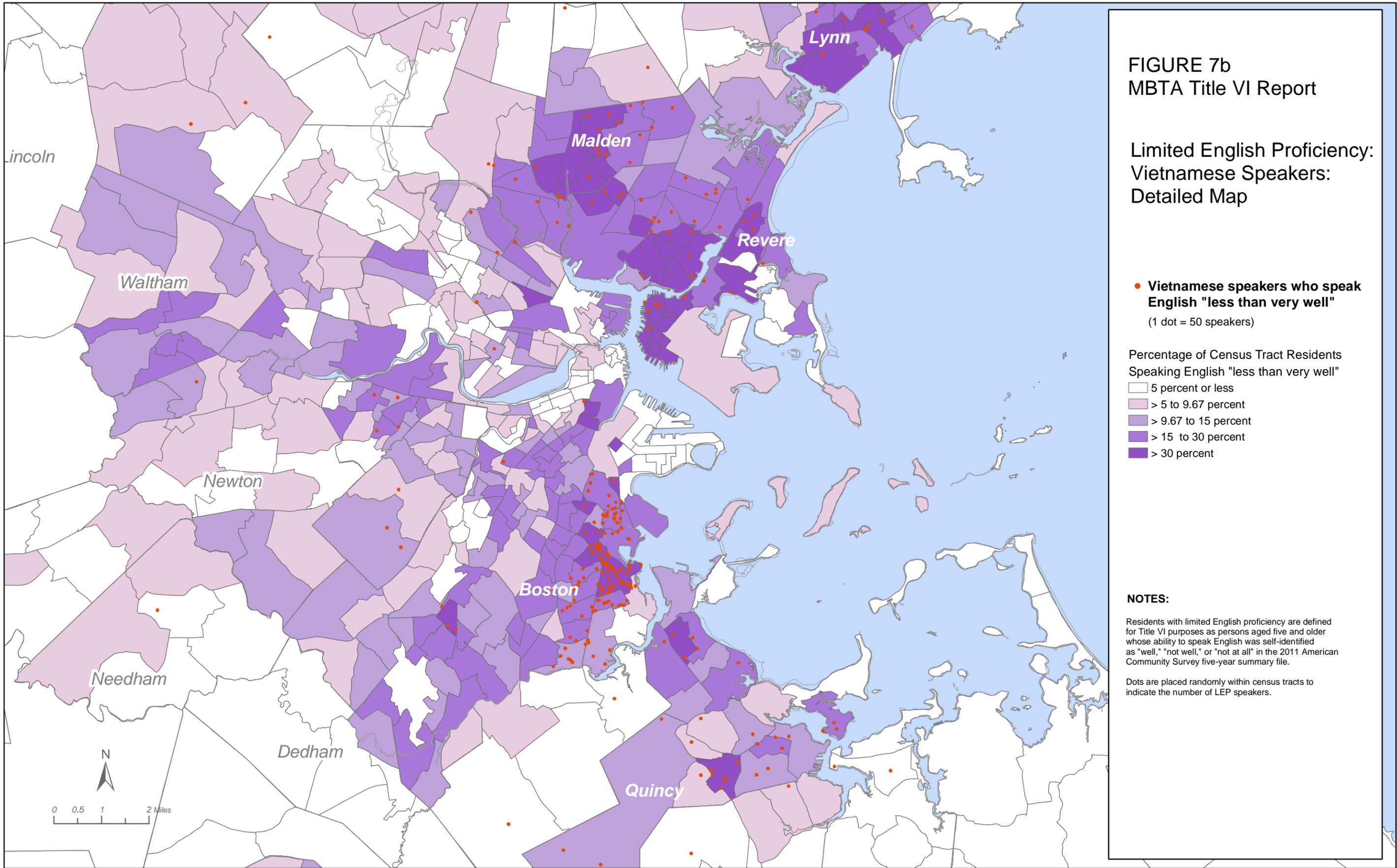
Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.

Dots are placed randomly within census tracts to indicate the number of LEP speakers.





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Portuguese-Speaking LEP Populations

The Portuguese- or Portuguese Creole-speaking population is the second largest in the MBTA service area. Portuguese, including Portuguese Creole, is the top language of the LEP populations of Brockton, Framingham, and Somerville, and is spoken by significant proportions of the LEP populations of other cities in the Boston metropolitan area and in the Merrimack River Valley.

Table 2
Representation of the Portuguese-Speaking Population by Municipality

LEP Representation	Municipality
Portuguese speakers constitute the largest group in the LEP population	Brockton Framingham Somerville
Portuguese speakers are a significant proportion in the LEP population	Boston Chelsea Everett Lawrence Lowell Malden Quincy Revere

French Creole-Speaking LEP Populations

French Creole is not the predominate language spoken by LEP people in any individual municipality, but it is spoken by significant proportions of LEP people in some of the municipalities within the MBTA service area.

Table 3
Representation of the French Creole–Speaking Population by Municipality

LEP Representation	Municipality
French Creole speakers constitute the largest group in the LEP population	None
French Creole speakers are a significant proportion in the LEP population	Boston Brockton Cambridge Everett Lowell Malden Somerville Waltham

Chinese-Speaking LEP Populations

Chinese is the top language of LEP people in several municipalities that are adjacent to Boston, and it is a significant proportion of the LEP languages in Boston and some of its suburbs.

Table 4
Representation of the Chinese-Speaking Population by Municipality

LEP Representation	Municipality
Chinese speakers constitute the largest group in the LEP population	Brookline Cambridge Malden Quincy
Chinese speakers are a significant proportion in the LEP population	Boston Framingham Somerville Waltham Worcester

Vietnamese-Speaking LEP Populations

Vietnamese is not one of the top LEP languages in any municipality in the MBTA service area; however, there are significant proportions of LEP people who speak Vietnamese throughout the MBTA service area.

Table 5
Representation of the Vietnamese-Speaking Population by Municipality

LEP Representation	Municipality
Vietnamese speakers constitute the largest group in the LEP population	None
Vietnamese speakers are a significant proportion in the LEP population	Boston Brockton Chelsea Everett Fitchburg Lawrence Lowell Lynn Malden Quincy Revere

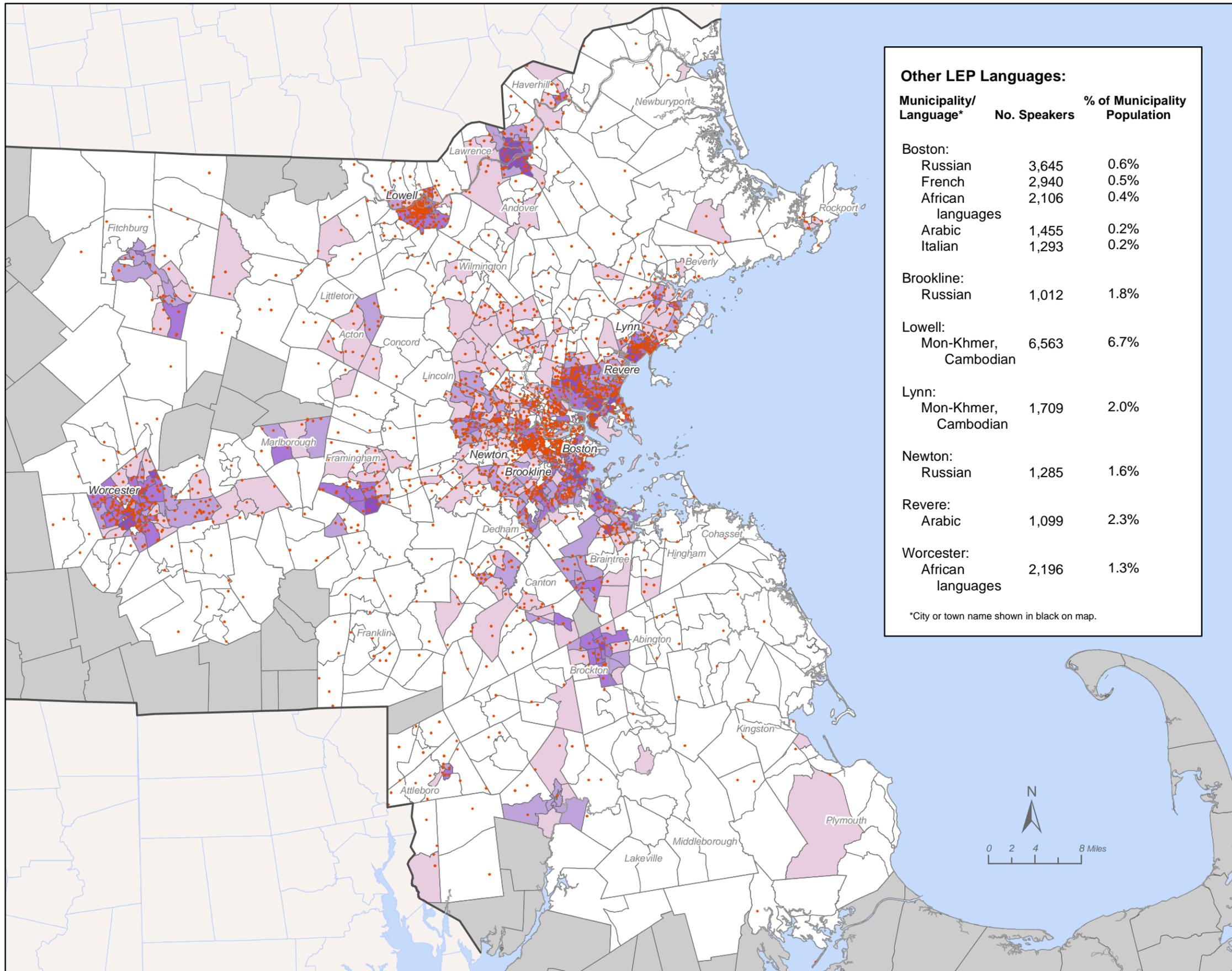
Finally, Figure 8 presents the combined distribution of individuals who speak languages at home other than the top six languages statewide. The number of these individuals in each city or town is also identified by the language spoken. Mon-Khmer (Cambodian) speakers are the largest group of LEP people in Lowell and the second-largest group in Lawrence and Lynn.

Massachusetts Department of Education English Language Learner Data

The MBTA obtained Massachusetts Department of Education English Language Learner data for 2011 for the school districts within the MBTA service area as a secondary representative sample of the LEP population in the MBTA service area. Although the school population does not have a one-to-one correlation with the overall population of a municipality, data on the languages that students speak can give additional insight into language composition and proficiency and the areas where assistance is likely to be needed. English language learners account for approximately 8.1 percent of the elementary, middle, and senior high school population in the area, numbering 67,567 of the total student population of 833,654.



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Other LEP Languages:

Municipality/ Language*	No. Speakers	% of Municipality Population
Boston:		
Russian	3,645	0.6%
French	2,940	0.5%
African languages	2,106	0.4%
Arabic	1,455	0.2%
Italian	1,293	0.2%
Brookline:		
Russian	1,012	1.8%
Lowell:		
Mon-Khmer, Cambodian	6,563	6.7%
Lynn:		
Mon-Khmer, Cambodian	1,709	2.0%
Newton:		
Russian	1,285	1.6%
Revere:		
Arabic	1,099	2.3%
Worcester:		
African languages	2,196	1.3%

*City or town name shown in black on map.

FIGURE 8a
MBTA Title VI Report

**Limited English Proficiency:
Speakers of Languages
Other than Top 5**

• **Speakers of other languages (not top 5) who speak English "less than very well"**
(1 dot = 50 speakers)

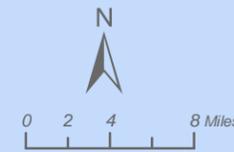
Percentage of Census Tract Residents Speaking English "less than very well"

- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent
- Town not within MBTA service area

NOTES:

Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.

Dots are placed randomly within census tracts to indicate the number of LEP speakers.





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FIGURE 8b
MBTA Title VI Report

**Limited English Proficiency:
Speakers of Languages
Other than Top 5:
Detailed Map**

● **Speakers of other languages
(not top 5) who speak
English "less than very well"**
(1 dot = 50 speakers)

Percentage of Census Tract Residents
Speaking English "less than very well"

- 5 percent or less
- > 5 to 9.67 percent
- > 9.67 to 15 percent
- > 15 to 30 percent
- > 30 percent

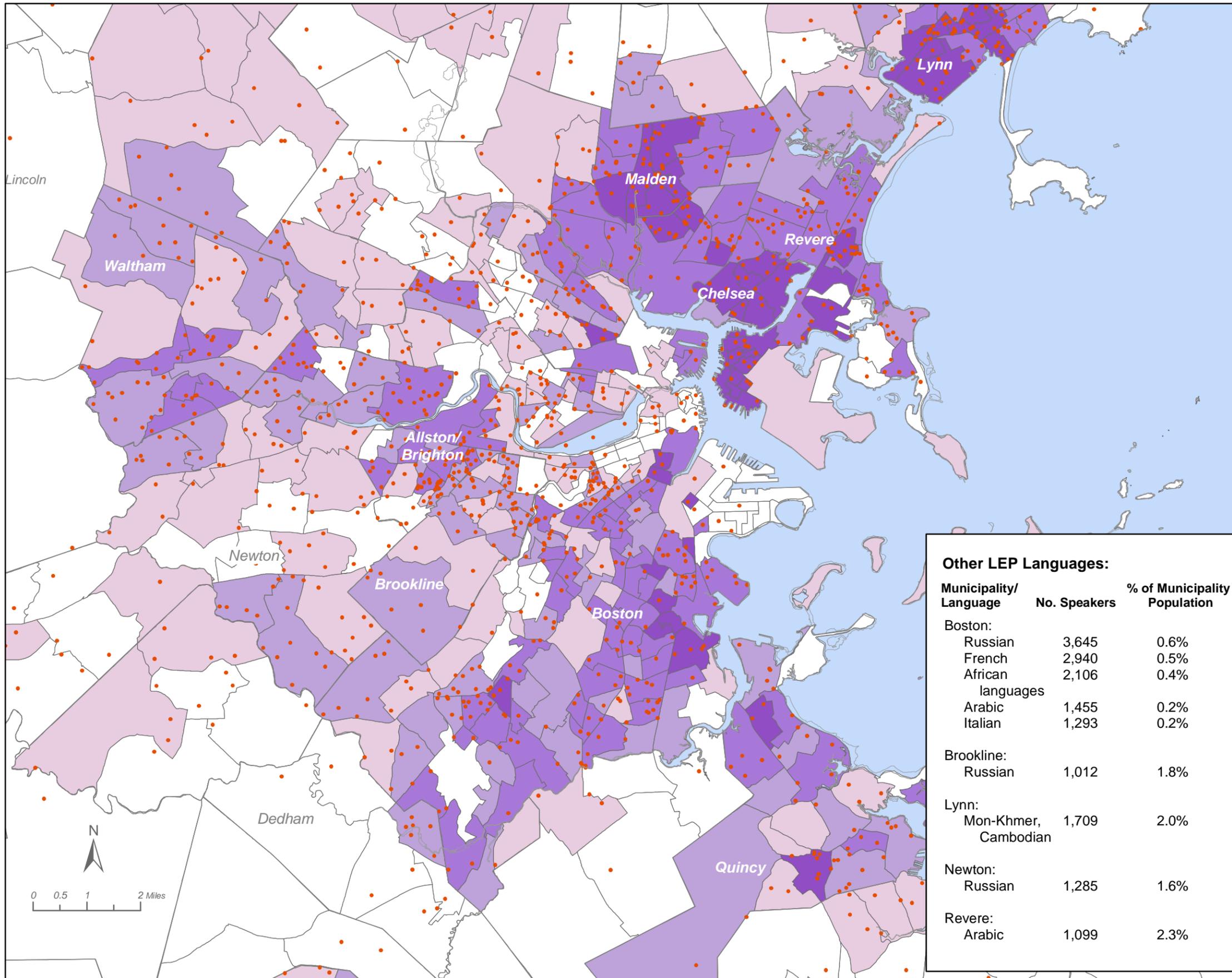
Other LEP Languages:

Municipality/ Language	No. Speakers	% of Municipality Population
Boston:		
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Arabic	1,455	0.2%
Italian	1,293	0.2%
Brookline:		
Russian	1,012	1.8%
Lynn:		
Mon-Khmer, Cambodian	1,709	2.0%
Newton:		
Russian	1,285	1.6%
Revere:		
Arabic	1,099	2.3%

NOTES:

Residents with limited English proficiency are defined for Title VI purposes as persons aged five and older whose ability to speak English was self-identified as "well," "not well," or "not at all" in the 2011 American Community Survey five-year summary file.

Dots are placed randomly within census tracts to indicate the number of LEP speakers.





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The Department of Education (DOE) data disaggregate languages much more than the US Census data do. The DOE data include “Chinese,” “Mandarin Chinese,” “Canton Dialect,” “Taiwanese,” “Hakka Dialect,” “Fukien,” and “Shanghai Dialect,” which are the spoken dialects and languages of Chinese, while the US Census includes only one category—“Chinese.” Further, the US Census category “Portuguese” is disaggregated as “Portuguese” and “Cape Verdean (Portuguese Creole)” in the DOE data. For Chinese and Portuguese, the MBTA has aggregated the language variants for purposes of comparing results to the ACS-based analysis. It should be noted, however, that the information about the different mix of languages and dialects that comprise the Portuguese and Chinese categories in the DOE data is very important with respect to targeting language assistance.

The Massachusetts DOE English Language Learner (ELL) data confirm the results of the analysis of the US Census ACS 2011 five-year summary data. The top English language learner language category is Spanish, with 35,261 students in the service area. This language group also represents 52.19 percent of all English language learners in the MBTA service area. The top five languages in the DOE’s ELL data are the same as the top five languages in the ACS-based analysis. Further, these top five languages have concentrations in the MBTA service area that are comparable to concentrations in the ACS 2011 data.

The DOE English language learner statistics for the MBTA’s service area are:

- Spanish (35,261)
- Portuguese/Creole (7,146)
- Chinese (3,462)
- Haitian Creole (French Creole) (3,395)
- Vietnamese (2,705)
- Khmer (Cambodian) (2,347)
- Arabic (1,414)
- Russian (878)
- Somali (616)
- Albanian (532)
- Korean (527)
- French (496)
- Japanese (328)
- Urdu (305)
- Gujarati (297)
- Nepali (291)
- Twi (290)
- Swahili (283)

- Hindi (230)
- Polish (225)

Qualitative Analysis Techniques

In addition to performing the quantitative analyses discussed above, the MBTA continues to refine its understanding of the locations of LEP populations through qualitative analyses. The MBTA works with community-based organizations (CBOs), as well as state legislators and other government entities or interested parties, to identify LEP populations that may need translation services for specific programs or activities. The MBTA conducts outreach to CBOs that work with LEP populations, such as neighborhood community service centers, community development corporations, and ethnic and cultural organizations. These organizations provide information that is not included in the census or state and local resources, such as the existence of pockets of the LEP populations relative to specific projects or public participation efforts, population trends, and what services are most frequently sought by the LEP population. Many of these organizations have resources that include language assistance, neighborhood knowledge, and expertise useful in communications with residents and customers. The MBTA's experience in this area shows that the greatest need for language assistance is in Spanish, but that there is also a need for assistance in a diverse range of primary languages, including Chinese, Haitian Creole, Portuguese, and Vietnamese.

Conclusions for Factor 1

The MBTA has used quantitative, qualitative, and spatial analyses to estimate the total number and proportion of limited-English-proficient (LEP) people in its service area and to identify areas that have high concentrations of LEP people. While the MBTA has identified 24 "safe harbor" languages using US Census data, the top five languages—Spanish, Portuguese and Portuguese Creole, Chinese, French Creole, and Vietnamese—represent more than 72 percent of the total LEP population. The Massachusetts DOE's ELL data confirms that these top five languages represent the most commonly spoken languages of the limited-English-proficiency population in the MBTA service area.

Factor 2: The Frequency of Contact

The FTA requires that the MBTA analyze the frequency of contact that the agency has with people with limited English proficiency. The MBTA used the following data and analysis methods to evaluate the frequency with which LEP individuals come into contact with the MBTA:

- Evaluation of Customer Communications Call Center metrics
- Evaluation of website browser primary language requests
- Analysis of paratransit records

Customer Communications Call Center

The Customer Communications Call Center houses a bilingual staff; each person is bilingual in English and at least one of several languages, including Spanish, Haitian French Creole, Cape Verdean Creole, and both Cantonese and Mandarin Chinese. The call center provides telephone translation service in all of those languages, and also functions as an in-house document translation center.

In calendar year 2013, the Customer Communications Call Center noted that there were 7,829 direct customer calls in Spanish. For a major planned service interruption, telephone services were requested and provided in Mandarin Chinese and in Cantonese Chinese. During the same major planned service interruption, a written translation was requested and provided in Spanish. While the Customer Communications Call Center had received requests for Haitian French Creole translation in previous years, there were no requests in 2013.

Website Analytics Based on Preferred Language and Locale Settings

The MBTA is able to distinguish between categories of visitors to its website by the language that the Web browser requests as its primary language. Data from the MBTA website analytics for calendar year 2013 indicate that the overwhelming majority of visits (98.3 percent) to the MBTA's website are on browsers that request English as the primary language. The next two most commonly requested languages are Spanish and Chinese, with approximately 0.4 percent of annual site visitors each, followed by German, French, Korean, Japanese, and Portuguese. This ranking reveals a different preference of LEP persons using this particular form of communication than is expected from the population data from the ACS and from the Massachusetts DOE's ELL data sets. One potential reason is that the website data will reveal preferences of people who live outside of the MBTA's service area, including visitors to the region who are interested in using public transit as part of their transportation. This may be the case for German and French having higher percentages in this particular data set than in the previous data sets.

Table 6
Number and Percentage of Visits
by the Browser Setting for Preferred Language
during Visits to the MBTA Website

Language	Number of Visits	Percentage of Visits
English	29,168,604	98.3%
Spanish	133,506	0.4%
Chinese	115,623	0.4%
German	49,483	0.2%
French	45,624	0.2%
Korean	41,767	0.1%
Japanese	33,866	0.1%
Portuguese	29,641	0.1%
Russian	16,719	0.1%
Italian	11,452	0.0%
Arabic	9,002	0.0%
Dutch	7,533	0.0%
Turkish	4,287	0.0%
Swedish	4,164	0.0%
Danish	2,634	0.0%
Afrikaans	1,470	0.0%
Polish	1,409	0.0%
Catalan	1,347	0.0%
Albanian	1,041	0.0%
Greek	980	0.0%
Finnish	980	0.0%
Total Visits	29,681,132	100.0%

MBTA Employee Survey

In 2011–2012, the MBTA conducted a survey of its bus operators and customer service agents (CSAs), who are often the first contact with the MBTA for people with limited English proficiency, to understand how frequently they engage with LEP people. This survey focused on the:

- Frequency that frontline staff encountered LEP customers
- Ways in which staff communicated with LEP passengers
- Suggestions that staff had to better serve LEP people

Findings

The MBTA received 131 valid survey responses. Of the respondents, 98 percent of bus operators and CSAs reported having at least one encounter with an LEP customer, and 81 percent of the respondents reported encountering LEP customers often. A significant number of frontline staff reported the ability to communicate in Spanish and assist Spanish-speaking LEP passengers directly.

To communicate with LEP passengers when there is a language barrier, bus operators and CSAs used gestures or informal sign language, pointed at maps, or asked other passengers for assistance with interpreting. When communication is difficult, LEP passengers are sometimes waved through and therefore given a free trip. At other times, how to take advantage of the discounted CharlieCard fare is not explained, and LEP passengers end up paying the higher CharlieTicket fare.

Bus operators and CSAs said that they would be helped by practical foreign language materials for use in the field, such as cards that contain basic information and/or useful phrases in different languages. Such cards would be particularly useful for describing the fare structure, the difference between CharlieCards and CharlieTickets, and how to use the fare vending machines, fare gates, validators, and bus fareboxes. Training was also mentioned as a way to provide assistance to staff in learning a second language and a common approach on how to communicate with LEP customers. Finally, certain bus routes and stations were identified as being locations where better signage could assist LEP customers.

Paratransit (THE RIDE) Records

According to the MBTA's paratransit contractors, less than 1 percent of all paratransit riders need translation assistance.

Conclusions for Factor 2

Though LEP people represent a small percentage of all riders on the MBTA system, significant numbers of Spanish-speaking LEP customers request translation services through MBTA customer information channels, including the website and customer communications call center. Many frontline staff members indicated that they used their personally developed abilities in Spanish to communicate directly with Spanish-speaking passengers without further aid. Furthermore, frontline staff members who interact with customers on a daily basis have indicated areas where the MBTA can do better in directly serving the LEP population, including staff training, signage, and opportunities to collaborate in the development of language materials used in the field.

Factor 3: The importance to LEP persons of the program, activity, or service provided by the MBTA

The MBTA performed a quantitative analysis using the results of interviews performed by Boston Region MPO staff, surveys of bus operators and CSAs, and responses from the MBTA's Rider Oversight Committee (ROC) to identify issues that LEP customers encountered while riding on the MBTA. This analysis showed the services that were deemed the most critical to LEP persons: fares and tickets, routes and schedules, and safety and security. These areas were chosen because language barriers in these areas could limit a person's ability to fully benefit from MBTA services or, in some cases, they could place a person in physical danger.

The quantitative analysis indicated that:

- MBTA programs and services are very important to LEP people, many of whom are transit dependent. A cross-tabulation of the data for zero-vehicle households and the ability to speak English using the 2008–2012 five-year public-use microdata sample (PUMS) shows that 20 percent of the people who speak English “less than very well” live in zero-vehicle households. Further, this percentage increases to 27 percent when the data are limited to people who speak English “less than well.”
- LEP customers experience frustrations similar to those of other MBTA riders, but are at risk of experiencing specific difficulties if they are unable to find assistance from MBTA staff (the survey results from Factor 2 show that MBTA staff do not often have difficulty assisting LEP customers). LEP customers in particular are susceptible to having problems when something unusual happens or when a service is changed to respond to an incident, and only an operator's audio announcement is made. Examples of this are when a bus or train switches to express service or drop-off only, or when a bus replacement service is deployed. LEP customers could potentially become endangered or lost if they are unable to understand emergency announcements.
- Finally, LEP customers often rely on traveling companions, such as family members or friends, to use the MBTA.

Conclusions for Factor 3

From the results of the quantitative analysis, it is apparent that the MBTA has an important role to play in the lives of people with limited proficiency in English, many of whom are transit dependent. Further, staff members familiar with riders with limited English proficiency have noted that riders who have difficulty communicating in English particularly struggle with respect to receiving correct information on fares and tickets, routes and schedules, and safety and security.

Factor 4: The Resources Available to the MBTA and Costs of Providing a Program, Activity, or Service

The fourth and final factor looks at associated costs and resources available to the MBTA to provide language assistance services considering the language needs identified in Factor 3 in the context of the MBTA's available and projected resources.

The MBTA in-house resources available to departments in meeting the needs of LEP customers include:

- Machine-translated content for the MBTA's website via Google Translate with Spanish, Chinese, Portuguese, Italian, and French highlighted on the MBTA' home page. Google's machine-based translation is also able to provide translations for all of the "safe harbor" languages in the MBTA's service area.
- Trained bilingual staff in the Customer Communications and Marketing Department fluent in Spanish, Haitian French Creole, Cape Verdean Creole, and both Cantonese Chinese and Mandarin Chinese.
- On-demand translation and interpretation service contracts for interpretation at meetings, and interpretation and translation of written materials.
- MBTA and MassDOT employee training programs for new hires and existing employees, which includes modules on Title VI Responsibilities, LEP Policies and Procedures, and Anti-discrimination and Harassment Prevention.
- Established communications and interactions with a number of community organizations in service activities, community relations, and planning efforts. Many of these community organizations directly serve LEP households and have working knowledge of neighborhood conditions and specific needs. They can be important resources in communicating with LEP individuals and engaging minority and low-income groups in MBTA policy-making and planning initiatives.

Conclusions for Factor 4

The MBTA maintains in-house resources for providing language services to the LEP community. It also has on-demand access to resources for interpretation at meetings and for translation of written materials. Both of these factors, combined with interactions and relationships that the MBTA has with community-based organizations that serve LEP communities, allow the MBTA to serve the LEP community with appropriate language services.

Concluding Remarks

The MBTA is committed to providing meaningful access to LEP persons. Given the results of the four-factor analysis, the MBTA will continue to place a premium on providing language access via oral and electronic (website) channels. The MBTA will focus on enhanced language access for speakers of Spanish, who are the majority of LEP persons with whom the MBTA comes into contact. The MBTA will continue its efforts in enhancing its language services to the speakers of Portuguese, Chinese (Mandarin and Cantonese), Haitian French Creole, and Vietnamese, who account for significant concentrations of LEP persons in the MBTA service area. The MBTA will provide language assistance upon request for all languages meeting the “safe harbor” threshold.

The remainder of this document describes:

- Methods and measures the MBTA uses to communicate with customers with limited proficiency in English
- Training programs for educating staff about the Authority’s Title VI obligations, including providing accessible service to customers who are not proficient in English
- Methods the Authority uses to provide notice to the public of the Authority’s Title VI obligations, including providing language assistance to customers who are not proficient in English
- MBTA’s plans for monitoring and updating the Language Assistance Plan

II. Language Assistance Measures

Language assistance services available at the MBTA to minimize barriers for transit service access to customers with limited proficiency in English include the following oral and written assistance:

- The MBTA Customer Communications Call Center is the Authority’s centralized customer information/feedback response service. The center is currently staffed by 23 employees, of whom 13 are bilingual. The Center receives, on average, approximately 900 Spanish-speaking callers per month. Language capabilities at the Center, in addition to English and Spanish, are Haitian French Creole, Cape Verdean Creole, and Cantonese and Mandarin Chinese. In addition to providing telephone interpreter services, the Center’s staff is available to provide translation or flyers and notices for MBTA departments. Departments can request translation assistance at 617-222-3200.

- Subway station announcements provide service and safety information in Spanish orally and visually via LED signs at stations.
- Safety and security information, including wayfinding, is provided at stations using universal symbols.
- Automated fare kiosks provide fare media and information in Spanish and Chinese, in addition to English.
- The MBTA website utilizes Google Translate to provide trip-planning, schedules, and information on how to use the MBTA's system in multiple languages. Spanish, Chinese, Portuguese, Italian, and French are highlighted on the MBTA's home page. Google's machine-based translation is also able to provide translations for all of the "safe harbor" languages in the MBTA's service area.
- Major-service-change and fare-change information is distributed in multiple languages, including Spanish, Portuguese, Chinese, Haitian Creole, Cape Verdean Creole, and Vietnamese.
- The MBTA Transit Police, in fulfilling a policy of quick and courteous response to all persons on a 24-hour basis, has contracted with on-call vendor Language Line Services to provide interpreter services. All officers, including Transit Police dispatchers, have 24-hour access to the service, which provides immediate translation service in more than 170 languages.
- In addition, the MBTA Transit Police have a number of police officers able to communicate in multiple languages. At present, 16 officers on staff are able to speak Spanish. Other language capabilities within the department are Italian, French, Haitian Creole, Vietnamese, Portuguese, Chinese (Cantonese and Toisanese), and American Sign Language.
- Brochures and notices of Title VI rights and complaints procedures are translated in multiple languages.
- MassDOT instituted an employee development/education program of MassDOT University, in which MBTA personnel are invited to participate. A pilot language education training was offered, beginning in the fall of 2011, using Rosetta Stone software and laptop computers. The program was oversubscribed, with participants selected by lottery. It is expected that the language training program will continue, given the level of interest. The program offers language training modules for Spanish, Portuguese, and Chinese/Mandarin.
- Service diversion notices are posted in Spanish and other languages, as appropriate.

- Interpretation and translated materials are offered at community public meetings, as appropriate.
- MBTA departments may obtain work orders with private vendors that provide translation services. A list of translation firms and their rates has been compiled by the MassDOT Community Affairs Office and is attached. MBTA staff are advised to make arrangements for translator services at least five business days prior to an event.
- The MBTA, through the MassDOT Community Affairs Office, provides outreach, including notice and press information using local media. Among the prominent media publications serving minority and non-English-speaking communities are *El Mundo*, *El Planeta*, *Mattapan Reporter*, *Haitian Reporter*, *Sampan*, and *The Banner*.
- The Office of Diversity and Civil Rights (ODCR) provides technical assistance and guidance for all departments on Title VI issues, including language assistance in serving LEP customers. Information and general assistance is available through ODCR at 617-222-3305.

Vital Materials for Translation

Vital materials are defined as information or documents that are critical for accessing MBTA services, programs, and activities, and they are prioritized for translation and distribution. The MBTA has identified the following vital documents and materials:

- Communications affecting health and safety
- Security announcements and signage
- Emergency related public announcements
- Materials regarding Title VI rights and complaint procedures
- Basic critical customer information on how to use and access the MBTA system such as ticket/pass purchase instruction
- Information and notices affecting a rider's ability to access and use the system safely and effectively (for example, major station changes, renovations, and permanent major changes in fares, service, or service routes)

Other Materials

Other materials considered non-vital may be translated by MBTA departments if the four-factor analysis indicates the appropriateness of such action. Examples of non-vital materials are:

- Planning studies and reports

- Budget reports including capital investment program
- General advertisements
- General announcements
- Publications of Authority policies and procedures

III. Training Programs for MBTA Personnel

The following section provides a summary outline of the human resource training programs that the MBTA has in place. All include a reference to the Authority's Title VI obligations, including providing access to service for customers with limited proficiency in English. Each Title VI element of the training extended to employees is facilitated with the overall goal of informing, supporting, and providing the necessary information, tools, and guidance in understanding and appreciating the Title VI requirements.

New-Hire Orientation

The MBTA's Human Resources Department provides orientation training for all new MBTA employees. Included within the orientation is a presentation by the Office of Diversity and Civil Rights of the Authority's policies and obligations to promote fairness, diversity, and inclusion for all employees and customers to ensure compliance with federal and state civil rights laws and regulations.

The Title VI element of the presentation by ODCR is primarily focused on providing information regarding staff responsibilities, including the need to provide appropriate language services that eliminate barriers to transit service access for MBTA customers. New hires are trained in the importance of being professional, sensitive, and responsive and the need to treat all customers with equal respect regardless of language capacity.

Anti-Discrimination and Harassment Prevention (ADHP)

The MBTA's Anti-Discrimination and Harassment Prevention training focuses on civil rights and MBTA policies. One goal of the training is to have employees gain an understanding of supervisors' responsibilities, employees' rights and responsibilities, and customers' rights under the laws and MBTA policies. Another goal is to develop skills and best practices for focusing on legitimate reasons for all employment decisions, and accountability regarding the same; to review best practices for maintaining excellence in customer service; and to learn when to seek assistance and/or partner with ODCR and/or other appropriate representatives at the MBTA.

This mandatory training is offered in separate sessions for supervisors and non-supervisory employees. Managers and supervisors are required to take the training every two years; all frontline employees must complete the one-day training every three

years. The training includes a discussion of workplace scenarios, including interactions with customers who are unable to speak English.

Training of Customer Service Representatives

The objective of this training is to help Customer Service Representatives (CSRs) raise their awareness of the policies and procedures regarding Title VI requirements. CSRs are employees who operate the MBTA's Customer Communications Call Center.

This training provides CSRs with the necessary awareness and best-practice skills for providing excellent customer service. Representatives learn the LEP policies and procedures for working with customers with limited English language skills. Employees are also taught how to identify Title VI violations. In addition, this training raises their understanding and sensitivity to their responsibilities in helping to provide meaningful access to information and services to all customers.

Training Area Supervisors and Superintendents

The purpose of this training is to provide an understanding to supervisors of Title VI, LEP, and Anti-Discrimination, and Harassment Prevention laws. Supervisors learn about customer rights under the laws, regulations, and MBTA policies and procedures.

This training provides practical tips and tools for supervisors to develop best-practice skills in areas of Title VI LEP, anti-discrimination, and harassment prevention regulations. Participants gain hands-on experience in how to recognize and handle caution areas, the rules for maintaining a discrimination-free workplace, and an awareness of the LEP customer environment.

“How Can I Help You Today?” Customer Service Training

All frontline MBTA Operations employees, including crew members and ticketing agents operating the MBTA commuter rail system, are required to complete customer service training. The one-day training program provided by the MBTA Human Resources Department includes a module on confronting stereotypes and on employee obligations with regard to Title VI, including tools and materials for communication with customers who have limited English proficiency.

All the training programs mentioned above include:

- 1) A summary of responsibilities under the LEP guidance
- 2) A summary of the MBTA's Language Assistance Plan
- 3) A summary of the Four-Factor Analysis of language assistance needs prepared by the MBTA (Number of LEP persons, frequency of contact, importance of program, and cost factor)

- 4) A description of the language assistance services made available by the MBTA and how staff can access these services

Media resources available to be used in MBTA training programs include:

- 1) LEP videos accessed on the FTA's website, including www.lep.gov
- 2) Links to policy information, including webinars produced by the FTA's Office of Civil Rights, available at www.fta.dot.gov/civilrights/12328.html
- 3) Best practices in engaging LEP customers, available at www.fhwa.dot.gov/hep/lowlim

IV. Providing Notices to LEP Persons

The MBTA incorporates multiple methods and media in communicating with its customers and the general public. These include:

- Public meetings and hearing notices.
- Postings on www.mbta.com and www.massdot.state.ma.us/.
- Postings on the Boston Region Metropolitan Planning Organization's website and via email distribution.
- Distribution through community-based neighborhood organizations including those serving or representing minority and low-income groups. (A listing of these organizations is included in the MBTA's Public Participation Plan.)
- Customer Communications Call Center phone line.
- Transit Police dispatch phone line.
- Press releases, including distribution to outlets serving minority and low-income neighborhoods (for example, to the publications *El Mundo*, *Bay State Banner*, *El Planeta*, *Mattapan Reporter*, *Sampan*, and *Haitian Reporter*).
- Brochures available in multiple languages (English, Spanish, Chinese, Portuguese, Haitian Creole, and Italian, informing customers of their Title VI rights and the MBTA's complaint process.
- Station audiovisual messages in Spanish.

V Monitoring and Updating the Language Assistance Plan

The MBTA has designated the Office of Diversity and Civil Rights to provide oversight and coordination of the implementation of the LEP Policy and Procedure. ODCR directs the ongoing monitoring and periodic assessment of the LEP Plan's effectiveness with assistance of the interdepartmental MBTA Title VI Working Group and technical assistance from the Central Transportation Planning Staff (CTPS).

ODCR, on an ongoing basis, will review the effectiveness of the LEP Plan using the following strategies:

- Solicit direct feedback from community-based organizations by distributing a questionnaire or holding focus group sessions on methods of communicating with LEP households;
- Assess the demographic composition of the MBTA service area using the most current census data or data collected from community organizations;
- Measure the actual frequency of contact by LEP persons by collecting information from the Customer Care Call Center, the MBTA website translation, and frontline operations staff interviews;
- Partnership with other Boston-region organizations and participation in regional forums and events focused on issues of diversity and social equity. Such regional collaborations include the MetroFuture planning workshops and task forces headed by the Metropolitan Area Planning Council.
- The MBTA will make changes to this Language Assistance Plan as needed, but at a minimum every three years. The three-year update will coincide with the MBTA's Title VI Program submittal to the Federal Transit Administration.

Table 7 shows the MBTA's Language Access Implementation Schedule.

TABLE 7
Language Access Implementation Schedule

Updated April 2014

Activity/Task	Responsibility	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	Status
1. Identification of LEP Individuals Who Need Language Assistance								
A. Update the number and proportion of LEP Persons	Planning and Development	X		X			√	Updated April 2014
B. Update frequency of Contact Data	Operations, Customer Communication Center, Transit police	X		X			√	Updated 2014
C. Update inventory/information from Community-based organizations	Marketing, Community Affairs, ODCR	X	X	X	√	√	√	Ongoing
2. Provision of Language Assistance Measures								
A. Post Notice of Rights at Service Locations								
i. Charlie Store and The RIDE Eligibility Center	Marketing, The RIDE Paratransit Office		X	-	-	-	-	Charlie Store, September 2012; RIDE Eligibility Center, (opening) October 2012
ii. Central Subway Stations	Marketing, Operations		X	-	-	-	-	September 2012
iii. Commuter Rail Stations	Marketing, Commuter Rail Operations			√	√	-	-	Will be posted with new materials at change-over to new Commuter Rail Operator
iv. Ferry Terminals	Marketing, Contracted Service Operations			√	√	-	-	Scheduled for Longwharf, Hingham, Hull, and Logan
v. Buses								
a. MBTA Major Bus Terminals	Marketing, Operations		X	X	-	-	-	Update as needed
vi. Federal Funding Subrecipients	Planning and Development	X	-	-	-	-	-	Ongoing monitoring
B. Communications Affecting Health, Safety, and Security								
i. Audio Announcements	Marketing, Operations	X	-	√	-	-	√	Update as needed
ii. Signage	Marketing, Operations	X	-	√	-	-	√	Signage in international symbols; update as needed
C. Notices and Information affecting a rider's ability to access and use the system safely and effectively								
i. Fare and Major Service Changes	Marketing, Planning and Schedules, Operations	X	-	-	-	-	-	Update as needed
ii. The RIDE Guide	The RIDE Paratransit Office		X	X	√	√	√	Update as needed
iii. Accessibility at the MBTA guide	Office of System-wide Access		X					Update as needed
iv. Fare payment instructions	Revenue, Marketing	X	-	-	-	-	-	Kiosk information in Spanish and Chinese
v. Ticket vending machines with multilingual functions	Revenue, ITD	X	-	-	-	-	-	Fare vending machines offer instructions in English, Spanish, and Chinese
vi. Public service announcements	Operations, Marketing	X	-	-	-	-	-	Public service announcements are made in English and Spanish
vii. Service diversion/disruption announcements	Operations, Design and Construction, Marketing	X	-	-	-	-	-	Service diversion/disruption announcements are made in English and Spanish
viii. Translated information on website	ITD, Relevant Department	X	-	-	-	-	-	Website utilizes Google Translate; translated versions of outreach materials for fare increase and service changes posted in six languages
ix. Translated electronic signs	ITD, Operations, Marketing	X	-	-	-	-	-	Messages provided in Spanish

TABLE 7
Language Access Implementation Schedule

Updated April 2014

Activity/Task	Responsibility	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	Status
3. Public Participation in the Decision-Making Process								
A. Translate meeting notices and press releases	Marketing, Community Affairs	X	√	√	√	√	√	As needed; languages for translation selected on the basis of the four-factor analysis
B. Provide interpreters at public meetings	Community Affairs, Relevant Department	X	√	√	√	√	√	As needed / upon request; languages for translation selected on the basis of the four-factor analysis
4. Training Staff								
A. Identify resources for communicating with LEP persons	ODCR	X		X		√		Updated 2014
B. Design LEP training for staff	ODCR	X		X		√		Update as needed
C. Implement LEP training	ODCR, Human Resources	X	-	-	-	-	-	Ongoing
5. Monitoring and Updating the LEP Plan								
A. Establish a process to obtain feedback on language assistance measures	ODCR	X	-	-	-	-	-	Ongoing
B. Obtain feedback from community-based organizations and agency staff	ODCR	X	-	X	-	-	√	Ongoing
C. Assessment of LEP Activities	ODCR	X	-	X	-	-	√	Ongoing
D. Update language assistance plan based on feedback and assessment	ODCR	X		X			√	Ongoing

X = Completed
 √ = Target Completion
 - = Ongoing (Completed & Maintain)

Translation Firms and Rates

Vendor	Services	Routine Services	Expedited Service
Baystate Interpreters, Inc.	Interpretation Services	\$75.00 per hr.	\$80.00 per hr.
Baystate Interpreters, Inc.	Translation Services	\$.30 per word	\$.30 per word.
Baystate Interpreters, Inc.	Telephonic Interpretation Services	\$.025 per min.	\$.025 per min.
Baystate Interpreters, Inc.	Simultaneous Interpretation Services	\$80.00 per hr.	\$80.00 Per hr.
Baystate Interpreters, Inc.	Voice Over Services	N/A	N/A
Cambodian Mutual Assistance Association of Greater Lowell, Inc.	Interpretation Services	\$65/hr.	\$65/hr.
Cambodian Mutual Assistance Association of Greater Lowell, Inc.	Translation Services	\$0.40/word	\$0.50/word
Cambodian Mutual Assistance Association of Greater Lowell, Inc.	Telephonic Interpretation Services	N/A	N/A
Cambodian Mutual Assistance Association of Greater Lowell, Inc.	Simultaneous Interpretation Services	N/A	N/A
Cambodian Mutual Assistance Association of Greater Lowell, Inc.	Voice Over Services	\$65/hour	\$65/hour
Catholic Charitable Bureau of the Archdiocese of Boston	Interpretation Services	\$85.00/hour	\$85.00/hour
Catholic Charitable Bureau of the Archdiocese of Boston	Translation Services	\$0.35/word	\$0.40/word
Catholic Charitable Bureau of the Archdiocese of Boston	Telephonic Interpretation Services	N/A	N/A
Catholic Charitable Bureau of the Archdiocese of Boston	Simultaneous Interpretation Services	N/A	N/A
Catholic Charitable Bureau of the Archdiocese of Boston	Voice Over Services	N/A	N/A
Central MA Area Health Education Center	Interpretation Services	\$60.00/hr	\$70.00/hr
Central MA Area Health Education Center	Translation Services	\$0.44/word	\$0.52/word
Central MA Area Health Education Center	Telephonic Interpretation Services	N/A	N/A
Central MA Area Health Education Center	Simultaneous Interpretation Services	N/A	N/A
Central MA Area Health Education Center	Voice Over Services	N/A	N/A
Centro Latino, Inc.	Interpretation Services	\$75.00 per hour	\$85.00 per hour
Centro Latino, Inc.	Translation Services	\$0.40 per word	\$0.50 per word
Centro Latino, Inc.	Telephonic Interpretation Services	N/A	N/A
Centro Latino, Inc.	Simultaneous Interpretation Services	N/A	N/A
Centro Latino, Inc.	Voice Over Services	N/A	N/A
CETRA, Inc.	Interpretation Services	\$102/hour	\$153/hour
CETRA, Inc.	Translation Services	\$0.24/word	\$0.36/word
CETRA, Inc.	Telephonic Interpretation Services	n/a	n/a
CETRA, Inc.	Simultaneous Interpretation Services	\$114/hour for interp	\$171/hour for interpre
CETRA, Inc.	Voice Over Services	\$139.50/hour	\$209.25
Corporate Translation Services, Inc.	Interpretation Services	n/a	n/a
Corporate Translation Services, Inc.	Translation Services	\$0.45	*Per word rate + 15%
Corporate Translation Services, Inc.	Telephonic Interpretation Services	n/a	n/a
Corporate Translation Services, Inc.	Simultaneous Interpretation Services	n/a	n/a
Corporate Translation Services, Inc.	Voice Over Services	n/a	n/a
Cross Cultural Communication Systems, Inc. (CCCS) SOMWBA AM	Interpretation Services	\$85.00 Per Hour	\$95.00 Per Hour
Cross Cultural Communication Systems, Inc. (CCCS) SOMWBA AM	Translation Services	\$0.50 Per Word	\$0.70 Per Word
Cross Cultural Communication Systems, Inc. (CCCS) SOMWBA AM	Telephonic Interpretation Services	\$1.15 Per Minute	\$1.15 Per Minute
Cross Cultural Communication Systems, Inc. (CCCS) SOMWBA AM	Simultaneous Interpretation Services	\$175.00 Per Hour	\$185.00 Per Hour
Cross Cultural Communication Systems, Inc. (CCCS) SOMWBA AM	Voice Over Services	N/A	N/A
Eduardo Berinstein Translations LLC	Interpretation Services	n/a	n/a
Eduardo Berinstein Translations LLC	Translation Services *	\$.30/word	\$.35/word
Eduardo Berinstein Translations LLC	Telephonic Interpretation Services	n/a	n/a
Eduardo Berinstein Translations LLC	Simultaneous Interpretation Services	n/a	n/a
Eduardo Berinstein Translations LLC	Voice Over Services *	\$100/hour	\$150/hour
GlobalVision International, Inc.	Interpretation Services	n/a	n/a
GlobalVision International, Inc.	Translation Services	*\$75/hr, ~*18c - ~*1; *\$100/hr, ~*24c/word	
GlobalVision International, Inc.	Telephonic Interpretation Services	n/a	n/a
GlobalVision International, Inc.	Simultaneous Interpretation Services	n/a	n/a
GlobalVision International, Inc.	Voice Over Services **	\$1000 for first 5min	\$1300 for first 5min, \$
Interpreters and Translators, Inc.	Interpretation Services	<u>\$90.00/per hour</u>	<u>\$90.00/per hour</u>
Interpreters and Translators, Inc.	Translation Services	<u>.29/per word</u>	<u>.38/per word</u>
Interpreters and Translators, Inc.	Telephonic Interpretation Services	<u>\$2.00/per minute</u>	<u>\$2.00/per minute</u>
Interpreters and Translators, Inc.	Simultaneous Interpretation Services	n/a	n/a
Interpreters and Translators, Inc.	Voice Over Services	n/a	n/a
Interpreters Associates, Inc.	Interpretation Services	75.00/hr 2 hr min	95.00/hr 2 hr min
Interpreters Associates, Inc.	Translation Services	0.50/word	0.95/word
Interpreters Associates, Inc.	Telephonic Interpretation Services	n/a	n/a
Interpreters Associates, Inc.	Simultaneous Interpretation Services	150.00/pp	190.00/pp
Interpreters Associates, Inc.	Voice Over Services	n/a	n/a
JTG, inc.	Interpretation Services	n/a	n/a
JTG, inc.	Translation Services	\$75/hour or 0.28/wc	20% surcharge for pro
JTG, inc.	Telephonic Interpretation Services	n/a	n/a
JTG, inc.	Simultaneous Interpretation Services	n/a	n/a
JTG, inc.	Voice Over Services	n/a	n/a

Language Bridge, LLC	Interpretation Services	\$\$75 per hour	\$75 per hour
Language Bridge, LLC	Translation Services	\$0.35 per word	\$0.45 per word
Language Bridge, LLC	Telephonic Interpretation Services	n/a	n/a
Language Bridge, LLC	Simultaneous Interpretation Services	n/a	n/a
Language Bridge, LLC	Voice Over Services	n/a	n/a
Language Connections		Incorrect	
Language Line Services, Inc.	Interpretation Services	n/a	n/a
Language Line Services, Inc.	Translation Services	\$0.35/word	\$0.40/word
Language Line Services, Inc.	Telephonic Interpretation Services	\$0.79/minute	\$0.79/minute
Language Line Services, Inc.	Simultaneous Interpretation Services	n/a	n/a
Language Line Services, Inc.	Voice Over Services	\$150/hour	\$150/hour
LONE STAR INTERPRETERS LLC	Interpretation Services	N/A	N/A
LONE STAR INTERPRETERS LLC	Translation Services	\$0.12/word	\$0.14/word
LONE STAR INTERPRETERS LLC	Telephonic Interpretation Services	\$0.63/min	\$0.63/min
LONE STAR INTERPRETERS LLC	Simultaneous Interpretation Services	N/A	N/A
LONE STAR INTERPRETERS LLC	Voice Over Services	\$12/prompt	\$14/prompt
Mario R. Martinez	Interpretation Services	N/A	N/A
Mario R. Martinez	Translation Services		0.058
Mario R. Martinez	Telephonic Interpretation Services	N/A	N/A
Mario R. Martinez	Simultaneous Interpretation Services	N/A	N/A
Mario R. Martinez	Voice Over Services	N/A	N/A
Patricio Endara	Interpretation Services	\$55.00 per hour	\$60.00 per hour
Patricio Endara	Translation Services	\$0.23 per word	\$0.30 per word
Patricio Endara	Telephonic Interpretation Services	\$1.00 per minute	\$1.25 per minute
Patricio Endara	Simultaneous Interpretation Services	N/A	N/A
Patricio Endara	Voice Over Services	N/A	N/A
Qwest Communications Corporation	Interpretation Services	N/A	N/A
Qwest Communications Corporation	Translation Services	N/A	N/A
Qwest Communications Corporation	Telephonic Interpretation Services	\$ 0.95 per minute –	\$ 0.95 per minute – a
Qwest Communications Corporation	Simultaneous Interpretation Services	N/A	N/A
Qwest Communications Corporation	Voice Over Services	N/A	N/A
Rapport International, LLC	Interpretation Services	\$150 per hour	\$185 per hour
Rapport International, LLC	Translation Services	.34 per word	.38 per word
Rapport International, LLC	Telephonic Interpretation Services	\$2 per minute	\$2 per minute
Rapport International, LLC	Simultaneous Interpretation Services	N/A	N/A
Rapport International, LLC	Voice Over Services	N/A	N/A
TransFluenci, LLC	Interpretation Services	\$75 per hour	\$75 per hour
TransFluenci, LLC	Translation Services	.28 per word	.28 per word
TransFluenci, LLC	Telephonic Interpretation Services	N/A	N/A
TransFluenci, LLC	Simultaneous Interpretation Services	N/A	N/A
TransFluenci, LLC	Voice Over Services	N/A	N/A
WorldWide Interpreters, Inc		Incorrect	



Appendix H

MBTA Subrecipient

Monitoring Form



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Massachusetts Bay Transportation Authority Subrecipient Monitoring Checklist

Definition:

From an MBTA perspective, a subrecipient is a governmental or non-profit entity that receives FTA funds, as a pass-through from the Authority, for the purpose of carrying out a Federal program.

Procedures:

Upon execution of an FTA grant that includes a pass-through of funds to a subrecipient, The Capital Budget Office will notify appropriate departments: (Capital Accounting, Legal, Planning, and the monitoring dept.) with the following checklist of pertinent information:

1) Award Information:

- a) Catalog of Federal Domestic Assistance (CFDA) Title and number
- b) Grant (award) name and title.
- c) Federal Awarding Agency
- d) Any applicable compliance requirements
Attached: Yes No
- e) If ARRA Funds, inform that these funds must be reported separately in the Schedule of Expenditures of Federal Awards (SEFA) and the SF-SAC (part of the annual OMB A-133 (Single) Audit).
ARRA Funds: Yes No
- f) All above incorporated into formal agreement between MBTA and subrecipient
Incorporated: Yes No

2) Local Match:

- a) Local match requirement
Percent:
Dollar Amount:
- b) Source of local match
- c) Expected documentation and eligibility of local match
- d) Responsible MBTA department for documenting local match

Massachusetts Bay Transportation Authority
Subrecipient Monitoring Checklist

3) Financial Management:

- a) Responsible MBTA department for oversight of this award
- b) Confirm that entity has adequate financial systems to carry out program(s) and to receive and disburse Federal funds
- c) Obtain copies of annual OMB A-133 audits and Audited Financial Statements
- d) Insure that any audit findings/deficiencies are resolved timely.

[Yellow box]

Confirmed: Yes No

Obtained: Yes No

Findings: Yes No

Resolved: Yes No

Note: Items b-d will be reviewed annually during life of grant

4) Monitoring Requirements:

- a) Responsible MBTA department for oversight of this award
- b) Expected oversight tasks (site visits, reviewing financial and/or performance reports, other).
- c) Expected documentation/verification of monitoring oversight.

[Yellow box]

[Yellow box]

[Yellow box]

5) Continuing Control:

- a) If applicable, department responsible for monitoring control over use of any equipment or real estate acquired with awarded funding.

[Yellow box]

6) Title VI Requirements

- a) Responsible MBTA department for oversight of this award

[Yellow box]

I. General Requirement Contents of Title VI program:

- i) A copy of the subrecipient's Title VI notice to the public that indicates the subrecipient complies with Title VI and informs members of the public of the protections against discrimination afforded to them by Title VI. Include a list of locations where the notice is posted.

Massachusetts Bay Transportation Authority Subrecipient Monitoring Checklist

- ii) A copy of the subrecipient's instructions to the public regarding how to file a Title VI discrimination complaint, including a copy of the complaint form.

- iii) A list of any public transportation-related Title VI investigations, complaints or lawsuits filed with the subrecipient.

- iv) A public participation plan that includes an outreach plan to engage minority and limited English proficient populations.

- v) A copy of the subrecipient's plan for providing language assistance to persons with limited English proficiency;

- vi) Recipients with transit-related, non-elected planning boards, advisory councils, or committees or similar decision-making bodies must provide a table depicting racial breakdown of membership of those bodies;

- vii) For subrecipients providing transit service, documentation that level and quality of service is provided on an equitable basis.



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Appendix I

Service and Fare

Equity Analysis

for the Green Line

Extension Project



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MEMORANDUM**TO: Green Line Extension Project Files****April 9, 2011****FROM: Bruce Kaplan****RE: Service and Fare Equity Analysis****INTRODUCTION**

The official Massachusetts Bay Transportation Authority (MBTA) Service Delivery Policy document has various criteria determining whether transit service changes are major or minor in magnitude. According to the latest policy update (June 2, 2010), "Route extensions of greater than one mile" constitute major transit service changes. The Green Line Extension project, which adds approximately 4 miles of new light-rail track to the MBTA system, thus qualifies as a major transit service change. Consequently, a Service and Fare Equity Analysis is necessitated to comply with the Title VI Regulations set by the Federal Transit Administration (FTA). However, all the salient service equity issues that would need to be investigated in such an analysis have already been addressed in the project's prior Environmental Assessment (EA) Environmental Justice memorandum. The memorandum demonstrates that the proposed Green Line Extension project does not disproportionately burden the study area's environmental justice populations more than the study area's non-environmental justice populations in the realms of environmental impacts, mobility, congestion, and accessibility to services and employment. Additionally, the proposed project does not adversely affect the study area's environmental justice populations in these areas when compared to a No-Build scenario. Thus, the Environmental Justice Analysis can serve as the Service Equity component of the Service and Fare Equity Analysis. Additionally, since neither a decrease in service nor a fare modification is advanced in the Green Line Extension project, a new separate Fare Equity component of the Service and Fare Equity Analysis for the project is not expressly needed.

PRIOR ENVIRONMENTAL JUSTICE WORK

In the Environmental Justice analysis conducted for the Green Line Extension EA, the Boston Metropolitan Planning Organization (MPO) identified geographic areas of minority and low-income populations (municipalities and Boston neighborhoods). Such geographic regions are determined by the demographics of the people living in a transportation analysis zone (TAZ). A TAZ is an aggregation of census geography based on population and estimated trip volumes. The Boston MPO's thresholds for these environmental justice populations are as follows:

- Low income – The Boston MPO median household income in 2000 was approximately \$55,800. A low-income TAZ was defined as having a median household income at or below 80 percent of this level (\$44,640).

- Minority – 21.4 percent of the MPO population in 2000 was composed of minorities (nonwhite and Hispanic). A minority TAZ was defined as having a percentage of minority population greater than 21.4 percent.

The future demographic forecasts used for the analysis assumed these attributes of the residential population TAZs remain the same as they were observed in the 2000 US Census. Thus, the modeled future-year classifications of environmental justice and non-environmental populations solely reflect the demographic conditions represented in the 2000 Census.

Certain performance measures were used as indicators of benefits and burdens for environmental justice and non-environmental justice populations. These measures fall into three categories: accessibility to needed services and jobs; mobility and congestion; and environmental impacts.

The EA's Environmental Justice analysis determined that the Green Line Extension scenario improves accessibility, mobility, congestion, and environmental conditions relative to the No-Build scenario for both environmental justice populations and non-environmental justice populations. This is not surprising given that the project does not reduce nor eliminate service, but rather extends the Green Line rapid transit service to areas that currently are only served by buses. This provides more options to all classes of populations in the study area. Furthermore, environmental justice TAZs slightly outperform the non-environmental justice population zones in garnering mobility, congestion, and environmental benefits, while non-environmental justice population zones best environmental justice population zones in accessibility improvements. Thus, compliance is met with the non-process-related elements of the Federal Transit Administration (FTA) Title VI Regulations, defined at 49 CFR Section 21.7.

FARE EQUITY ISSUES

A distinct fare equity analysis is not needed for the Green Line Extension study for several reasons. First, no fare changes are proposed for this project; the fares at the new Green Line Extension stations will be the same as those at other Green Line stations. Second, no existing transit services are proposed for elimination; the existing bus network in the study area will remain completely intact. Because no service will be eliminated, riders of all populations (low-income, minority, etc.) will continue to retain their same previous transit options; they can either carry on using their existing transit modes (buses) or switch to use the new Green Line Extension service. No new burdens will be assessed on any populations; no one will be encumbered more than before, just more mobility alternatives will be present.

Appendix J
Summary of
Disparate Impact
Analyses for
Service Monitoring



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Appendix J
Summary of Disparate Impact Analysis of Service Standards

Indicator/Mode	Result of Disparate Impact Analysis	Page
Vehicle Load:		
Bus and Trackless Trolley - Weekday	No Disparate Impact	6-7
Bus and Trackless Trolley - Saturday	No Disparate Impact	6-7
Bus and Trackless Trolley - Sunday	Disparate Impact	6-7
Light Rail - Early AM	No Disparate Impact	6-13
Light Rail - AM Peak	No Disparate Impact	6-13
Light Rail - Midday Base	No Disparate Impact	6-13
Light Rail - Midday School	No Disparate Impact	6-13
Light Rail - PM Peak	No Disparate Impact	6-13
Light Rail - Evening	No Disparate Impact	6-13
Light Rail - Late Evening	No Disparate Impact	6-13
Commuter Rail	N/A	—
Vehicle Headway:		
Bus and Trackless Trolley - Weekday	No Disparate Impact	6-8
Bus and Trackless Trolley - Saturday	No Disparate Impact	6-8
Bus and Trackless Trolley - Sunday	No Disparate Impact	6-8
Light Rail	N/A	—
Commuter Rail	N/A	—
On-Time Performance:		
Bus and Trackless Trolley - Weekday	Disparate Impact	6-10
Bus and Trackless Trolley - Saturday	Disparate Impact	6-10
Bus and Trackless Trolley - Sunday	No Disparate Impact	6-10
Light Rail - Headway-Based Analysis	No Disparate Impact	6-14
Light Rail - Trip-Time-Based Analysis	No Disparate Impact	6-16
Commuter Rail	No Disparate Impact	6-19
Service Availability (Coverage):		
All Modes - Weekday	No Disparate Impact	6-20
All Modes - Saturday	No Disparate Impact	6-21
All Modes - Sunday	No Disparate Impact	6-22

N/A = Not applicable, all service meets the service standard.

Appendix J
Summary of Disparate Impact Analysis of Service Policies

Indicator/Location by Mode	Result of Disparate Impact Analysis	Page
<i>Distribution of Transit Amenities—Bus:</i>		
Bus Shelter Placement - All Stops	No Disparate Impact	6-24
Bus Shelter Placement - Stops with More than 60 ADB	No Disparate Impact	6-45
Bus Shelter - Bench Exists	No Disparate Impact	6-46
Bus Shelter - Timetable Exists	No Disparate Impact	6-46
Bus Shelter - Timetable Legible	No Disparate Impact	6-46
Bus Shelter - Timetable Current	No Disparate Impact	6-46
Bus Shelter - Map Exists	No Disparate Impact	6-46
Bus Shelter - Map Legible	No Disparate Impact	6-46
Bus Shelter - Map Current	No Disparate Impact	6-46
Bus Shelter - Roof Condition	No Disparate Impact	6-48
Bus Shelter - Side Condition	No Disparate Impact	6-48
Bus Shelter - Graffiti/Vandalism	No Disparate Impact	6-48
Bus Shelter - Cleanliness	No Disparate Impact	6-48
Bus Shelter - Composite Score	No Disparate Impact	6-48
<i>Distribution of Transit Amenities—Rapid Transit</i>		
Neighborhood Maps - All Rapid Transit Stations	No Disparate Impact	6-49
Bus Transfer Maps - All Rapid Transit Stations	No Disparate Impact	6-49
Neighborhood Maps - Stations with Bus Connection	No Disparate Impact	6-50
Bus Transfer Maps - Stations with Bus Connection	No Disparate Impact	6-50
Subway Lobby - Trash Receptacles Present	No Disparate Impact	6-54
Subway Lobby - Recycling Receptacles Present	Disparate Impact	6-54
Subway Lobby - Seating Fixtures Present	No Disparate Impact	6-54
Subway Lobby - System Map Present	No Disparate Impact	6-55
Subway Lobby - Line Map Present	No Disparate Impact	6-55
Subway Platform - Trash Receptacles Present	No Disparate Impact	6-56
Subway Platform - Recycling Receptacles Present	No Disparate Impact	6-56
Subway Platform - Seating Fixtures Present	No Disparate Impact	6-56
Subway Platform - System Map Present	No Disparate Impact	6-56
Subway Platform - Line Map Present	No Disparate Impact	6-56
Subway Exterior Lobby - Structure Condition	No Disparate Impact	6-58
Subway Exterior Lobby - Vandalism Condition	No Disparate Impact	6-58
Subway Exterior Lobby - Cleanliness Condition	No Disparate Impact	6-58
Subway Exterior Lobby - Name Signage Condition	No Disparate Impact	6-58
Subway Interior Lobby - Structure Condition	No Disparate Impact	6-59
Subway Interior Lobby - Vandalism Condition	No Disparate Impact	6-59
Subway Interior Lobby - Cleanliness Condition	No Disparate Impact	6-59
Subway Interior Lobby - Way-Finding Signage Condition	No Disparate Impact	6-59

Indicator/Location by Mode	Result of Disparate Impact Analysis	Page
Subway Interior Lobby - Floor Surface Condition	No Disparate Impact	6-59
Subway Interior Lobby - Stairwell Condition	Disparate Impact	6-59
Subway Interior Lobby - Lighting Condition	No Disparate Impact	6-59
Subway Platform - Structure Condition	No Disparate Impact	6-60
Subway Platform - Vandalism Condition	No Disparate Impact	6-60
Subway Platform - Cleanliness Condition	No Disparate Impact	6-60
Subway Platform - Name Signage Condition	No Disparate Impact	6-60
Subway Platform - Way-Finding Signage Condition	No Disparate Impact	6-61
Subway Platform - Floor Surface Condition	No Disparate Impact	6-61
Subway Platform - Tactile Strip Condition	No Disparate Impact	6-61
Subway Platform - Stairwell Condition	No Disparate Impact	6-61
Subway Platform - Lighting Condition	No Disparate Impact	6-61
Surface Platform - Trash Receptacles Present	No Disparate Impact	6-62
Surface Platform - Recycling Receptacles Present	Disparate Impact	6-62
Surface Platform - Seating Fixtures Present	No Disparate Impact	6-62
Surface Platform - System Map Present	No Disparate Impact	6-62
Surface Platform - Line Map Present	No Disparate Impact	6-62
Surface Shelter - Structure Condition	No Disparate Impact	6-64
Surface Shelter - Vandalism Condition	No Disparate Impact	6-64
Surface Shelter - Cleanliness Condition	No Disparate Impact	6-64
Surface Platform - Platform Condition	No Disparate Impact	6-65
Surface Platform - Name Signage Condition	No Disparate Impact	6-65
Surface Platform - Tactile Strip Condition	No Disparate Impact	6-65
Surface Platform - Walkway Condition	No Disparate Impact	6-65
Surface Platform - Pedestrian Control Condition	No Disparate Impact	6-65
<i>Distribution of Transit Amenities—Commuter Rail:</i>		
Station - Trash Receptacles Present	No Disparate Impact	6-66
Station - Recycling Receptacles Present	No Disparate Impact	6-66
Station - Seating Fixtures Present	No Disparate Impact	6-66
Station - System Map Present	No Disparate Impact	6-67
Station - Schedule Present	No Disparate Impact	6-67
Shelter - Structure Condition	No Disparate Impact	6-69
Shelter - Vandalism Condition	No Disparate Impact	6-69
Shelter - Cleanliness Condition	No Disparate Impact	6-69
Shelter - Station Name Signage Condition	No Disparate Impact	6-69
Platform - Structure Condition	No Disparate Impact	6-70
Platform - Vandalism Condition	No Disparate Impact	6-70
Platform - Cleanliness Condition	No Disparate Impact	6-70
Platform - Station Name Signage Condition	No Disparate Impact	6-70
Platform - Floor Surface Condition	No Disparate Impact	6-70
Platform - Stairwell Condition	No Disparate Impact	6-70

Indicator/Location by Mode	Result of Disparate Impact Analysis	Page
Platform - Way-Finding Signage Condition	No Disparate Impact	6-71
Platform - Tactile Strip Condition	No Disparate Impact	6-71
Platform - Lighting Condition	No Disparate Impact	6-71
<i>Distribution of Transit Amenities—Systemwide:</i>		
Cashless FVM Availability	No Disparate Impact	6-74
Full-Service FVM Availability	No Disparate Impact	6-74
ADA Gate Availability	Disparate Impact	6-75
High Speed Gate Availability	No Disparate Impact	6-75
Retail Sales Terminals	No Disparate Impact	6-77
Elevators - Average Number of Incidents	No Disparate Impact	6-92
Elevators - Average Number of Repair Hours	No Disparate Impact	6-92
Elevators - Median Number of Repair Hours	No Disparate Impact	6-92
Elevators - Average Number of Hours Out of Service	No Disparate Impact	6-92
Elevators - Median Number of Hours Out of Service	No Disparate Impact	6-92
Escalators - Average Number of Incidents	Disparate Impact	6-94
Escalators - Average Number of Repair Hours	No Disparate Impact	6-94
Escalators - Median Number of Repair Hours	No Disparate Impact	6-94
Escalators - Average Number of Hours Out of Service	No Disparate Impact	6-94
Escalators - Median Number of Hours Out of Service	No Disparate Impact	6-94
<i>Vehicle Assignment:</i>		
Bus - Vehicle Age	No Disparate Impact	6-102
Bus - Air Conditioning	No Disparate Impact	6-102
Light Rail - Average Age per Car Trip	No Disparate Impact	6-104
Commuter Rail - Average Coach Age	No Disparate Impact	6-106

ADB = Average daily boardings. FVM = Fare vending machines.



Appendix K

MBTA Bus Route Classification



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**Appendix K
MBTA Bus Route Classification**

Route	Route Name (from MBTA Database)	Minority
1	Harvard Station - Dudley Station via BU Medical Center	Y
4	North Station - World Trade Center	Y
5	City Point - Mary Ellen McCormick Housing	N
7	City Point - Otis and Summer Streets via Summer Street	N
8	Harbor Point/UMASS - Kenmore via South Bay and BU Med. Ctr.	Y
9	City Point - Copley Station	N
10	City Point - St. James Avenue via South Bay Mall	N
11	City Point - Bedford and Chauncy Streets	N
14	Roslindale Square - Heath Street via Dudley	Y
15	Kane Square - Ruggles Station	Y
16	Forest Hills Station - UMASS Campus via JFK and South Bay	Y
17	Fields Corner - Andrew Station via Uphams Corner	Y
18	Ashmont Station - Andrew Station	Y
19	Fields Corner Station - Kenmore Station	Y
21	Ashmont Station - Forest Hills Station	Y
22	Ashmont Station - Ruggles via Jackson Square Station	Y
23	Ashmont Station - Ruggles Station via Washington	Y
24	Wakefield Avenue/Truman Parkway - Mattapan Station	Y
26	Ashmont Station/Norfolk Street Loop via Norfolk	Y
27	Mattapan Station - Ashmont Station	Y
28	Mattapan Station - Ruggles via Dudley	Y
29	Mattapan Square - Jackson Square Station	Y
30	Mattapan - Forest Hills via Roslindale Square	Y
31	Mattapan Square - Forest Hills Station	Y
32	Wolcott Square - Forest Hills Station via Cleary Square	Y
33	River and Milton Streets, Dedham - Mattapan Station	Y
34	Dedham Line - Forest Hills Station via Washington	Y
34	Walpole Center - Forest Hills via Dedham Mall (Local)	Y
35	Dedham Mall - Forest Hills via Centre and Belgrade	Y
36	VA Hospital West Roxbury - Forest Hills via Charles	Y
37	Baker and Vermont Streets - Forest Hills Station	Y
38	Wren Street - Forest Hills Station	N
39	Forest Hills Station - Back Bay Station	Y
40	Georgetown - Forest Hills Station via Alwin Street	Y
41	Center and Elliott Streets - JFK Umass via Dudley	Y
42	Forest Hills - Dudley Square Terminal via Garage	Y
43	Ruggles Station - Park and Tremont Streets	Y
44	Jackson Square - Ruggles Station via Seaver Street	Y
45	Franklin Park - Ruggles Station via Grove Hall	Y
47	Central Square - Broadway Station	Y
50	Cleary Square - Forest Hills Station	Y
51	Reservoir Station - Forest Hills Station	Y
52	Dedham Mall - Watertown via Oak Hill	N
55	Jersey and Queensbury - Park and Tremont Streets	Y
57	Watertown Bus Yard - Kenmore Square	Y
59	Needham Junction - Watertown Square	N
60	Chestnut Hill Mall - Kenmore Square	Y

Route	Route Name (from MBTA Database)	Minority
62	Bedford VA Hospital - Alewife Station via Lexington Center	N
64	Oak Square - Kendall/MIT Station via Union and Central	Y
65	Brighton Center - Kenmore Square	Y
66	Harvard Square - Dudley Square via Union Square, Allston	Y
67	Turkey Hill - Alewife Station via Arlington Center	N
68	Harvard Square - Kendall Station	Y
69	Harvard Square - Lechmere Station	Y
70	North Waltham (Lakeview) - University Park via Central Square	Y
70	Cedarwood - University Park via Central Square, Waltham	Y
71	Watertown Square - Harvard Station via Mount Auburn Street	N
72	Aberdeen Avenue and Mount Auburn - Bennett Street via Huron	N
73	Waverly Square - Harvard Station via Belmont	N
74	Belmont Center - Bennett Street Alley	N
75	Belmont Center - Bennett Alley via Huron Towers	N
76	Lincoln Labs - Alewife Station via Hanscom	N
77	Arlington Heights - Bennett Street Alley	N
78	Arlmont Village - Bennett Alley	N
79	Arlington Heights - Alewife Station	N
80	Arlington Center - Lechmere Station	Y
83	Rindge Avenue - Central Square, Cambridge	Y
84	Alewife Station - Alewife Station via Arlmont Loop	N
85	Spring Hill - Kendall Station	Y
86	Sullivan Station - Cleveland Circle	Y
87	Arlington Center - Lechmere Station	Y
88	Clarendon Hill - Lechmere Station via Highland Avenue	Y
89	Clarendon Hill - Sullivan Station	Y
90	Davis Station - Wellington Station via Sullivan	N
91	Central Square, Cambridge - Sullivan Station	Y
92	Assembly Square Mall - Franklin Street via Sullivan	N
93	Sullivan Station - Downtown Boston via Bunker Hill	N
94	Medford Square - Davis Square via West Medford	N
95	West Medford - Sullivan Station via Mystic Avenue	Y
96	Medford Square - Bennett Alley via Davis Square and George	N
97	Malden Station - Wellington Station via Commercial Street	Y
99	Boston Regional Med. Ctr. (Upper Highland) - Wellington Station	Y
100	Elm Street - Wellington Station via Fellsway	Y
101	Malden Center Station - Sullivan Station via Winter Hill	Y
104	Malden Center Station - Sullivan Station via Ferry	Y
105	Malden Station - Sullivan Station via Newland Street Housing	Y
106	Lebanon Loop - Wellington Station via Malden Station	Y
108	Linden Square - Wellington Station via Malden Station	Y
109	Linden Square - Sullivan Station via Broadway	Y
110	Wonderland Station - Wellington Station via Woodlawn	Y
111	Woodlawn - Haymarket via Bellingham Square	Y
112	Wellington - Wood Island via Mystic Mall	Y
114	Bellingham Square - Maverick Station	Y
116	Wonderland - Maverick via Revere Street	Y
117	Wonderland - Maverick via Beach Street	Y
119	Northgate Shopping Center - Beachmont Station	Y

Route	Route Name (from MBTA Database)	Minority
120	Orient Heights - Maverick Station via Jeffries Point and Waldemar	Y
121	Wood Island Station - Maverick Station via Lexington Street	Y
131	Melrose Highland - Oak Grove Station via East Side	N
132	Redstone Shopping Plaza - Malden Station	N
134	North Woburn - Wellington Station via Riverside Avenue	Y
136	Reading Depot - Malden Center Station	N
137	Reading Depot - Malden Center Station	N
170	Oakpark - Dudley Station via Waltham and Back Bay	Y
171	Logan Airport - Dudley via Andrew and Terminals	Y
191	Mattapan Station - Haymarket Station	Y
192	Cleary Square - Haymarket Station via Forest Hills	Y
193	Watertown Square - Haymarket Square	Y
194	Clarendon Hill - Haymarket Station via Sullivan Station	Y
201	Fields Corner Loop via Neponset Avenue	Y
202	Fields Corner Loop via Adams, Keystone and Puritan	Y
210	Quincy Center Station - Fields Corner Station	Y
211	Quincy Center Station - Squantum via North Quincy Station	Y
212	Quincy Center Station - North Quincy Station	Y
214	Quincy Center - Germantown	Y
215	Quincy Center - Ashmont Station via West Quincy	Y
216	Quincy Center - Hough's Neck	N
217	Quincy Center - Ashmont Station	Y
220	Quincy Center - Hingham Square via Hingham Center	Y
221	Quincy Center - Fort Point via North Weymouth	Y
222	Quincy Center - East Weymouth	N
225	Quincy Center - Weymouth Landing via DesMoines	Y
230	Quincy Center - Montello Commuter Rail via Braintree	Y
236	Quincy Center - South Shore Plaza via Braintree Station	N
238	Quincy Center - Crawford Square via Holbrook/Randolph Station	Y
240	Avon Square - Ashmont Station	Y
245	Quincy Center - Mattapan via Quarry Street And Edgehill Road	Y
325	Elm Street, Medford - Haymarket Station via I93	Y
326	West Medford - Haymarket Station	N
350	Burlington (Chestnut Avenue) - Alewife Station	N
351	Oak Park/Bedford Woods - Alewife via Mall Road	N
352	Burlington (Chestnut Avenue) - State Street, Boston	N
354	Woburn Line - State Street, Boston via Woburn Square	N
411	Jack Satter House (Revere) - Malden Station	Y
424	Eastern Avenue/Essex Street - Haymarket Station	N
426	Central Square, Lynn - Haymarket via Cliftondale Square	Y
428	Oaklandvale - Haymarket via Granada Highlands	Y
429	Northgate Shopping Ctr., Central Square, Lynn via Square 1 Mall	Y
430	Saugus Center - Malden Station	Y
431	Neptune Towers - Central Square	Y
434	Main Street, Peabody - Haymarket via Goodwin Circle	Y
435	Liberty Tree mall - Central Square, Lynn via Euclid	N
436	Liberty Tree Mall - Central Square, Lynn via Goodwins Circle	N
439	Nahant - Central Square, Lynn	Y
441	Marblehead - Haymarket via Central Square and Paradise Road	Y

Route	Route Name (from MBTA Database)	Minority
442	Marblehead - Haymarket via Central Square and Humphrey Street	Y
448	Marblehead - Downtown Crossing Express via Paradise Road	N
449	Marblehead - Downtown Crossing Express via Humphrey	N
450	Salem Center - Haymarket Square via Western Avenue	Y
451	North Beverly - Salem Depot via Cabot Street	N
455	Salem Depot - Wonderland via Central Square, Lynn	Y
456	Salem Depot - Central Square, Lynn via Highland Avenue	N
459	Salem Depot - Downtown Crossing via Central Square, Lynn	Y
465	Danvers Square - Salem Depot via Liberty Tree Mall	N
501	Express: Brighton - Federal and Franklin Streets	Y
502	Express: Watertown Square - Copley Square	N
503	Express: Brighton - Copley Square	Y
504	Express: Watertown Square - Federal and Franklin Streets	N
505	Express: Waltham Center - Federal and Franklin Streets	N
553	Roberts - Federal and Franklin Streets	Y
554	Waverly Square - Federal and Franklin Streets	N
556	Waltham Highlands - Federal and Franklin Streets	Y
558	Riverside - Federal and Franklin Streets	N
701	CT-1: Central Square, Cambridge - BU Medical Center	Y
708	CT-3: Beth Israel Deaconess - Andrew Station	Y
741	SL1: Waterfront – South Station - Airport	Y
742	SL2: Waterfront – South Station – Design Center	N
747	CT-2: Sullivan Station – Ruggles Station	Y
749	SL5: Dudley Station – Downtown Crossing	Y
751	SL4: Dudley Station – South Station	Y

Appendix L
MBTA Rapid
Transit and
Commuter Rail
Line Classification



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Appendix L
Classification of Rapid Transit and Commuter Rail Lines

Line	Minority
<i>Rapid Transit—Heavy Rail:</i>	
Red Line	Y
Blue Line	Y
Orange Line	Y
<i>Rapid Transit—Light Rail:</i>	
Green Line Branch B	Y
Green Line Branch C	Y
Green Line Branch D	N
Green Line Branch E	Y
Mattapan (Red)	Y
<i>Commuter Rail:</i>	
Fairmount	Y
Fitchburg	N
Franklin	N
Greenbush	N
Haverhill	N
Kingston	N
Lowell	N
Middleborough	Y
Needham	N
Newburyport	N
Providence	N
Rockport	N
Stoughton	N
Worcester	Y



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Appendix M

MBTA Rapid Transit

Station Classification



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Appendix M
MBTA Rapid Transit Station Classification

Station	Minority	Source
<i>Transfer Stations:</i>		
State★	N	Survey
Government Center	N	Census
Downtown Crossing★	Y	Survey
Haymarket★	N	Survey
Park Street	N	Census
North Station★	N	Survey
<i>Red Line:</i>		
Alewife★	N	Survey
Davis	N	Census
Porter	N	Census
Harvard★	N	Survey
Central	Y	Census
Kendall/MIT	Y	Census
Charles/MGH	N	Census
Park Street	N	Census
Downtown Crossing★	N	Survey
South Station★	N	Survey
Broadway	Y	Census
Andrew	Y	Census
JFK/UMass	Y	Census
North Quincy★	Y	Survey
Wollaston	Y	Census
Quincy Center★	N	Survey
Quincy Adams★	N	Survey
Braintree★	N	Survey
Savin Hill	Y	Census
Fields Corner	Y	Census
Shawmut	Y	Census
Ashmont	Y	Census
<i>Mattapan High-Speed Line:</i>		
Ashmont	Y	Census
Cedar Grove	Y	Census
Butler★	Y	Census★★
Milton	Y	Census
Central Avenue	Y	Census
Valley Road	Y	Census
Capen Street	Y	Census
Mattapan	Y	Census

Station	Minority	Source
Orange Line:		
Oak Grove★	N	Survey
Malden★	Y	Survey
Wellington★	N	Survey
Sullivan Square	Y	Census
Community College	N	Census
North Station★	N	Survey
Haymarket	N	Census
State★	N	Survey
Downtown Crossing★	N	Survey
Chinatown	Y	Census
Tufts Medical Center	Y	Census
Back Bay★	N	Survey
Massachusetts Ave	Y	Census
Ruggles★	Y	Survey
Roxbury Crossing	Y	Census
Jackson Square	Y	Census
Stony Brook	Y	Census
Green Street	Y	Census
Forest Hills★	Y	Survey
Blue Line:		
Wonderland★	N	Survey
Revere Beach	Y	Census
Beachmont	Y	Census
Suffolk Downs	Y	Census
Orient Heights★	N	Survey
Wood Island★	N	Survey
Airport	Y	Census
Maverick	Y	Census
Aquarium	N	Census
State★	N	Survey
Government Center	N	Census
Bowdoin	N	Census
Green Line Subway:		
Lechmere★	N	Survey
Science Park	Y	Census
North Station	N	Census
Haymarket	N	Census
Government Center	N	Census
Park Street	N	Census
Boylston	N	Census
Arlington	N	Census

Station	Minority	Source
Copley	N	Census
Hynes Convention Center	N	Census
Kenmore	Y	Census
Prudential	N	Census
Symphony	N	Census
Green Line-B:		
Blandford Street	Y	Census
Boston University East	Y	Census
Boston University Central	Y	Census
Boston University West	Y	Census
St Paul Street	Y	Census
Pleasant Street	Y	Census
Babcock Street	Y	Census
Packards Corner	Y	Census
Harvard Avenue	Y	Census
Griggs Street	Y	Census
Allston Street	Y	Census
Warren Street	Y	Census
Washington Street	Y	Census
Sutherland Road	N	Census
Chiswick Road	N	Census
Chestnut Hill Avenue	N	Census
South Street	N	Census
Boston College	N	Census
Green Line-C:		
St Mary's Street	Y	Census
Hawes Street	Y	Census
Kent Street	Y	Census
St Paul Street	Y	Census
Coolidge Corner	Y	Census
Summit Ave/Winchester St	N	Census
Brandon Hall	N	Census
Fairbanks Street	N	Census
Washington Square	N	Census
Tappan Street	N	Census
Dean Road	N	Census
Englewood Avenue	N	Census
Cleveland Circle	N	Census
Green Line-D:		
Fenway	N	Census
Longwood	N	Census
Brookline Village	Y	Census

Station	Minority	Source
Brookline Hills	N	Census
Beaconsfield	N	Census
Reservoir	N	Census
Chestnut Hill★	N	Survey
Newton Centre	N	Census
Newton Highlands	N	Census
Eliot	N	Census
Waban★	N	Survey
Woodland★	N	Survey
Riverside★	N	Survey
Green Line–E:		
Northeastern	Y	Census
Museum of Fine Arts	Y	Census
Longwood Medical Area	Y	Census
Brigham Circle	Y	Census
Fenwood Road	Y	Census
Mission Park	Y	Census
Riverway	Y	Census
Back of the Hill	Y	Census
Heath Street	Y	Census
Silver Line:		
Courthouse	N	Census
World Trade Center	N	Census
Silver Line Way	N	Census
Dudley Station	Y	Census

★ Designated a “non-local” station. The percentage of people walking to the station is less than 50 percent. Ridership data is used to define minority and low-income classification in most cases.

★★ Census data was used to compensate for a small sample size of ridership data.



Appendix N

MBTA Commuter Rail Station Classification



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**Appendix N
Commuter Rail Station Classification**

Station	Minority	Source
<i>Multiline Stations:</i>		
North Station★	N	Survey
South Station★	N	Survey
Ruggles	Y	Census
Back Bay★	N	Survey
Braintree	N	Census
Quincy Center★	Y	Census★ ★
JFK/UMass	Y	Census
Readville	Y	Census
Hyde Park	Y	Census
<i>Newburyport/Rockport:</i>		
Rockport	N	Census
Gloucester	N	Census
West Gloucester	N	Census
Manchester	N	Census
Beverly Farms	N	Census
Prides Crossing	N	Census
Montserrat	N	Census
Newburyport	N	Census
Rowley	N	Census
Ipswich	N	Census
Hamilton/Wenham	N	Census
North Beverly	N	Census
Salem	N	Census
Swampscott	Y	Census
Beverly Depot	N	Census
Lynn	Y	Census
River Works	Y	Census
Chelsea	Y	Census
North Station★	N	Survey
<i>Haverhill:</i>		
Haverhill	Y	Census
Bradford	Y	Census
Lawrence	Y	Census
Andover	N	Census
Ballardvale	N	Census
North Wilmington	N	Census
Reading	N	Census
Wakefield	N	Census

Station	Minority	Source
Greenwood	N	Census
Melrose Highlands	N	Census
Melrose Cedar Park	N	Census
Wyoming Hill	N	Census
Malden Center★	Y	Census★★
North Station★	N	Survey
Lowell:		
Lowell★	N	Survey
North Billerica★	N	Survey
Wilmington	N	Census
Anderson/Woburn★	N	Survey
Mishawum	N	Census
Winchester Center	N	Census
Wedgemere	N	Census
West Medford	N	Census
North Station★	N	Survey
Fitchburg:		
Fitchburg★	N	Survey
North Leominster★	N	Survey
Shirley	N	Census
Ayer	N	Census
Littleton/Route 495	N	Census
South Acton	N	Census
West Concord	N	Census
Concord	N	Census
Lincoln	N	Census
Silver Hill	N	Census
Hastings	N	Census
Kendal Green★	N	Census★★
Brandeis/Roberts	Y	Census
Waltham	Y	Census
Waverley	N	Census
Belmont	N	Census
Porter	N	Census
North Station★	N	Survey
Framingham/Worcester:		
Worcester/Union Station	Y	Census
Grafton★	N	Survey
Westborough	Y	Census
Southborough★	N	Survey
Ashland	N	Census
Framingham	Y	Census

Station	Minority	Source
West Natick	Y	Census
Natick	N	Census
Wellesley Square	N	Census
Wellesley Hills	N	Census
Wellesley Farms	N	Census
Auburndale	N	Census
West Newton	N	Census
Newtonville	N	Census
Yawkey	N	Census
Back Bay★	N	Survey
South Station★	N	Survey
<i>Needham:</i>		
Needham Heights	N	Census
Needham Center	N	Census
Needham Junction	N	Census
Hersey	N	Census
West Roxbury	N	Census
Highland	N	Census
Bellevue	N	Census
Roslindale Village	Y	Census
Forest Hills	Y	Census
Ruggles	Y	Census
Back Bay★	N	Survey
South Station★	N	Survey
<i>Franklin:</i>		
Forge Park/495★	N	Survey
Franklin/Dean College	N	Census
Norfolk	N	Census
Walpole	N	Census
Windsor Gardens	N	Census
Norwood Central	N	Census
Norwood Depot	N	Census
Islington	N	Census
Dedham Corporate Center	N	Census
Endicott	N	Census
Readville	Y	Census
Hyde Park	Y	Census
Ruggles	Y	Census
Back Bay★	N	Survey
South Station★	N	Survey
<i>Providence/Stoughton:</i>		
Providence	N	Census

Station	Minority	Source
South Attleboro★	N	Survey
Attleboro	Y	Census
Mansfield	N	Census
Sharon	N	Census
Stoughton:		
Canton Center	N	Census
Canton Junction	N	Census
Route 128★	N	Survey
Hyde Park	Y	Census
Ruggles	Y	Census
Back Bay	Y	Census
South Station★	N	Survey
Fairmount:		
Readville	Y	Census
Fairmount	Y	Census
Morton Street	Y	Census
Uphams Corner	Y	Census
South Station★	Y	Survey
Middleborough:		
Middleborough/Lakeville★	N	Survey
Bridgewater	N	Census
Campello	Y	Census
Brockton	Y	Census
Montello	Y	Census
Holbrook/Randolph	Y	Census
Braintree	N	Census
Quincy Center★	Y	Census★★
JFK/UMass	Y	Census
South Station★	N	Survey
Kingston/Plymouth:		
Kingston★	N	Survey
Plymouth★	N	Census★★
Halifax	N	Census
Hanson	N	Census
Whitman	N	Census
Abington	N	Census
South Weymouth	N	Census
Braintree	N	Census
JFK/UMass	Y	Census
South Station★	Y	Survey
Greenbush:		
Greenbush	N	Census

Station	Minority	Source
North Scituate	N	Census
Cohasset	N	Census
Nantasket Junction	N	Census
West Hingham	N	Census
East Weymouth	N	Census
Weymouth Landing/East Braintree	N	Census
Quincy Center★	N	Census★★
JFK/UMass	Y	Census
South Station	N	Census

★ Designates a “non-local” station. The percentage of people walking to the station is less than 50 percent. Ridership data is used to define minority and low-income classification in most cases.

★★ Census data was used to compensate for a small sample size of ridership data.



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Appendix O

Draft MBTA Disparate Impact and Disproportionate Burden Policy



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Deval L. Patrick, Governor
Richard A. Davey, MassDOT Secretary & CEO
Beverly A. Scott, Ph.D., General Manager
and Rail & Transit Administrator



MBTA Title VI Program Disparate Impact and Disproportionate Burden Policy--DRAFT

Purpose:

The Federal Transit Administration (FTA) requires transit agencies to monitor service using specific service standards and policies and to determine whether a “disparate impact” exists when comparing the performance of services provided to predominantly minority areas with the performance of services provided to predominantly nonminority areas. FTA also requires that transit agencies assess whether a proposed fare change or major service change would have a “disparate impact” on minority populations or “disproportionate burden” on low-income populations, under Title VI of the Civil Rights Act of 1964 and other directives. Under FTA Circular C4702.1 issued in October 2012, the Federal Transit Administration is now requiring fixed route public transit agencies to clearly establish, with input through a public engagement process, threshold definitions for measuring disparate impacts and disproportionate burdens.

This policy is to be used for service monitoring and for analysis of proposed fare changes and major service changes. It establishes threshold standards for evaluating the equity impacts and the distribution of benefits and burdens caused by any fare change or major service change. In establishing this policy, the MBTA takes account of the size and multi-modal character of its operations, the diversity of its communities, and similar policy thresholds set by peer transit agencies.

Definitions:

Disparate Impact

The FTA Title VI guidelines define Disparate Impact as a facially neutral policy or practice that disproportionately affects members of a group identified by race, color, or national origin, where the recipient's policy or practice lacks a substantial legitimate justification and where there exists one or more alternatives that would serve the same legitimate objectives, but with less disproportionate effects on the basis, of race, color, or national origin."

Disproportionate Burden

The FTA Title VI guidelines define Disproportionate Burden as a facially neutral policy or practice that disproportionately affects low-income populations more than non-low income populations. A finding of disproportionate burden requires the recipient to evaluate alternatives and mitigate burdens where practicable.

Fare Equity Analysis

Per FTA Circular C4702.1, the fare equity analysis is the required study conducted by large, urban transit agencies prior to the enactment of a fare increase or decrease. The analysis examines the impact that the fare change will have on minority and low-income users, based on each individual fare type (e.g., cash, CharlieCard, CharlieTicket, 1-day pass, weekly pass), when compared to the impact the fare change will have on all users.

Adverse Effects

The MBTA will define and analyze adverse effects related to proposed fare changes or major service changes. The MBTA will measure the loss (the adverse impact), or the gain (benefit), among minority and nonminority populations and among low-income and non-low-income populations, when conducting the equity analysis of proposed major service changes, and among minority and overall users and among low-income and overall users for any fare changes.

Low-Income

The FTA Title VI guidelines define “low-income” as *“a person whose median household income is at or below the US Department of Health and Human Services poverty guidelines.”* As of 2013, the base level for a one person household is \$11,490 annually, with a \$4,020 increase per household member. Because median incomes in the MBTA service area are high in comparison to national levels, the MBTA uses a more inclusive definition for low-income. The median household income for the years 2007 through 2011 for the 175-municipality MBTA service area was \$69,393. A low-income census tract is defined as one in which the median household income in 2011 was less than 60% of that level, or \$41,636.

Low-Income Populations

The FTA Title VI guidelines define a low-income population as “any readily identifiable group of low-income persons who live in geographic proximity and, if circumstances warrant, geographically dispersed/transient populations who will be similarly affected by a proposed DOT program, policy, or activity.”

Major Service Change

Major service changes at an individual route level are defined in the MBTA Service Delivery Policy as major service restructuring that includes:

- Implementation of new routes or services
- Elimination of a route or service
- Elimination of part of a route
- Span of service changes greater than one hour
- Route extension of greater than 1 mile

Major service changes systemwide are as defined in the "Public Process for Changing MBTA Fares, and/or Fare Structure or Major Service Reductions" policy, latest update 2009, as "a systemwide reduction of 10% or more, as measured by typical daily usage."

Major Fare Increase

As defined in the "Public Process for Changing MBTA Fares, and/or Fare Structure or Major Service Reductions" policy, major fare increases are defined as:

- Major changes to the fare structure; or
- A system-wide fare increase in which the percent increase in fare revenue realized by the MBTA would be 10% or more; or
- A system-wide fare increase of less than 10% that results in a cumulative increase in fare revenue of 10% or more within a three year period.

Minor Fare Increase

As defined in the "Public Process for Changing MBTA Fares, and/or Fare Structure or Major Service Reductions" policy, minor fare increases are defined as:

- Minor changes to the MBTA fare structure; or
- A system-wide fare increase in which the percent increase in fare revenue realized by the MBTA would be less than 10%; or
- A system-wide fare increase of less than 10% that results in a cumulative increase in fare revenue of less than 10% within a three year period.

Minority Persons

The FTA Title VI guidelines define minority persons to include the following five groups: 1) American Indian and Alaskan Native, 2) Asian, 3) Black or African-American, 4) Hispanic or Latino, and 5) Native Hawaiian and Other Pacific Islander.

Minority Population

The FTA Title VI guidelines define a minority population as "any readily identifiable group of minority persons who live in geographic proximity and, if circumstances warrant, geographically dispersed/transient populations who will be similarly affected by a proposed DOT program, policy, or activity." In the 175 municipalities of the MBTA service area, 26.19% of the residents were members of minority groups in 2010. The MBTA defines a minority census tract as one in which the minority percentage exceeds 26.19%.

Policy Thresholds:

For service monitoring:

- A disparate impact would be found if for each service standard/policy, the performance of a service provided to minority areas passed the service standard at a rate less than 80 percent of the service provided to nonminority areas.

For major service changes:

- A disparate benefit would be found if the minority customers (population) receive less than 80 percent of the benefits that the nonminority customers (population) receive.
- A disproportionate benefit would be found if the low-income customers (population) receive less than 80 percent of the benefits that the non-low-income customers (population) receive.
- A disparate burden would be found if the minority customers (population) sustain more than 20 percent additional burden than the total burden that the nonminority customers (population) sustain.
- A disproportionate burden would be found if the low-income customers (population) sustain more than 20 percent additional burden than the total burden that the non-low-income customers (population) sustain.

For minor fare changes:

- A disparate benefit would be found if the minority riders (population) are projected to receive less than 80 percent of the benefit that all customers (population) receive.
- A disproportionate benefit would be found if the low-income customers (population) are projected to receive less than 80 percent of the benefits that all customers (population) receive.
- A disparate burden would be found if the minority customers (population) are projected to sustain more than 20 percent additional burden than the total burden that all customers (population) sustain.
- A disproportionate burden would be found if the low-income customers (population) are projected to sustain more than 20 percent additional burden than the total burden that all customers (population) sustain.

For major fare changes:

- A disparate benefit would be found if the minority customers (population) are projected to receive less than 90 percent of the benefit that all customers (population) receive.
- A disproportionate benefit would be found if the low-income customers (population) are projected to receive less than 90 percent of the benefits that all customers (population) receive.
- A disparate burden would be found if the minority customers (population) are projected to sustain more than 10 percent additional burden than the total burden that all customers (population) sustain.

- A disproportionate burden would be found if the low-income customers (population) are projected to sustain more than 10 percent additional burden than the total burden that all customers (population) sustain.

For fare changes, the MBTA will compare the percentage change in the average fare for minority and nonminority riders and for low-income and non-low-income riders. For fare type changes, the MBTA will assess whether minority and low-income customers are disproportionately more likely to use the affected fare type or media than nonminority and non-low-income customers, respectively.

This policy could be represented by the following:

A disparate impact would be found if:

- Projected benefit to minority $< 0.8 \times$ projected benefit to non-minority, for major service changes
- Projected benefit to minority $< 0.8 \times$ projected benefit to all, for minor fare changes
- Projected benefit to minority $< 0.9 \times$ projected benefit to all, for major fare changes
- Projected burden to minority $> 1.2 \times$ projected burden to non-minority, for major service changes
- Projected burden to minority $> 1.2 \times$ projected burden to all, for fare minor changes
- Projected burden to minority $> 1.1 \times$ projected burden to all, for fare major changes

A disproportionate burden would be found if:

- Projected benefit to low-income $< 0.8 \times$ projected benefit to non-low-income, for major service changes
- Projected benefit to low-income $< 0.8 \times$ projected benefit to all, for minor fare changes
- Projected benefit to low-income $< 0.9 \times$ projected benefit to all, for major fare changes
- Projected burden to low-income $> 1.2 \times$ projected burden to non-low-income, for major service changes
- Projected burden to low-income $> 1.2 \times$ projected burden to all, for minor fare changes
- Projected burden to low-income $> 1.1 \times$ projected burden to all, for major fare changes

Should analysis by the MBTA result in a finding of disparate impact or disproportionate burden by a fare change or major service change proposal based on Title VI evaluation using the above threshold policy definition, the MBTA shall consider modifying the proposed changes in order to avoid, minimize, or mitigate the disparate impacts of the proposed changes. If the MBTA chooses not to alter the proposed service changes despite the potential disparate impact on minority populations, or if the MBTA finds, even after the revisions, that minority riders will continue to bear a disproportionate share of the proposed service change, the MBTA will implement the service change *only* if:

- the MBTA has a substantial legitimate justification for the proposed service change, **and**

- there are no alternatives that would have a less disparate impact on minority riders but would still accomplish the MBTA's legitimate program goals.

Public Review Process:

Development of the policy threshold standard for defining disparate impact and disproportionate burden, and any future revision or amendment thereto, will involve a public outreach and civic engagement process by the MBTA. In addition to making the proposed policy and any changes thereto available on the MBTA website, the Authority will distribute copies of the policy to community and neighborhood groups and organizations, particularly those which represent minority and low-income populations, as identified in contact list databases maintained by the Boston Region Metropolitan Planning Organization and MassDOT/MBTA. Further, the MBTA will hold at least three public meetings/workshops on the policy with opportunity for public comment prior to policy adoption by the MassDOT Board of Directors.



Appendix P

MBTA 2012

Service and Fare

Equity Analysis



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Service and Fare Equity Analysis of Potential MBTA Fare Increase and Service Changes in 2012

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SERVICE AND FARE EQUITY ANALYSIS OF POTENTIAL MBTA FARE INCREASE AND SERVICE CHANGES IN 2012

BACKGROUND

With the goal of reducing a projected budget deficit, the MBTA estimated the impacts of three potential scenarios for changes in MBTA pricing and service. The analysis presented in this document complements the analyses presented in *Potential MBTA Fare Increase and Service Reductions in 2012: Impact Analysis, December 30, 2011* and *Potential MBTA Fare Increase and Service Changes in 2012: Scenario 3 Impact Analysis, March 28, 2012* (provided as Appendix A).

Requirements

In order to comply with 49 CFR Section 21.5(b)(2), 49 CFR Section 21.5(b)(7), and Appendix C to 49 CFR Part 21, the Massachusetts Bay Transportation Authority (MBTA) must evaluate significant systemwide service and fare changes at the planning and programming stages to determine if the changes proposed have a discriminatory impact. This requirement applies to *any* fare change and to only “major service changes.” The Federal Transit Administration (FTA) allows each transit agency to establish its own definition of major service changes.

The FTA provides guidance for conducting analyses to make this type of evaluation in FTA Circular 4702.1A (“Circular”), Section V.4, which is augmented by a questionnaire entitled *Title VI Service and Fare Equity Analysis Questionnaire*. As indicated in the Circular and reinforced in a March 8, 2011, “Dear Colleague” letter from the FTA, any FTA recipient whose service area has 200,000 or more residents must conduct a Title VI equity analysis in the course of planning a major service change or any magnitude of fare change, regardless of whether the proposed changes would be detrimental or beneficial to riders on the whole.

FTA recommends that recipients fulfill this requirement by implementing one or both of the following two options:

- **Option A:** The FTA details a procedure that includes the following four tasks. The FTA provides guidance on how to complete these tasks in the Circular.
 - 1) Assess the effects of the proposed fare or service change on minority and low-income populations.
 - 2) Assess the alternatives available for people affected by the fare increase or major service change.
 - 3) Describe the actions the agency proposes to minimize, mitigate, or offset any adverse effects of proposed fare and service changes on minority and low-income populations.
 - 4) Determine which, if any, of the proposals under consideration would have a disproportionately high and adverse effect on minority and low-income riders. Recipients can implement a fare increase or major service reduction that would have disproportionately high and adverse effects on minority and low-income populations provided that the recipient demonstrates that the action meets a substantial need that is in the public interest and that alternatives would have more severe adverse effects than the preferred alternative.
- **Option B:** Agencies have the option of modifying the above option or developing their own procedure for evaluating significant systemwide service and fare changes and proposed improvements at the planning and programming stages to determine whether those changes have a discriminatory impact. This locally developed alternative must include a description of the

methodology used to determine the impact of the service and fare change, a determination as to whether the proposed change would have discriminatory impacts, and a description of what, if any, action was taken by the agency in response to the analysis conducted.

The MBTA used a locally developed procedure (Option B in the Circular) to evaluate the impacts of the proposed fare and service changes. This methodology incorporates most of the analyses recommended in Option A and is described in the Equity Analysis Methodology and Results section of this document.

This document presents the service and fare equity analyses, conducted in compliance with the guidance provided, for the proposed MBTA fare increase and service changes. First, it provides background on MBTA rider demographics in terms of minority and income status and on the need for a fare increase and/or service reductions. Next, information concerning the efforts the MBTA made to inform and involve the public in general and minority and low-income people in particular in the planning process is presented. These sections are followed by a description of the approach taken to the equity analysis and the methodology and results of the analysis. Finally, the availability of alternative services for routes that are proposed for elimination is discussed.

Minority and Income Characteristics of MBTA Riders

The systemwide demographic profile in Table 1 below shows how the MBTA’s ridership characteristics in terms of minority and income status vary by mode. Information on the minority and low-income status of the MBTA’s ridership comes from the MBTA 2008–09 Systemwide Passenger Survey and a GIS analysis of THE RIDE¹ pick-up and drop-off locations.

TABLE 1
Demographic Profile of MBTA Riders by Mode

Mode	Minority	Nonminority	Low-Income	Non-Low-Income
Rapid transit	27.5%	72.5%	24.1%	75.9%
Bus	46.5%	53.5%	41.5%	58.5%
Commuter rail	13.9%	86.1%	7.2%	92.8%
Commuter boat	5.7%	94.3%	4.5%	95.5%
THE RIDE	49.0%	51.0%	17.9%	82.1%
Total	33.0%	67.0%	28.5%	71.5%

Need for a Fare Increase and/or Service Reductions

The MBTA supports its operations from five main sources of revenue: a dedicated percentage of state sales tax receipts; assessments on cities and towns served by the MBTA; customer fares; non-fare revenues from advertising, real estate transactions, and parking; and other initiatives. In 2009, the state legislature added another source of revenue—a new \$160 million annual allocation from the state sales tax. This money saved the MBTA from a major fare increase and possible service cuts that could have eliminated many services beginning that year.

However, due to increasing operating costs (principally for energy, fuel, and health care as well as for THE RIDE service, which has seen an exponential growth in ridership), a debt burden that consumes

¹ THE RIDE is the MBTA’s paratransit service.

nearly 30% of the operating budget, and the continued underperformance of the state sales tax, the MBTA faces a projected budget deficit for fiscal year (FY) 2013 (July 1, 2012–June 30, 2013) of \$185 million.

Before considering fare increases or service reductions, the MBTA took steps to reduce the deficit, including reducing energy purchase costs, planning introduction of single-person train operation on the Red Line, increasing MBTA employee enrollment in a new lower-cost health care plan, and implementing other operating and administrative efficiencies. Among the savings the MBTA has already achieved are:

- Personnel changes, including staff reductions and changes in scheduling and assignments: Savings over seven years total \$90.3 million—an average of \$12.9 million a year. MBTA staff levels have been reduced by 155 positions from recent highs.
- Reduced overtime spending over the last five years: The total operating budget for overtime has fallen four of the past five years from a high of \$36.9 million in FY 2005 to \$30.9 million in FY 2011. It is important to note that overtime spending declined despite the fact that collectively bargained wages increased during the same period.
- Operations efficiency: The expansion of single-person train operation (SPTO) has produced millions of dollars in savings and will save more in the years ahead. Introduced on the Blue Line in 1996, SPTO was extended to the Orange Line in 2010. In the spring of 2012, the MBTA introduced SPTO on the Red Line, bringing a projected annual systemwide savings of \$1.3 million.
- Automated fare collection: Rollout of the CharlieCard system in 2007 has led to a dramatic reduction in labor costs, resulting in annual savings of \$12.3 million.

Important information concerning the actions that the MBTA has taken to limit the impacts on riders of operating cost increases is discussed in “MBTA Efficiencies and Cost Savings” (included as Appendix B). The MBTA will continue to advance the operational and administrative efficiencies undertaken since the implementation of forward funding in 2000 and transportation reform in 2009, but it has limited means by which to raise revenue sufficiently to close the budget deficit. The primary means are raising fares, reducing service, or a combination of both, requiring the MBTA to consider fare and service changes.

The MBTA initially developed two fare and service change scenarios that cover the FY 2013 budget deficit, both of which proposed a systemwide fare increase, changes in the fare structure, and service reduction alternatives affecting all modes of service. Scenario 1 proposed to raise the majority of the needed revenue through a fare increase, with the remainder of the deficit being covered by reducing service. Scenario 2 was split approximately evenly between revenue gains from a fare increase and saved operating costs from service reductions. Both scenarios are one-year solutions; they do not solve the MBTA’s long-term financial problems. These two scenarios were presented in the report, *Potential MBTA Fare Increase and Service Reductions in 2012: Impact Analysis*, December 30, 2011, which was posted on the MBTA’s website for review and comment. The public was also provided the opportunity to comment through 31 public meetings and hearings. The public involvement process is discussed in more detail below.

In an effort to continue to identify resources and in response to the comments received through the public involvement process, the MBTA subsequently proposed a third, preferred fare and service change scenario, which is presented in the report, *Potential MBTA Fare Increase and Service Changes in 2012: Scenario 3 Impact Analysis*, March 28, 2012 (“Scenario 3 report,” provided as Appendix A). In this scenario, the majority of the projected revenue gain is raised through a fare increase, with the remainder

of the deficit reduction being accomplished by reducing service. The fare increases and service reductions included in Scenario 3 are significantly smaller than those proposed in either of the first two scenarios and do not close the FY 2013 budget deficit. Scenario 3 depends in part on additional funding sources that have been identified by MassDOT to close that deficit. Like Scenarios 1 and 2, this strategy is a one-year solution and will not solve the MBTA's long-term financial problems.

The service changes proposed in Scenario 3 are shown in Figures 1, 2, and 3 for weekday, Saturday, and Sunday service, respectively. These figures also show the locations of minority and low-income populations in the MBTA service area.

PUBLIC INVOLVEMENT

The MBTA met regularly with the Ridership Oversight Committee (ROC)² in September and October 2011 to discuss potential changes to the fare structure, fare levels, and service levels. The membership of the ROC is composed of representatives from the riding public and several advocacy groups and is supported by staff from the MBTA and the Central Transportation Planning Staff of the Boston Region Metropolitan Planning Organization (MPO). The committee is specifically charged with reviewing changes to MBTA fare structure, prices, or service, among other functions, and, should it have any suggestions for changes, discussing those suggestions with the MBTA.

The MBTA first met with the ROC in September 2011 to specifically discuss potential fare structure, fare level, and service changes to address the MBTA's FY 2013 budget deficit, although the ROC had already been independently discussing the MBTA's financial situation and the likelihood of proposed fare increases and service reductions for several months. The MBTA provided copies of its own internal analyses to the ROC and performed several additional analyses per the request of the ROC. Input from the ROC was used in developing Scenarios 1 and 2. The ROC also alerted the MBTA to the proposals in those scenarios that would generate the greatest public opposition. Members of the ROC generally expressed a preference for fare increases over service reductions.

The MBTA conducted an extensive outreach program to inform and solicit input from the public about the potential fare increase and service reductions. In early January 2012, the MBTA sent out a press release to six area newspapers and posted it on the MBTA website (a copy of the press release is included as Appendix C); the MBTA also posted other relevant documents, including an informational booklet (included as Appendix D) that describes the reasons for the need to increase fares and/or reduce service, summarizes Scenarios 1 and 2, and invites members of the public to attend public meetings/hearings.³ The booklet was posted in English and in the languages of the six largest limited-English-proficiency (LEP) populations in the MBTA service area. An audio edition of the document was also posted on the MBTA's website.

The MBTA sent an email blast including the fare increase booklet to Transportation Management Associations (TMAs) and employers that participate in the corporate pass program and distributed the booklet at stations. The booklet was also distributed to community-based organizations that represent non-English speakers in both English and the relevant language(s) when appropriate. Appendix E is a list of organizations that the MBTA contacted to ensure effective dissemination of the booklet to LEP populations.

² A group that was established in response to the MBTA fare increase in 2004 to better incorporate the public and advocacy voices into the planning process. Additional information concerning the ROC and its role in developing the public process for fare changes is included in the definitions section of this document.

³ The MBTA website utilizes *Google translate* to provide translations in other languages.

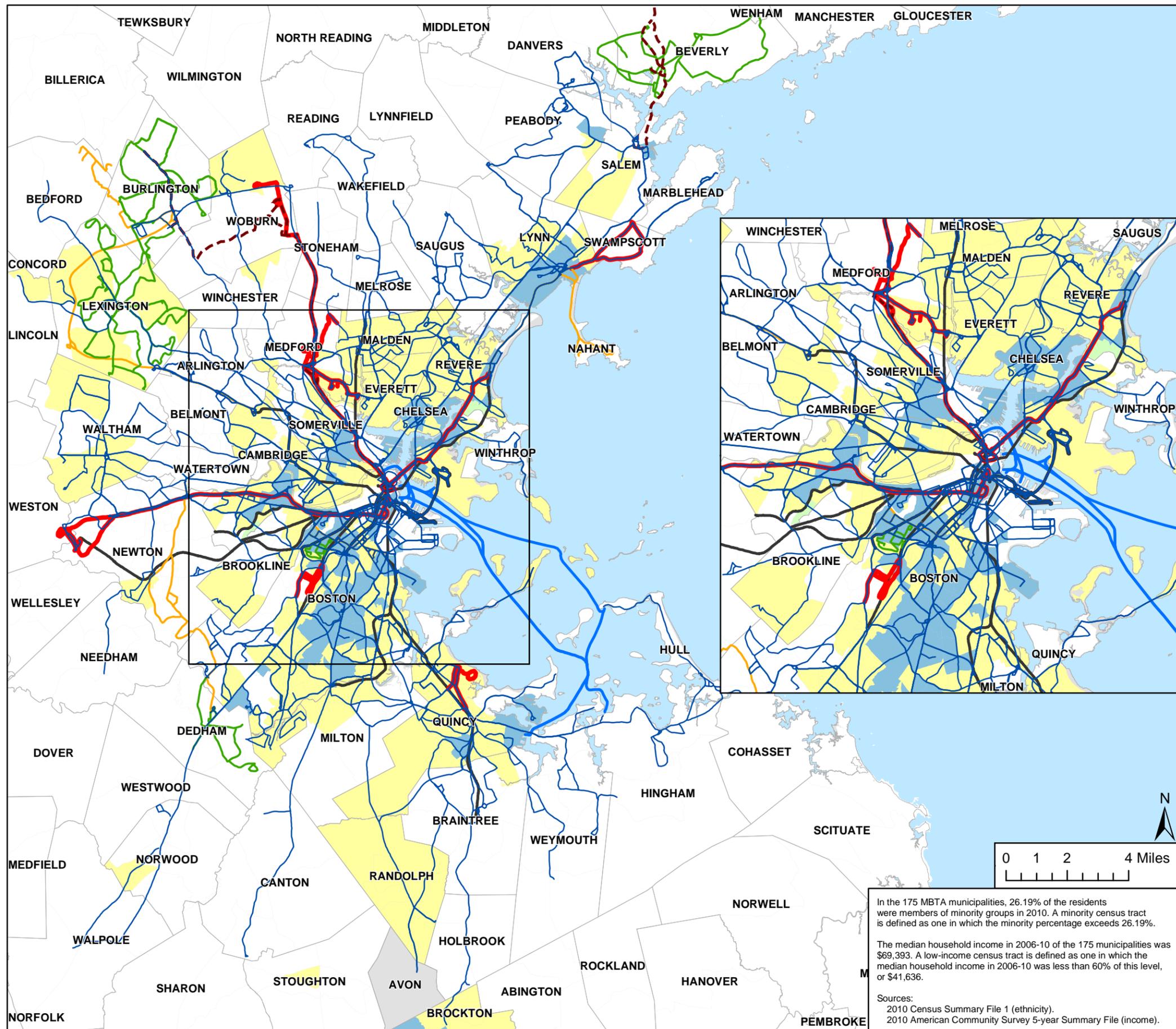


FIGURE 1
Scenario 3 Weekday Bus, Rapid Transit, and Ferry Service Changes, with EJ Census Tracts

Route Eliminations (65,000 annual trips):
 - Eliminate routes: 48, 355, and 500

Route Revisions (297,000 annual trips):
 - Route 217: Eliminate Wollaston Beach section
 - Route 354: Eliminate midday service
 - Route 439: Eliminate service between Central Square (Lynn) and Vinnin Square; extend service to Wonderland
 - Route 441: Eliminate service between Wonderland and Haymarket
 - Route 442: Eliminate service between Wonderland and Haymarket
 - Route 451: Eliminate midday service
 - Route 455: Eliminate service between Brown Circle and Haymarket and terminate at Wonderland
 - Route 555: Change terminus from Riverside to Central Square (Waltham)

Reduce Frequency (69,000 annual trips):
 - Route 52: From 45 to 90 minutes in midday
 - Route 217: From 11 to 4.5 round-trips
 - Route 351: From 30 to 45 minutes
 - Route 439: From 9 to 5 round-trips; 1.5 round-trips to serve Wonderland
 - Route CT3: From 30 to 60 minutes in midday

Eliminate Private Carrier Bus Program in Medford (Route 710) and reduce Suburban Bus Program subsidies by 50% in all locations (Bedford, Boston [Mission Hill], Beverly, Burlington, Dedham, and Lexington) (169,000 annual trips)

- Legend**
- Bus: Maintained Service
 - Rapid Transit: Maintained Service
 - Ferry: Maintained Service
 - Reduced-Frequency Service
 - - - Midday-Only Eliminated Service
 - Eliminated Service
 - Suburban Bus Program Service
- Census Tracts**
- Low-income tract
 - Minority tract
 - Minority and low-income tract
 - Non-minority, non-low-income tract
 - Outside MBTA service area



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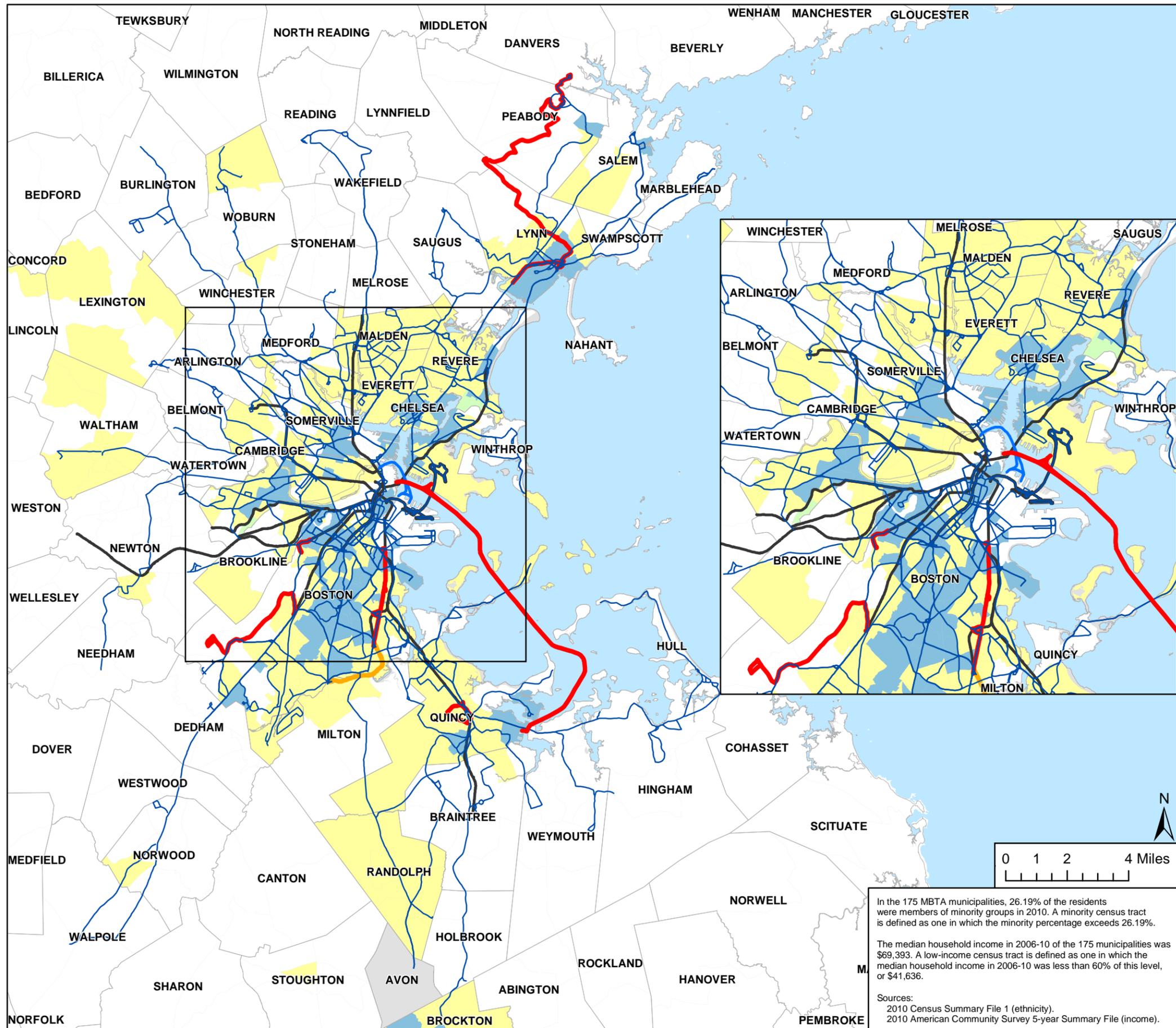


FIGURE 3
Scenario 3 Sunday Bus, Rapid Transit, and Ferry Service Changes, with EJ Census Tracts

Route Eliminations (57,000 annual trips):
 - Eliminate routes: 18, 37/38, 245, 436 and Quincy ferry F2

Route Revisions (68,000 annual trips):
 - Green Line E Branch: Eliminate service between Brigham Circle and Heath St

Reduce Frequency (21,000 annual trips):
 - Mattapan High-Speed Line: From 11-13 to 23-26 minutes all day

Legend

- Bus: Maintained Service
- Rapid Transit: Maintained Service
- Ferry: Maintained Service
- Reduced-Frequency Service
- Eliminated Service

Census Tracts

- Low-income tract
- Minority tract
- Minority and low-income tract
- Non-minority, non-low-income tract
- Outside MBTA service area

In the 175 MBTA municipalities, 26.19% of the residents were members of minority groups in 2010. A minority census tract is defined as one in which the minority percentage exceeds 26.19%.

The median household income in 2006-10 of the 175 municipalities was \$69,393. A low-income census tract is defined as one in which the median household income in 2006-10 was less than 60% of this level, or \$41,636.

Sources:
 2010 Census Summary File 1 (ethnicity).
 2010 American Community Survey 5-year Summary File (income).



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The MBTA conducted an eleven-week public process to allow members of the public to comment on the proposed alternatives. During this period, the MBTA held public meetings and hearings and accepted written comments via mail, email, telephone, and the MBTA website. Meeting notices (Appendix F) were posted throughout the system (in stations and on vehicles) and advertised in both the major and ethnic newspapers in the region. Notices posted in English included a reference to the MBTA website for translations in the languages of the six largest LEP populations in the MBTA service area. In addition, notices in Spanish were distributed throughout the system, and notices in Chinese were distributed in stations used by large numbers of Chinese-speaking customers.

The MBTA held 31 public meetings; seven of these were official public hearings. Meeting sites were located throughout the MBTA service area and included locations with significant minority, low-income, and LEP populations. Maps showing the meeting locations and minority, low-income, and LEP populations are provided in Appendix G. All meeting spaces were accessible to people with disabilities, and Communication Access Realtime Translation (CART), American Sign Language interpreters, and assistive listening devices were provided. At each meeting, the MBTA provided copies of the MBTA Fare and Service Changes booklet in English and in the languages of the six largest LEP populations in the MBTA service area; in large-print in English, Cape Verdean, Chinese, Haitian Creole, Portuguese, Spanish, and Vietnamese; in Braille in English, Spanish, Portuguese, Vietnamese, and Chinese; and in audio recordings. Additional accommodations (e.g., handouts in alternate formats, language translators, etc.) were available upon request. Bilingual MBTA staff members participated at locations where large numbers of LEP participants were expected. At four of the meetings, language interpreters were requested by members of the public and were provided (the number of translators ranged from one to three per meeting). Some of the meetings were held during the day to accommodate people who could not attend evening meetings.

Nearly 6,000 people attended the 31 public meetings/hearings held, and nearly 2,000 individuals offered public comments at these meetings/hearings. In addition, the MBTA received nearly 6,000 emails and 400 letters. The comments were overwhelmingly against both the proposed fare increases and service changes outlined in the two scenarios; many more concerns were expressed about the service cuts than about the fare increases. Neither scenario garnered much support, and Scenario 1 (higher fare increase and fewer service reductions) was preferred to Scenario 2. It is interesting to note that the majority of the comments came from bus customers. A summary and analysis of the comments received was produced by the MBTA and is included in Appendix H.

The MBTA developed Scenario 3 as a result of the feedback received from the public, as well as MassDOT's success in identifying additional revenue sources to decrease the FY 2013 deficit. Scenario 3 results in fewer impacts than either Scenario 1 or 2. As with Scenarios 1 and 2, the MBTA considered the concerns of the ROC while developing Scenario 3; this is reflected, for example, in that scenario's relying more on fare increases than service reductions.

APPROACH TO EQUITY ANALYSIS

The following sections describe the approach used to evaluate the equity of the impacts of the proposed fare and service changes (Scenario 3).

Major Service Change Threshold

The MBTA's definition of a major service reduction is "a systemwide reduction of 10% or more, as measured by typical daily usage."⁴ Table 2-2 in the Scenario 3 report shows the percentage change in various measures of usage under the proposed scenario. None of the measures of "typical daily usage" rose to the 10% threshold of a major service reduction. As shown in Table 2-2 in the Scenario 3 report, the percentage of service affected by the service reductions varies from 0.3% for unlinked trips to 1.4% for vehicle revenue miles.

Datasets and Data Collection

Several datasets were used in the analysis:

- 2010 census and 2006–10 American Community Survey (ACS) demographic data
- Boston Region MPO travel demand model set
- CTPS spreadsheet model
- MBTA 2008–09 Systemwide Passenger Survey
- Geocoded retail sales terminal locations
- Geocoded MBTA public meeting locations
- Geocoded RIDE drop-off and pick-up locations

Each of these datasets is described below.

The United States Census Bureau provides a count of total population and population by ethnicity every 10 years; the most recent decennial census occurred in 2010. Data on population by income level is no longer collected as part of the decennial census; more recent estimates from the American Community Survey were used instead. The ACS, which has replaced the long form of the decennial census, provides estimates of total population as well as population by ethnicity and income level. ACS five-year estimates are currently available for the 2006–10 period. In the present analysis, data from these sources were used to determine whether the units of analysis (census tracts and transportation analysis zones [TAZs]) were minority or nonminority and low-income or non-low-income.

The Boston Region MPO travel demand model set simulates travel on the transportation network in eastern Massachusetts, including both the transit and highway systems. It covers all MBTA commuter rail, rapid transit, and bus services, as well as all private express bus services. The model set reflects service frequency (how often trains and buses arrive at a given transit stop), routing, travel time, and fares for all these services. All express highways, all principal arterial roadways, and many minor arterial and local roadways are included in the modeling of the highway system. The travel demand model set uses a traditional four-step, sequential process: trip generation, trip distribution, mode choice, and trip assignment. The results of this process are used to estimate average daily transit ridership and projected highway travel conditions, among other measures. The model set was therefore used to analyze MBTA ridership and revenue impacts due to the proposed fare increase and service reductions. More detailed information can be found in chapter 3 of the Scenario 3 report.

The CTPS spreadsheet model is an elasticity-based spreadsheet model. This model has been used in the past to provide inputs to the fare increase analysis process. After the most recent fare increase, in 2007,

⁴More detail regarding the MBTA's definition of "major service change" is provided in the final section of this report.

the model was internally reviewed and validated, and improvements were made to account for linked trip calculations. The spreadsheet model takes existing ridership in the form of unlinked trips by mode, fare-payment type, and fare media (the physical method of paying) as inputs. The existing ridership is provided from the automated fare collection (AFC) system. For modes that are not yet part of the AFC system, the MBTA provides ridership estimates from passenger counts or ticket sales. Using these input data, the spreadsheet model applies elasticities and diversion factors to model a range of possible impacts resulting from changes to the MBTA's fares. More detailed information can be found in chapter 3 of the Scenario 3 report and that document's appendix.

The MBTA 2008–09 Systemwide Passenger Survey covered all of the modes operated by the MBTA, including the Red, Blue, Orange, and Green Lines; the commuter rail system; the bus system; and the ferry system. The questions asked for each mode varied based on the specific characteristics of the given mode, but common among all of the surveys were questions regarding origins, destinations, frequency of travel, and, most important to this equity analysis, fare payment method, usage frequency, race, and income. In general, surveys were distributed from early morning until midafternoon. Each survey result was expanded to represent typical boardings during the survey hours. In the present analysis, the systemwide survey was used in conjunction with the CTPS spreadsheet model to determine the number of riders using each fare type and the fare changes for low-income, non-low-income, minority, and non-minority riders.

Retail sales terminal locations were geocoded and mapped along with census data regarding minority status and income level to determine the populations served.

The locations of the MBTA public meetings regarding the proposed fare increases and service changes were also geocoded and mapped with information about the locations of low-income, minority, and LEP populations to guide decisions about where to conduct public meetings.

The MBTA provided a year's worth of THE RIDE pick-up and drop-off locations. These locations were geocoded and, together with the information about the locations of low-income and minority populations, were used to determine the likely demographics of the people who are using THE RIDE.

Geographic Levels of Analysis

The MBTA has defined two service areas with different demographic characteristics: one for the urban fixed-route service area (65 core municipalities) and one for the commuter rail service area (175 municipalities, including the 65 in the fixed-route service area). The analysis for each level of geography includes all modes serving each of the respective areas. The urban fixed-route service area is home to approximately 2.6 million people. The commuter rail service area is home to 4.8 million people. For each of the two service areas, the average annual income and the percentage of minority population were identified for each TAZ or census tract. A TAZ or census tract was then defined as low-income if its income level was at or below 60% of the median household income in the service area. Minority TAZs and census tracts were defined as those in which the percentage of the non-white population (including the Hispanic population) was greater than the average for the service area.

For results and analysis based on the travel demand model set, the smallest unit of analysis is the TAZ. Each TAZ was determined to be low-income or non-low-income and minority or nonminority based on the definitions of minority and low-income described above. These definitions are detailed in the Definitions section of this document.

For analysis that did not use the travel demand model set, the smallest unit of analysis was the census tract. Each census tract was determined to be low-income or non-low-income and minority or nonminority based on the above-described definitions of minority and low-income for each service area.

The MBTA Systemwide Passenger Survey was used in some analyses. The survey data allow for analysis at the individual or household level. Riders were classified as to income and minority status based on their responses to questions about income, race, and ethnicity and the above-described definitions of minority and low-income.

Populations Used in the Equity Analyses

Some of the impacts were evaluated for passengers, while others were evaluated for area residents. The impacts in each of these categories were compared for minority and nonminority populations and for low-income and non-low-income populations. Three categories of impacts were considered in the equity analysis using the travel demand model set: transit equity, congestion and air quality, and transit accessibility. The transit equity and transit accessibility analyses were evaluated for the transit rider populations, and the congestion and air quality impacts were evaluated for all residents. The spreadsheet model evaluated the cost impacts for riders, the analysis of THE RIDE passenger demographics evaluated the impact on riders, and the analysis of the accessibility of fare products that give riders access to the less expensive fares was evaluated for area residents.

EQUITY ANALYSIS METHODOLOGY AND RESULTS

Two main approaches were used to project the impacts of the proposed fare increase and service reductions on the environmental justice (EJ) categories of MBTA riders (low-income, non-low-income, minority, and non-minority). One approach utilized the spreadsheet model to evaluate projected impacts of changes in fares on minority and low-income riders versus those on nonminority and non-low-income riders. The second approach consisted of applying the Boston Region MPO's regional travel demand model set to evaluate a range of projected impacts on these same classifications of riders. The spreadsheet model is primarily used to estimate the impacts of a fare change (though the estimated ridership impacts of service changes can be added to the model as an adjustment to existing ridership, so that the spreadsheet model's projections will reflect the impacts of a simultaneous change in fares and service). The travel demand model set can forecast both impacts caused by fare changes and those caused by service changes.

The modeling approaches were supported by analyses of the accessibility of fare products that give riders access to the less expensive fares and the characteristics of THE RIDE passengers who will be facing fare increases.

Analysis Using the Spreadsheet Model

The MBTA Systemwide Passenger Survey was used in conjunction with the CTPS spreadsheet model to determine, for low-income, non-low-income, minority, and non-minority riders, the existing number of riders using each fare-payment type ("fare type") and the price change by fare type. Because the spreadsheet model's ridership values are in trips and the survey values are in riders, the survey data concerning the percentage of riders (by low-income, non-low-income, minority, and nonminority status) who used each fare type and the frequency at which they used each fare type were used to derive the number of trips by fare type for each rider classification. The percentage of the total number of trips made by each rider classification using each fare type was multiplied by the total number of trips for the corresponding fare type shown in the spreadsheet model. This process resulted in an estimate of the number of trips made by each rider classification for each fare-payment type on each mode. The data for each of the key fare-payment types for low-income, minority, and all riders are shown in Table 2.

TABLE 2
Low-Income and Minority Passengers Using Each Key Fare-Payment Type

Fare-Payment Type	Cost		Change		Usage by Group: Number of Trips			Usage by Group: Percent of Total		
	Existing	Proposed	Absolute	Percentage	Low-Income	Minority	All Riders	Low-Income	Minority	All Riders
SINGLE-RIDE FARES										
CharlieCard										
<i>Adult</i>										
Local Bus	\$ 1.25	\$ 1.50	\$ 0.25	20.0%	7,671,000	9,110,000	17,069,000	7.4%	9.3%	5.0%
Rapid Transit	1.70	2.00	0.30	17.6%	12,736,000	14,883,000	53,002,000	12.3%	15.2%	15.6%
Bus+RT	1.70	2.00	0.30	17.6%	3,294,000	3,893,000	9,292,000	3.2%	4.0%	2.7%
Inner Express	2.80	3.50	0.70	25.0%	377,000	420,000	708,000	0.4%	0.4%	0.2%
Outer Express	4.00	5.00	1.00	25.0%	59,600	67,100	117,000	0.1%	0.1%	0.0%
<i>Senior</i>										
Local Bus	\$ 0.40	\$ 0.75	\$ 0.35	87.5%	3,725,000	1,943,000	5,024,000	3.6%	2.0%	1.5%
Rapid Transit	0.60	1.00	0.40	66.7%	2,777,000	1,389,000	5,649,000	2.7%	1.4%	1.7%
Bus+RT	0.60	1.00	0.40	66.7%	1,223,000	630,000	1,899,000	1.2%	0.6%	0.6%
<i>Student</i>										
Local Bus	\$ 0.60	\$ 0.75	\$ 0.15	25.0%	1,324,000	1,381,000	1,799,000	1.3%	1.4%	0.5%
Rapid Transit	0.85	1.00	0.15	17.6%	698,000	698,000	1,118,000	0.7%	0.7%	0.3%
Bus+RT	0.85	1.00	0.15	17.6%	195,000	231,000	325,000	0.2%	0.2%	0.1%
CharlieTicket										
<i>Adult</i>										
Local Bus	\$ 1.50	\$ 2.00	\$ 0.50	33.3%	2,191,000	2,221,000	3,679,000	2.1%	2.3%	1.1%
Rapid Transit	2.00	2.50	0.50	25.0%	6,072,000	6,257,000	18,734,000	5.9%	6.4%	5.5%
Bus+RT	3.50	4.50	1.00	28.6%	9,400	9,500	17,100	0.0%	0.0%	0.0%
Inner Express	3.50	4.50	1.00	28.6%	89,800	80,500	145,000	0.1%	0.1%	0.0%
Outer Express	5.00	6.50	1.50	30.0%	9,100	9,700	14,900	0.0%	0.0%	0.0%
<i>Commuter Rail</i>										
Zone 1A-10	\$1.70-8.25	\$2.00-11.00	\$0.30-11.00	17.6-29.6%	357,000	1,133,000	7,506,000	0.3%	1.2%	2.2%
InterZone 1-10	\$2.00-4.50	\$2.50-6.50	\$0.50-6.50	22.2-33.3%	3,200	11,700	68,200	0.0%	0.0%	0.0%
<i>Ferry</i>										
F1	\$ 6.00	\$ 8.00	\$ 2.00	33.3%	9,500	37,000	483,000	0.0%	0.0%	0.1%
F2: Boston	6.00	8.00	2.00	33.3%	40,400	5,900	226,000	0.0%	0.0%	0.1%
F2: X-Harbor	10.00	13.00	3.00	30.0%	100	100	2,100	0.0%	0.0%	0.0%
F2: Logan	12.00	16.00	4.00	33.3%	11,700	4,500	32,700	0.0%	0.0%	0.0%
Inner Harbor	1.70	3.00	1.30	76.5%	6,900	19,600	245,000	0.0%	0.0%	0.1%
THE RIDE										
ADA Territory	\$ 2.00	\$ 4.00	\$ 2.00	100.0%	400,000	1,086,000	2,084,000	0.4%	1.1%	0.6%
Premium Territory	N/A	5.00	5.00	N/A	300	10,800	276,000	0.0%	0.0%	0.1%
Single-Ride Total								42%	46%	38%
PASSES										
Local Bus	\$ 40.00	\$ 48.00	\$ 8.00	20.0%	2,585,000	3,461,000	5,684,000	2.5%	3.5%	1.7%
LinkPass	59.00	70.00	11.00	18.6%	21,806,000	9,453,000	105,106,000	21.1%	9.6%	30.9%
Senior/TAP	20.00	28.00	8.00	40.0%	6,638,000	3,944,000	11,161,000	6.4%	4.0%	3.3%
Student 5-Day	20.00	25.00	5.00	25.0%	5,906,000	7,048,000	10,787,000	5.7%	7.2%	3.2%
Student 7-Day	N/A	28.00	28.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1-Day	9.00	11.00	2.00	22.2%	341,000	322,000	895,000	0.3%	0.3%	0.3%
7-Day	15.00	18.00	3.00	20.0%	20,637,000	22,530,000	46,708,000	20.0%	23.0%	13.7%
Inner Express	89.00	110.00	21.00	23.6%	323,000	670,000	2,187,000	0.3%	0.7%	0.6%
Outer Express	129.00	160.00	31.00	24.0%	21,800	104,000	337,000	0.0%	0.1%	0.1%
Commuter Boat	198.00	262.00	64.00	32.3%	17,300	16,400	286,000	0.0%	0.0%	0.1%
<i>Commuter Rail</i>										
Zone 1A	\$ 59.00	\$ 70.00	\$ 11.00	18.6%	543,000	1,062,000	3,123,000	0.5%	1.1%	0.9%
Zone 1	135.00	173.00	38.00	28.1%	106,000	333,000	1,889,000	0.1%	0.3%	0.6%
Zone 2	151.00	189.00	38.00	25.2%	176,000	476,000	4,145,000	0.2%	0.5%	1.2%
Zone 3	163.00	212.00	49.00	30.1%	159,000	545,000	4,332,000	0.2%	0.6%	1.3%
Zone 4	186.00	228.00	42.00	22.6%	239,000	951,000	3,894,000	0.2%	1.0%	1.1%
Zone 5	210.00	252.00	42.00	20.0%	90,800	245,000	2,173,000	0.1%	0.2%	0.6%
Zone 6	223.00	275.00	52.00	23.3%	137,000	553,000	3,876,000	0.1%	0.6%	1.1%
Zone 7	235.00	291.00	56.00	23.8%	121,000	467,000	1,940,000	0.1%	0.5%	0.6%
Zone 8	250.00	314.00	64.00	25.6%	110,000	239,000	2,164,000	0.1%	0.2%	0.6%
Zone 9	265.00	329.00	64.00	24.2%	N/A	N/A	N/A	N/A	N/A	N/A
Zone 10	N/A	345.00	345.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A
InterZone 1-10	\$65.00-149.00	\$82.00-218.00	\$17.00-218.00	16.8-29.9%	4,000	15,400	85,900	0.0%	0.0%	0.0%
Pass Total								58%	54%	62%

Note: Values over 100,000 are rounded to the nearest 1,000. Values under 100,000 are rounded to the nearest 100. Percentages are calculated using unrounded values.

The spreadsheet model also estimates the existing and the projected average fare (price) for each fare type on each mode. These average fares, and the absolute and percentage changes between existing and projected, were also calculated for each classification of rider (Table 3). Low-income and minority riders are paying a lower existing average fare than non-low-income and nonminority riders, and the absolute increase in the average fare is less for low-income and minority riders. On a percentage basis, however, since the existing average fare for low-income riders is significantly lower than the non-low-income average, the price increase affects low-income communities more. Although the percentage change in the average fare is higher for low-income riders than non-low-income riders, the projected absolute average fare will still be lower for low-income riders than for non-low-income riders.

TABLE 3
Existing and Proposed Average Fares and Price Changes
(Weighted by Fare Usage Frequency)

EJ Designation	Existing Average Fare	Proposed Average Fare	Absolute Price Change	Percentage Price Change
Low-income	\$0.84	\$1.04	\$0.20	24.1%
Non-low-income	\$1.32	\$1.58	\$0.26	20.0%
Minority	\$0.95	\$1.15	\$0.20	21.3%
Nonminority	\$1.33	\$1.62	\$0.29	22.0%
Systemwide	\$1.17	\$1.42	\$0.25	21.4%

The absolute and percentage change in prices shown in Table 2 for the majority of the MBTA's fare types were estimated using data from the systemwide survey along with output from the CTPS spreadsheet model. The table also presents the estimated number of minority, low-income, and overall riders who use each fare type and the distribution of fare type usage for each of these groups. Low-income riders and minority riders are more likely to use single-ride fares, and when using a single-ride fare, are more likely to be riding on a bus and paying a senior or student fare. When considering fare increase alternatives, the MBTA decided to maintain lower bus fares relative to rapid transit fares to assist low-income and minority riders, who are more transit dependent and who rely on the bus system to a larger degree than non-low-income and nonminority populations.

Minority riders and low-income riders are also significantly more likely to use the 7-Day LinkPass.⁵ The 7-Day LinkPass was introduced during a previous fare structure change to allow people who cannot afford to pay the full price of a monthly LinkPass at the beginning of the month to, in effect, spread the payments. Buying four 7-Day LinkPasses costs essentially the same amount as buying one monthly LinkPass.

A new fare media is one of the proposed changes: the 7-Day Student Pass, which complements the existing 5-Day Student Pass (for use on weekdays only). Both passes, judging by the usage of the existing 5-Day pass, will benefit low-income riders and minority riders more than the general ridership. The existing 11:00 PM limit on student pass usage is eliminated, in addition to providing for weekend travel using the 7-Day pass. These changes will allow young minority and low-income riders to have greater access to the MBTA system on weekends and evenings. Both passes are valid on local bus, rapid transit, inner and outer express bus, and commuter rail up to Zone 2.

⁵ The 7-Day and monthly LinkPasses provide unlimited access to all local bus and rapid transit services.

Analysis of Retail Sales Terminal Accessibility

Retail sales terminals (RSTs), found at a variety of locations ranging from supermarkets and convenience stores to banks and check cashing agencies, allow passengers to purchase many different fare products that give riders access to the less expensive fares that cannot be purchased on-board. Therefore, access to RSTs is a measure of equity. An analysis of the locations of retail sales terminals, summarized in Table 4 below, shows that they are far more accessible to low-income riders than non-low-income riders and to minority riders than non-minority riders. This is true in both the commuter rail service area and the urban fixed-route service area. Figure 4 depicts the locations of RSTs in both service areas in relation to census tracts that are low-income, minority, or both.

In the commuter rail service area, about 25% of the low-income population lives within a quarter-mile of an RST, while in the urban fixed-route service area, about 37% of the low-income population lives within a quarter-mile of an RST. A lower percentage of minorities live within a quarter-mile of an RST, but, again, the percentage is still significantly higher than for their nonminority counterparts. In the commuter rail service area, about 16% of the minority population lives within a quarter-mile of an RST. In the urban fixed-route service area, about 23% of the minority population lives within a quarter-mile of an RST. Scenario 3 does not change the availability or location of RSTs.

TABLE 4
Number and Percentage of Residents Living within 0.25 Miles of a Retail Sales Terminal

Population	Minority	Nonminority	Low-Income	Non-Low-Inc.	Total
Urban Fixed-Route Area					
Inside 0.25 miles	236,000	112,000	117,000	230,000	347,000
Outside 0.25 miles	804,000	1,464,000	196,000	2,073,000	2,269,000
Total	1,040,000	1,576,000	313,000	2,303,000	2,616,000
% inside 0.25 miles	22.7%	7.1%	37.4%	10.0%	13.3%
Commuter Rail Service Area					
Inside 0.25 miles	270,000	95,000	139,000	226,000	365,000
Outside 0.25 miles	1,439,000	3,030,000	427,000	4,041,000	4,469,000
Total	1,709,000	3,125,000	566,000	4,267,000	4,834,000
% inside 0.25 miles	15.8%	3.0%	24.6%	5.3%	7.6%

Analysis of THE RIDE Passenger Demographics

It is proposed that THE RIDE's base fare will increase to twice the CharlieTicket local bus adult fare and a premium fare be charged for the following types of trips: 1) trips to or from any area outside of the service area mandated by the Americans with Disabilities Act (ADA) (within corridors with a width of three-fourths of a mile on each side of each fixed route, including an area with a three-fourths of a mile radius at the ends of each fixed route, and within a three-fourths of a mile radius around rapid transit stations); 2) trips earlier or later than the service hours mandated by the ADA; and 3) same-day and will-

call⁶ trips (which are outside the scope of the ADA). Analysis of the location of THE RIDE pick-up and drop-off locations was used to determine the likely demographics of potential THE RIDE customers. For all trips made using THE RIDE, 18% started or ended in a low-income community, and 49% started or ended in a minority community. Within the ADA territory, nearly 19% (just over one million) of the pick-ups and drop-offs occurred in low-income communities, and 52% (about 2.8 million) were within a minority community. In the premium territory, less than a hundredth of a percent (21) of the total pick-ups and drop-offs were in a low-income community, and only 4% (about 14,000 trips) ended or started in a minority community. Therefore, increases in the price of travel on THE RIDE will not have as great of an impact on RIDE customers from minority communities and low-income communities as they do on RIDE customers from non-minority and non-low-income communities.

Analysis Using the Regional Travel Demand Model Set

The regional travel demand model set was used to evaluate the impacts of the service and fare changes on low-income and minority populations for all modes. Equity analyses were conducted for each of the two MBTA service areas for the weekday AM peak period, as this represents the greatest number of transit trips in any time period.

The results of the equity analyses for minority and low-income populations combined (in which any TAZ which qualifies as minority and/or low-income was defined as an environmental justice [EJ] community) are discussed in full in Chapter 6 of the Scenario 3 report, and summaries of the results are displayed in Tables 6-1 through 6-3 of that report. The equity analyses show no disparate impact on EJ communities for average fare; transit walk-access, wait, and in-vehicle times; number of transit transfers and trips; or access to various types of jobs and facilities. The analyses show higher levels of vehicle-miles traveled (VMT) and carbon monoxide (CO) emissions per square mile in EJ communities than for non-EJ communities. This is a result of increased congestion in areas with existing high levels of congestion found in the urban core, where many EJ communities are located.

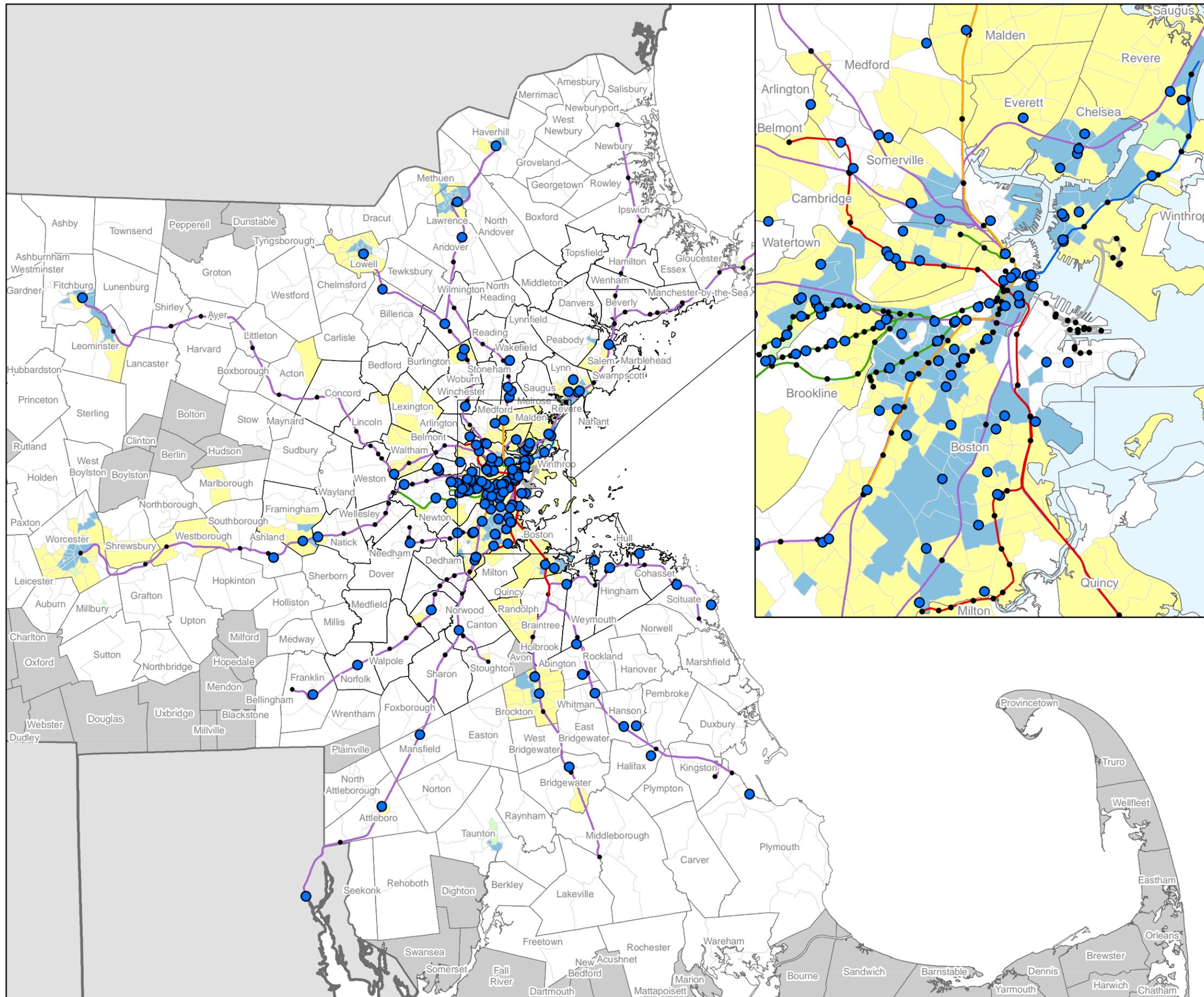
The travel demand model set was used to further analyze the equity of the impacts on the two categories of people, minority and low-income, individually. Each TAZ's "score" in terms of various metrics was estimated by the model set for both the existing and the projected conditions. To measure the areawide results, averages across TAZs (for minority and nonminority communities and for low-income and non-low-income communities) were calculated; in this calculation, each TAZ's score was weighted according to its existing transit trips. The statistical significance of the difference between the minority and nonminority averages and between the low-income and non-low-income averages was also calculated.

Three general categories of metrics were analyzed with respect to their projected equity impacts:

- Transit equity, represented by average fare, average walk-access time, average wait time, average in-vehicle travel time, average number of transfers, and total number of transit trips. All averages were weighted by the number of transit trips originating from each TAZ (as opposed to the trips destined for each TAZ).
- Highway congestion and air quality, represented by the average vehicle-miles traveled (VMT) per square mile and average kilograms of carbon monoxide (CO) emissions per square mile,⁷ respectively.

⁶ Will-call trips are ones for which the day of the trip is scheduled in advance, but the exact pick-up time is not specified until the day on which the trip is made.

⁷ Carbon monoxide is used because it is a local pollutant.



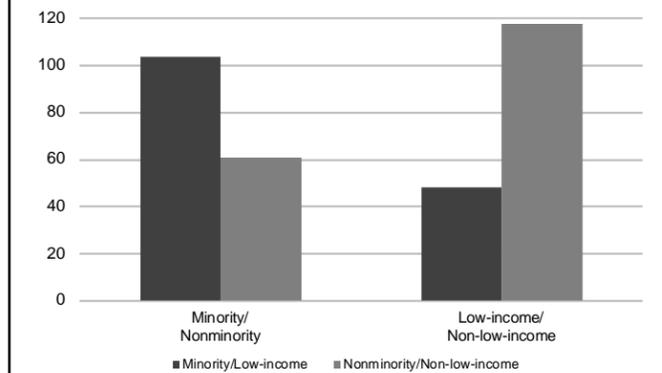
**FIGURE 4
MBTA Retail Sales Terminals,
with EJ Census Tracts**

- Retail sales terminal (RST)
- Census Tracts**
- Low-income tract
 - Minority tract
 - Minority and low-income tract
 - Non-minority, non-low-income tract
 - Outside MBTA service area

Number and Percentage of Residents Living Within 0.25 Miles of Any Retail Sales Terminal

Location	Minority	Nonminority	Low-Income	Non-Low-Inc.	Total
Urban Fixed-Route Area					
Inside 0.25 miles	236,000	112,000	117,000	230,000	347,000
Outside 0.25 miles	804,000	1,464,000	196,000	2,073,000	2,269,000
Total	1,040,000	1,576,000	313,000	2,303,000	2,616,000
% inside 0.25 miles	22.7%	7.1%	37.4%	10.0%	13.3%
Commuter Rail Service Area					
Inside 0.25 miles	270,000	95,000	139,000	226,000	365,000
Outside 0.25 miles	1,439,000	3,030,000	427,000	4,041,000	4,469,000
Total	1,709,000	3,125,000	566,000	4,267,000	4,834,000
% inside 0.25 miles	15.8%	3.0%	24.6%	5.3%	7.6%

Number of Retail Sales Terminals by Category of Census Tract



In the 175 MBTA municipalities, 26.19% of the residents were members of minority groups in 2010. A minority census tract is defined as one in which the minority percentage exceeds 26.19%.

The median household income in 2006-10 of the 175 municipalities was \$69,393. A low-income census tract is defined as one in which the median household income in 2006-10 was less than 60% of this level, or \$41,636.

Sources:
2010 Census Summary File 1 (ethnicity).
2010 American Community Survey 5-year Summary File (income).

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- Accessibility, represented by the ability to access the desired destination by transit within at least 40 minutes, which is based on the average commute trip time for the Boston region. This analysis used the number of service sector jobs, the total number of beds at health facilities, and the total enrollment at colleges within a 40-minute transit trip.

Metrics for these categories are presented in Tables 5 and 6. Table 5 shows the metrics for low-income and non-low-income communities, Table 6 the metrics for minority and nonminority communities.

TRANSIT EQUITY MEASUREMENTS

Low-Income and Non-Low-Income

As seen in the first section of Table 5, in both the commuter rail and the urban fixed-route service areas, the existing average fare, walk-access time, wait time, in-vehicle travel time, and number of transfers are less for low-income communities than non-low-income communities. This reflects the greater concentration of low-income communities in areas currently well served by transit, which also tend to be urban and densely developed. These relationships between the low-income and non-low-income conditions are projected to remain consistent after the proposed fare increase and service reductions.

In the commuter rail service area, both the absolute and percentage changes in the average fare are lower for low-income communities than for non-low-income communities. In the urban-fixed route service area, the absolute change is lower for low-income communities, but the percentage change is slightly higher relative to the existing fare. This reflects the fact that since the existing average fare for low-income communities is lower than the non-low-income average, the nearly equal absolute price increase affects low-income communities relatively more on a percentage basis. In both service areas, both the absolute and percentage changes in the wait time, in-vehicle travel time, and number of transfers are slightly less for low-income communities. The only changes that are greater for low-income communities are the increases in the average walk-access time in both service areas. However, the differences between low-income and non-low-income communities in the amounts of these changes are so minimal that they fail to be statistically significant, indicating that there would be no perceptible difference between the change in walk-access time for low-income and non-low-income communities. In both the commuter rail and urban fixed-route service areas, the only differences between the low-income and non-low-income changes that are statistically significant are for the in-vehicle travel time and the wait time. Finally, both the absolute and percentage decreases in transit trips are greater for non-low-income communities than low-income communities.

Minority and Nonminority

As seen in the table, in both the commuter rail and urban fixed-route service areas, the existing average fare, average walk-access time, wait time, and in-vehicle travel time are less for minority communities than nonminority communities. This reflects the greater concentration of minority communities in areas currently well served by transit, which also tend to be urban and densely developed. However, the number of transfers is greater for minority communities. These relationships between the minority and nonminority conditions remain consistent in the projected conditions.

In the commuter rail service area, both the absolute and percentage changes in the average fare are lower for minority communities than for nonminority communities. In the urban-fixed route service area, the absolute price change is lower for minority communities, but the percentage change is higher relative to the existing fare. This reflects the fact that since the existing average fare for minority communities is lower than the nonminority average, the nearly equal absolute price increase affects minority communities relatively more on a percentage basis. In both service areas, both the absolute and percentage changes in

TABLE 5
Existing and Projected Metrics: Low-Income vs. Non-Low-Income

Category	Metric *	Existing		Projected		Absolute Change		Percentage Change	
		Low-Income	Non-Low-Inc.	Low-Income	Non-Low-Inc.	Low-Income	Non-Low-Inc.	Low-Income	Non-Low-Inc.
Transit Equity									
Commuter Rail	Average fare ⁴	\$2.10	\$2.16	\$2.51	\$2.61	\$0.41	\$0.45	19.6%	21.0%
	Walk-access time (min.) ³	18.46	20.43	18.49	20.46	0.03	0.03	0.2%	0.1%
	Wait time (min.) ^{1,2,3}	16.53	17.47	16.66	17.61	0.12	0.14	0.7%	0.8%
	In-vehicle time (min.) ^{1,2,3}	46.01	49.89	46.02	49.97	0.01	0.08	0.0%	0.2%
	Number of transfers ^{2,3}	1.74	1.75	1.74	1.76	0.00	0.01	0.2%	0.4%
	Total transit trips ⁴	57,592	169,234	56,549	163,134	-1,043	-6,100	-1.8%	-3.6%
Urban Fixed-Route	Average fare ⁴	\$1.87	\$2.16	\$2.26	\$2.57	\$0.39	\$0.41	20.7%	19.0%
	Walk-access time (min.) ³	18.39	20.41	18.42	20.44	0.04	0.03	0.2%	0.1%
	Wait time (min.) ^{1,2,3}	16.51	17.46	16.64	17.60	0.13	0.14	0.8%	0.8%
	In-vehicle time (min.) ^{1,2,3}	45.96	49.83	45.97	49.91	0.01	0.08	0.0%	0.2%
	Number of transfers ^{2,3}	1.73	1.76	1.73	1.76	0.00	0.01	0.2%	0.4%
	Total transit trips ⁴	52,086	154,419	51,214	149,815	-872	-4,604	-1.7%	-3.0%
Highway Congestion and Air Quality									
Commuter Rail	Avg. VMT / sq. mile ^{1,2,3}	52,250	15,297	52,732	15,355	482	58	0.9%	0.4%
	Avg. CO / sq. mile (kg) ^{1,2,3}	626.9	182.3	633.1	183.0	6.2	0.7	1.0%	0.4%
Urban Fixed-Route	Avg. VMT / sq. mile ^{1,2,3}	53,186	15,324	53,684	15,382	497	58	0.9%	0.4%
	Avg. CO / sq. mile (kg) ^{1,2,3}	638.0	182.6	644.4	183.3	6.4	0.7	1.0%	0.4%
Accessibility									
Commuter Rail	Service jobs ²	328,042	233,301	327,057	232,182	-985	-1,118	-0.3%	-0.5%
	Hospital beds	3,655	2,358	3,635	2,345	-19	-13	-0.5%	-0.6%
	College enrollment ³	51,445	38,095	51,373	38,018	-73	-76	-0.1%	-0.2%
Urban Fixed-Route	Service jobs ²	329,769	234,591	328,848	233,452	-922	-1,139	-0.3%	-0.5%
	Hospital beds	3,734	2,355	3,720	2,340	-14	-15	-0.4%	-0.7%
	College enrollment ³	52,122	38,115	52,052	38,038	-70	-77	-0.1%	-0.2%

¹ Indicates that the difference between the low-income change and the non-low-income change is statistically significant.

² Indicates that the difference between the existing and projected values for low-income communities is statistically significant.

³ Indicates that the difference between the existing and projected values for non-low-income communities is statistically significant.

⁴ No statistical test was performed for average fare or total transit trips, since neither of these measures has a distribution to which a statistical test could be applied. Average fare equals the total trip cost factored to eliminate the parking cost, but this factoring is performed after the weighted average of the total trip cost is calculated based on the distribution of total trip costs by TAZ, not at the individual TAZ level. Transit trips are a total and do not have a distribution of values.

* For measures without a note, there are no statistically significant differences either between the low-income and non-low-income changes or between the existing and projected values for either low-income or non-low-income communities.

TABLE 6
Existing and Projected Metrics: Minority vs. Nonminority

Category		Existing		Projected		Absolute Change		Percentage Change	
Service Area	Metric	Minority	Nonminority	Minority	Nonminority	Minority	Nonminority	Minority	Nonminority
Transit Equity									
Commuter Rail	Average fare ⁴	\$2.12	\$2.18	\$2.52	\$2.63	\$0.40	\$0.45	19.2%	20.5%
	Walk-access time (min.) ²	19.47	20.59	19.50	20.62	0.03	0.04	0.1%	0.2%
	Wait time (min.) ^{1,2,3}	16.84	17.88	16.96	18.03	0.13	0.14	0.7%	0.8%
	In-vehicle time (min.) ^{2,3}	47.24	51.62	47.30	51.69	0.05	0.07	0.1%	0.1%
	Number of transfers ^{1,2,3}	1.76	1.73	1.76	1.74	0.00	0.01	0.3%	0.4%
	Total transit trips ⁴	135,327	91,499	132,524	87,159	-2,803	-4,340	-2.1%	-4.7%
Urban Fixed-Route	Average fare ⁴	\$1.96	\$2.23	\$2.36	\$2.65	\$0.40	\$0.42	20.2%	18.9%
	Walk-access time (min.) ^{1,2}	19.47	20.34	19.49	20.38	0.02	0.04	0.1%	0.2%
	Wait time (min.) ^{1,2,3}	16.91	17.56	17.04	17.69	0.13	0.14	0.8%	0.8%
	In-vehicle time (min.) ^{2,3}	47.36	50.49	47.42	50.54	0.07	0.05	0.1%	0.1%
	Number of transfers ^{1,2,3}	1.77	1.72	1.78	1.73	0.01	0.01	0.3%	0.4%
	Total transit trips ⁴	107,209	99,296	105,190	95,839	-2,019	-3,457	-1.9%	-3.5%
Highway Congestion and Air Quality									
Commuter Rail	Avg. VMT / sq. mile ^{1,2,3}	36,525	14,226	36,792	14,274	267	49	0.7%	0.3%
	Avg. CO / sq. mile (kg) ^{1,2,3}	434.4	169.7	437.8	170.3	3.4	0.6	0.8%	0.3%
Urban Fixed-Route	Avg. VMT / sq. mile ^{1,2,3}	37,920	14,737	38,211	14,790	291	53	0.8%	0.4%
	Avg. CO / sq. mile (kg) ^{1,2,3}	451.1	175.7	454.9	176.4	3.8	0.6	0.8%	0.4%
Accessibility									
Commuter Rail	Service jobs ²	287,823	209,743	286,776	208,603	-1048	-1140	-0.4%	-0.5%
	Hospital beds ³	2,978	2,269	2,964	2,253	-15	-16	-0.5%	-0.7%
	College enrollment ³	44,746	36,680	44,755	36,449	9	-230	0.0%	-0.6%
Urban Fixed-Route	Service jobs ²	285,076	230,831	284,142	229,575	-933	-1256	-0.3%	-0.5%
	Hospital beds ³	2,939	2,477	2,923	2,463	-16	-14	-0.5%	-0.6%
	College enrollment ³	43,731	39,734	43,759	39,535	28	-199	0.1%	-0.5%

¹ Indicates that the difference between the minority change and the nonminority change is statistically significant.

² Indicates that the difference between the existing and projected values for minority communities is statistically significant.

³ Indicates that the difference between the existing and projected values for nonminority communities is statistically significant.

⁴ No statistical test was performed for average fare or total transit trips, since neither of these measures has a distribution to which a statistical test could be applied. Average fare equals the total trip cost factored to eliminate the parking cost, but this factoring is performed after the weighted average of the total trip cost is calculated based on the distribution of total trip costs by TAZ, not at the individual TAZ level. Transit trips are a total and do not have a distribution of values.

the walk-access time, wait time, and number of transfers are slightly less for minority communities. The only change that is greater for minority communities is the increase in the average in-vehicle travel time in the urban fixed-route service area. However, the difference between minority and nonminority in the amount of this change is so minimal that it fails to be statistically significant, indicating that there would be no perceptible difference between the change in in-vehicle travel time for minority and nonminority communities. In the commuter rail service area, the differences between the minority and nonminority changes are statistically significant for the wait time and number of transfers. For the urban fixed-route service area, the only differences between the minority and nonminority changes that are statistically significant are for the walk-access time, the wait time, and the number of transfers. Both the absolute and percentage decreases in transit trips are greater for nonminority communities than minority communities.

HIGHWAY CONGESTION AND AIR QUALITY METRICS

Low-Income and Non-Low-Income

As shown in the second section of Table 5, the average existing-conditions measures of both VMT and CO emissions are greater for low-income communities than non-low-income communities. This is a reflection of the greater automotive activity in more urban areas, which, in this region, is where low-income communities are typically located. In both the urban fixed-route and commuter rail service areas, low-income communities have existing averages for VMT and average CO per square mile that are over three times the averages for non-low-income communities.

Unlike the transit equity metrics, the highway congestion and air quality metrics show a greater negative impact on low-income communities than on non-low-income communities, an exacerbation of the difference in local congestion and air quality that already exists. These differences in the changes between low-income and non-low-income communities were determined to be statistically significant. The absolute changes for each measurement are about eight to nine times higher for low-income communities.

Minority and Nonminority

As shown in the second section of Table 6, the patterns for minority and nonminority communities mirror those of low-income and non-low-income communities. Under existing conditions, on average, about two and a half times as many vehicle-miles are traveled in minority communities, and the CO emissions per square mile are two and a half times greater. The increases for both the highway congestion and air quality metrics are greater (worse) for minority communities, and these differences in the changes between minority and nonminority communities were determined to be statistically significant. The absolute changes are five to six times greater for minority communities.

ACCESSIBILITY EQUITY METRICS

The third sections of Tables 5 and 6 present the existing and projected accessibility measures. Access to jobs is measured by the number of jobs in the service employment category that can be accessed by transit. The changes in accessibility to service jobs largely match those for retail and other jobs; therefore, service jobs are presented in the table as a proxy for all jobs. Access to health care is measured by the number of hospitals, weighted by hospital beds, that can be accessed by transit. Access to higher education is measured by the two- and four-year institutions, weighted by enrollment, that can be accessed by transit. These metrics indicate the accessibility of high-demand destinations from communities.

Low-Income and Non-Low-Income

As seen in Table 5, in both the commuter rail and urban fixed-route service areas, low-income communities have a greater level of existing access in terms of all three metrics compared to non-low-income communities. This is not projected to change. The percentage decreases in accessibility are greater for non-low-income communities. However, none of the differences between the changes for low-income and those for non-low-income communities are statistically significant, indicating that there would be no perceptible difference between low-income and non-low-income communities in terms of their changes in the various measures.

Minority and Nonminority

The same trends that occurred for low-income and non-low-income communities occurred for minority and nonminority communities. Nonminority communities are affected more adversely than minority communities, although the differences between the changes for minority and nonminority communities are not statistically significant. It is therefore indicated that there would be no perceptible difference between minority and nonminority communities in terms of their changes in the various measures.

CONSIDERATION OF OFF-MODEL STATIONS

Six MBTA commuter rail stations are outside of the model region. The ridership associated with these stations is therefore not included in the preceding analysis. These stations are Grafton Station and Worcester Station on the Framingham-Worcester Line; North Leominster Station and Fitchburg Station on the Fitchburg Line; and Providence Station and T.F. Green Station on the Providence-Stoughton Line. Because these stations are outside of what CTPS is able to model, a separate analysis was completed for these stations. Two sources of data were used: the MBTA's most recent systemwide survey⁸ and the 2010 census. Demographic data for these stations are presented in Table 7.

According to the MBTA Systemwide Survey, riders who use these stations tend to be higher-income (64% of the ridership's households make over \$75,000 per year and 91% make over \$40,000 per year) and nonminority (74% of these stations' total riders). Using the census data, populations living within a mile of each station were analyzed. The percentage of minority and lower income people living in the areas surrounding these stations is much higher than the percentage for the people who actually ride the commuter rail.

Except for Providence Station, these stations have relatively few riders. The ridership of these stations represents about five percent of the commuter rail system's total ridership, and it represents less than half a percent of the total trips made on the entire MBTA transit system. Because not many riders use these stations, and because few of the riders are minority or low-income, it is highly unlikely that data from these stations would change any results from the previous analyses.

SUMMARY OF EQUITY ANALYSIS

An analysis of the impacts of the proposed fare increase and service reductions using the spreadsheet model and the MBTA Systemwide Passenger Survey estimated that not only are low-income and minority riders paying a lower existing average fare than non-low-income and nonminority riders, but the absolute change in the average fare is also less for low-income and minority riders. A greater percentage

⁸ T.F. Green Station was not in service when the passenger survey was completed; demographic data for users of this station was not, therefore, collected as part of the passenger survey.

TABLE 7
Off-Model Station Characteristics

2008–09 MBTA Systemwide Survey

<u>Station Name</u>	<u>Total Riders</u>	<u>Minority</u>	<u>% of Total</u>	<u>Nonminority</u>	<u>% of Total</u>	<u>Community Type</u>
Grafton	511	99	19.4%	412	80.6%	Nonminority
Worcester	675	222	32.9%	453	67.1%	Minority
N. Leominster	295	47	15.9%	248	84.1%	Nonminority
Fitchburg	266	48	18.1%	218	82.0%	Nonminority
Providence	1,341	400	29.8%	941	70.2%	Nonminority
T.F.Green	0	0	0.0%	0	0.0%	No Demographics
Total	3,088	816	26.4%	2,272	73.6%	

<u>Station Name</u>	<u>Total Riders</u>	<u>Less than \$40k</u>	<u>% of Total</u>	<u>More than \$40K</u>	<u>% of Total</u>	<u>Community Type</u>
Grafton	406	16	3.9%	390	96.1%	Non-low-income
Worcester	559	45	8.1%	514	92.0%	Non-low-income
N. Leominster	263	29	11.0%	234	89.0%	Non-low-income
Fitchburg	212	31	14.6%	181	85.4%	Non-low-income
Providence	1,219	124	10.2%	1,095	89.8%	Non-low-income
T.F.Green	0	0	0.0%	0	0.0%	Non-low-income
Total	2,659	245	9.2%	2,414	90.8%	

2010 US Census

<u>Station Name</u>	<u>Total Population</u>	<u>Minority</u>	<u>% of Total</u>	<u>Nonminority</u>	<u>% of Total</u>	<u>Community Type</u>
Grafton	1,042	357	34.3%	685	65.7%	Minority
Worcester	35,446	20,454	57.7%	14,992	42.3%	Minority
N. Leominster	4,668	1,000	21.4%	3,668	78.6%	Nonminority
Fitchburg	19,548	7,337	37.5%	12,211	62.5%	Minority
Providence	29,036	13,591	46.8%	15,445	53.2%	Minority
T.F.Green	3,404	337	9.9%	3,067	90.1%	Nonminority
Total	93,144	43,076	46.3%	50,068	53.8%	

<u>Station Name</u>	<u>Total Households</u>	<u>Less than \$40k</u>	<u>% of Total</u>	<u>More than \$40K</u>	<u>% of Total</u>	<u>Community Type</u>
Grafton	878	47	5.0%	831	95.0%	Non-low-income
Worcester	13,979	8,315	59.0%	5,664	40.0%	Low-income
N. Leominster	1,901	702	37.0%	1,199	64.0%	Non-low-income
Fitchburg	7,199	3,559	49.0%	3,640	50.0%	Low-income
Providence	10,677	6,329	59.0%	4,348	41.0%	Low-income
T.F.Green	1,542	464	30.0%	1,078	70.0%	Non-low-income
Total	36,176	19,416	54.0%	16,760	46.0%	

of riders paying with single-ride fares—especially on the bus and those paying senior and student fares—or a 7-Day LinkPass are low-income and minority. Therefore, low-income riders and minority riders will benefit from the introduction of a 7-Day Student Pass, relaxed restrictions on the current and new student passes, and lower increases in bus fares compared to other modes. In addition, low-income riders and minority riders have significantly better access to retail sales terminals, where they can purchase a variety of discounted fare products. Modifications to THE RIDE’s pricing and fare structure will impact fewer low-income and minority riders than non-low-income and nonminority riders.

An analysis of the equity impacts on various metrics from the regional travel demand model set showed that, in general, for the metrics in which low-income and minority communities have better existing “scores” than non-low-income and nonminority communities, that is, for the transit and accessibility equity measures, the proposed changes, while making the scores slightly worse overall, degrade the scores less for low-income and minority versus non-low-income and nonminority communities. For the metrics in which low-income and minority communities have worse existing scores than non-low-income and non-minority communities, that is, for the highway congestion and air quality equity measures, the proposed changes result in larger negative impacts on low-income and minority communities than non-low-income and nonminority communities, again further increasing the differences. Many of the differences between minority/low-income communities and nonminority/non-low-income communities were so small that they failed to be statistically significant, indicating that there would be no perceptible difference.

ALTERNATIVE SERVICES AVAILABLE NEAR ELIMINATED SERVICES TO MINORITY AND LOW-INCOME POPULATIONS

One of the criteria used in developing Scenario 3 was to minimize the number of eliminated routes for which no alternative service is available. Under Scenarios 1 and 2, bus routes were identified that do not meet a certain threshold of cost-effectiveness. Based on these thresholds and the extent of the coverage of the remaining services, bus routes were either eliminated or modified. The impact on transit service for minority and low-income populations under Scenario 2 was not insignificant. In addition, both of those scenarios eliminated services for which no alternative service was available.

In Scenario 3, four weekday bus routes are proposed for elimination. In each of these cases, other nearby transit services are available to riders, whether minority or low-income or not, though these services have either a greater fare or in-vehicle travel time. The alternative services are described in the Scenario 3 report (Appendix A). Five routes on Saturday and four routes on Sunday are recommended for elimination, and some of these routes do not have an alternative service. The weekend routes that are proposed for elimination that do not have alternative service options are not routes that are classified as minority or low-income, and they operate in lower-density areas where transit ridership is typically lower, particularly on the weekends (as is evidenced by the high net cost per passenger).

PLANS TO RESTORE SERVICE

The MBTA is proposing to eliminate some bus routes that have a net cost per passenger greater than 3.5 times the systemwide average. Restoring these low-performing routes would not be the best use of additional funds, were they to become available. Also, given the continuing nature and magnitude of the MBTA’s financial problems, it is premature to plan for restoring service. If resources are available in the future, the MBTA would consider restoring service where ridership potential was sufficient to meet cost-effectiveness standards.

CONCLUSIONS

Before considering fare increases or service reductions, the MBTA took steps to reduce the initial \$185 million deficit, including reducing energy purchase costs, planning introduction of single-person train operation on the Red Line, increasing MBTA employee enrollment in a new lower-cost health care plan, and implementing other operating and administrative efficiencies. The remaining means available to the MBTA for addressing the residual \$161 million projected budget deficit for FY 2013 are generally limited to increasing fares and reducing service, although the MBTA will continue to advance the operational and administrative efficiencies undertaken since the implementation of forward funding in 2000 and transportation reform in 2009. After extensive public participation, Scenario 3 was developed in recognition of the fact that it is not feasible for transit riders to shoulder the entire burden of closing the budget gap and that most riders would prefer fare increases to service reductions. Therefore, the percentage magnitude of the fare increase proposed in Scenario 3 is more in line with previous fare increases, and service changes are only proposed for those routes that have the worst cost efficiency in the entire MBTA system or the elimination or modification of which would only affect a small percentage of passengers. The analysis shows that, overall, there is not a disparate impact on minority and low-income riders from the proposed new fare levels or service changes.

DEFINITIONS

Disparate Impact

The MBTA has not yet developed a specific definition for what constitutes a disparate impact with regard to either a fare increase or service changes. It is beginning the process of developing disparate-impact threshold levels, which will be reviewed through a public process. This will most likely occur in the context of the next Service Plan, the document through which the MBTA reviews all bus routes and rapid transit lines and proposes changes that will make the system more effective within existing resources. Although the MBTA ordinarily produces a Service Plan every two years, the time and nature of changes proposed in the next Service Plan will be dependent on the final scenario selected through the current process.

For the purposes of this analysis, two different definitions of disparate impact are used depending on whether it is possible to perform a statistical test of the analysis. For those analyses in which a statistical test is possible (most analyses using the travel demand model set), any negative impact that is greater for minority or low-income communities is considered disparate if the corresponding difference between nonminority and non-low-income communities, respectively, is statistically significant. For those analyses where a statistical test is not possible (analyses using the spreadsheet model or GIS locations), a greater negative impact for minority or low-income communities is considered disparate. In situations where the percentage change is greater for minority or low-income communities compared to nonminority or non-low-income communities, but the absolute change is less, this is not considered a disparate impact.

Environmental Justice

Any TAZ which qualifies as minority and/or low-income is considered an environmental justice (EJ) community.

Low-Income

The MBTA defines low-income separately for each of its two service areas: 1) the commuter rail service area, which includes the 175 municipalities that pay an assessment to the MBTA and covers all modes; and 2) the urban fixed-route service area, which includes 65 municipalities and covers all modes serving this area. Low-income is defined separately for the two service areas, as the definitions are based on the average income levels for the respective service areas. For each of the two service areas, the average annual income was identified for each transportation analysis zone (TAZ). A TAZ was then defined as low-income if its income level was at or below 60% of the median household income in the service area; this meant at or below \$40,766 in the urban fixed-route transit service area and \$41,636 in the commuter rail service area.⁹

Major Service Changes

The FTA allows each transit agency to establish its own definition of major service changes. The MBTA has two definitions of “major service change” that are used for two different purposes. One definition is at the system level and the other is at the route level. When the MBTA is considering changing fares or the fare structure or systemwide service reductions in order to reduce a budget deficit, the system-level definition is used. In the context of the service planning process, the route-level definition is used. The two types of major service changes trigger different levels of Title VI equity analyses and public engagement.

⁹ Median household income was determined based on the 2006-2010 American Community Survey.

The MBTA's policy regarding major service changes at the system level is documented in the MBTA's enabling legislation (MGL 161A) and the MBTA's existing policy regarding the "Public Process for Changing MBTA Fares, and/or Fare Structure or Major Service Reductions," which was approved by the MBTA's Board of Directors on June 4, 2009.

MGL 161A, Section 5 (d) defines systemwide service changes and the process required—including the level of public engagement—for systemwide fare changes or major service reductions:

No proposal for a systemwide change in fares or **decrease in systemwide service of 10 per cent or more** shall be effective until **said proposal shall first have been the subject of one or more public hearings** and shall have been reviewed by the advisory board and, for a systemwide increase in fares of 10% or more, the MBTA board has made findings on the environmental impact of such increase in fares and, for a systemwide decrease in service of 10% or more, the decrease shall be the subject of an environmental notification form initiating review pursuant to sections 61 and 62H, inclusive, of chapter 30. Any systemwide increase in fares of 10 per cent or more shall conform to the fare policy established pursuant to paragraph (r). The authority shall increase fares only to provide needed revenue and shall not increase fares solely for the purpose of funding the stabilization fund established pursuant to section 19.

The MBTA's policy entitled *Public Process for Changing MBTA Fares, and/or Fare Structure or Major Service Reductions* further clarifies that a major service reduction is "defined as a systemwide reduction of 10% or more, **as measured by typical daily usage.**" It is not specifically stated what measure of "typical daily usage" should be used.

Major service changes at the individual route level are defined in the Service Delivery Policy as major service restructuring that includes:

- Implementation of new routes or services
- Elimination of a route or service
- Elimination of part of a route
- Span of service changes greater than one hour
- Route extension of greater than 1 mile

Route-level changes—whether major or minor—are attempts to improve the performance of specific routes with regard to the service standards in the MBTA's Service Delivery Policy and are proposed through the biennial Service Plan. Before the route-level changes proposed in the Service Plan are approved and implemented, a Title VI level-of-service analysis for all routes is completed for frequency of service, vehicle load, and schedule adherence. The Service Delivery Policy also outlines the level of public participation required for the Service Plan, through which major route-level service changes are made.

Minority

The MBTA defines minority separately for each of its two service areas: 1) the commuter rail service area, which includes the 175 municipalities that pay an assessment to the MBTA and covers all modes; and 2) the urban fixed-route service area, which includes 65 municipalities and covers all modes serving this area. Minority is defined separately for the two service areas, as the definitions are based on the average percent minority for the respective service areas. For each of the two service areas, the percentage of minority population was identified for each transportation analysis zone (TAZ). Minority TAZs were defined as those in which the percentage of the non-white population (including the Hispanic population)

was greater than the average for the service area. The average percentage of minority residents is 31.3% in the urban fixed-route transit service area and 26.2% in the commuter rail service area.¹⁰

Rider Oversight Committee

As part of the mitigation for the 2004 fare increase, the MBTA Board of Directors instructed the General Manager to create a Rider Oversight Committee (ROC). The ROC was originally made up of eight transportation advocacy groups, eight individual MBTA customers, and eight senior-level MBTA staff members and was staffed by an MBTA employee.

The ROC was tasked with working with the MBTA to discuss customer service improvements and service quality issues; address the concerns of public transit customers; and develop strategies aimed at increasing ridership. In addition, the ROC was to coordinate with the MBTA to develop recommendations for an amended fare structure and fare policy that would become effective upon full implementation of the automated fare collection (AFC) system. After an almost two-year MBTA/ROC collaboration, a set of recommendations for a new fare structure and fare policy were made in February 2006. These addressed three key themes: simplification of the fare structure; institution of “step-up” transfer privileges between local bus and rapid transit, and incentives to encourage use of new CharlieCards as a payment method. The MBTA implemented those changes as part of its 2007 fare increase and restructuring.

In conjunction with development of a new fare policy, the MBTA collaborated with the ROC to develop public process policy that emphasized the MBTA’s commitment to an extensive public engagement campaign for any proposed fare increase. This document, the “Public Process for Changing MBTA Fares, Fare Policy, and/or Fare Structure,” outlined a very robust public process that far exceeds the requirements of the MBTA’s enabling legislation. This proposed public process policy, the new fare policy, and the proposed 2007 fare restructuring and increase were reviewed by the public through an extensive process that met the requirements in the proposed public process policy and included eleven public meetings and five public hearings held throughout the MBTA’s service area in 2006.

The public process policy was revised in 2009 to include requirements for public review of major service reductions in addition to fare increases. The 2009 “Public Process for Changing MBTA Fares, and/or Fare Structure or Major Service Reductions” was developed in anticipation of proposed fare increases or service reductions. Although neither occurred in 2009, the changes to the policy (which was approved by the MBTA’s Board of Directors) increased the applicability of the required public review, while retaining the same rigorous review requirements as the 2007 public process policy.

Service Area

The MBTA has defined two service areas with different demographic characteristics: ***urban fixed-route service*** area (65 core municipalities) and one for the ***commuter rail service area*** (175 municipalities, including the 65 in the fixed-route service area). The analysis for each level of geography includes all modes serving each of the respective areas

¹⁰ Minority percentages were determined based on the 2010 U.S. census.



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Appendix Q

MBTA Fare Impact

Report for SFY 2015



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Potential MBTA Fare Changes in SFY 2015: Impact Analysis

A report produced for the Massachusetts Bay Transportation Authority
by the Central Transportation Planning Staff



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Potential MBTA Fare Changes in SFY 2015

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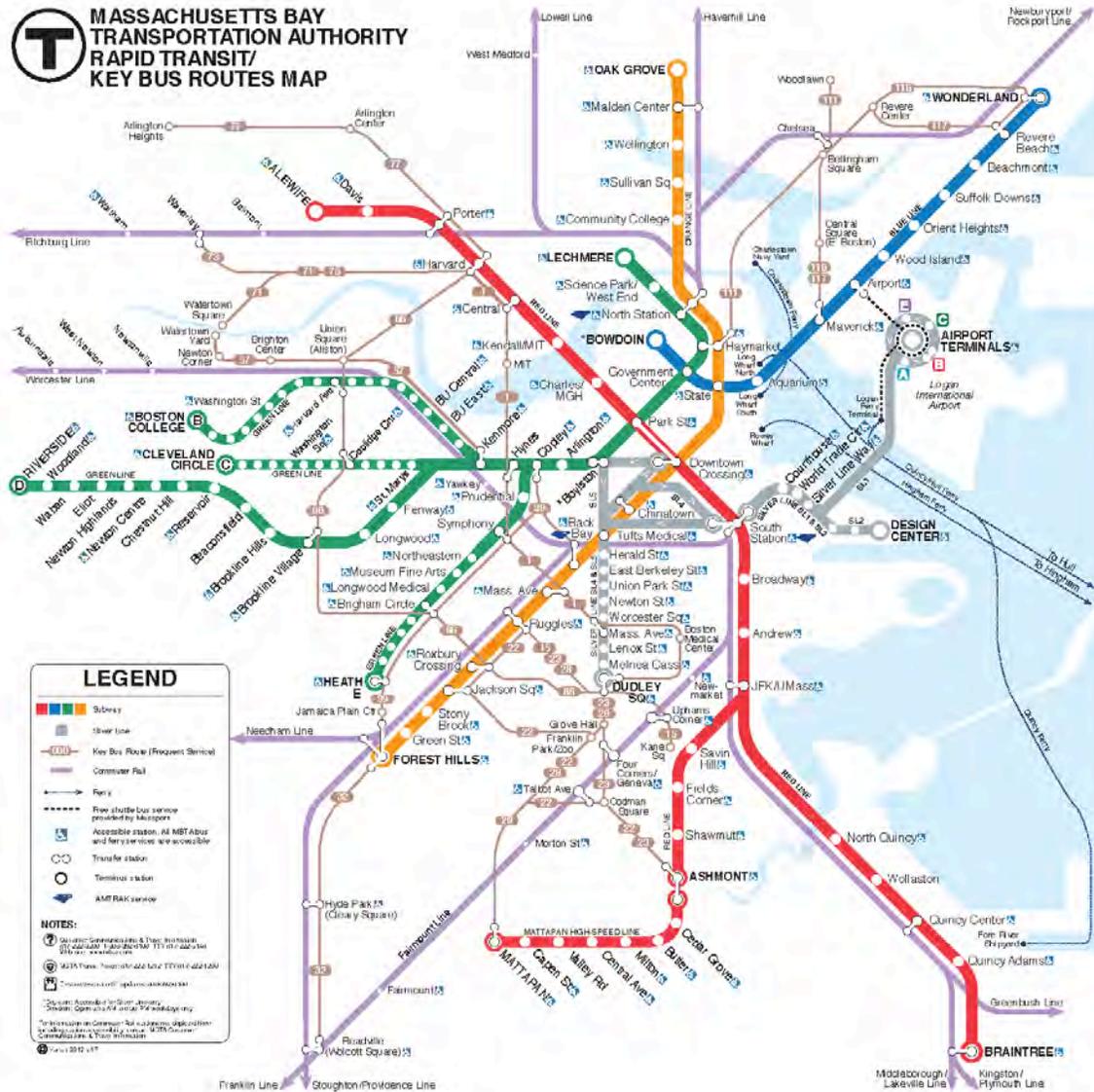
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ABSTRACT

This study analyzes the various effects of a potential MBTA fare-pricing scenario aimed at achieving a balanced budget in state fiscal year 2015. The proposed scenario raises new revenue from a 5% average fare increase; the Authority is not planning to reduce or eliminate service to meet its revenue targets. We use two different modeling methodologies to estimate the effects on ridership, revenue, air quality, and fare equity. The methodologies are complementary, each providing some information the other is not designed to gather. In addition, generating two sets of estimates produces a wider range of possible impacts.

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EXECUTIVE SUMMARY

In response to the Massachusetts state Legislature's requirement that the MBTA generate a portion of its revenue from fares, the MBTA proposed to establish a pattern of modest, regularly scheduled fare changes, beginning with a 5% fare increase in state fiscal year (SFY) 2015. The Central Transportation Planning Staff (CTPS) to the Boston Region Metropolitan Planning Organization (MPO), using a spreadsheet model, assisted the MBTA in determining the fare levels for each mode and fare category that would be needed in SFY 2015 to reach the MBTA's fare revenue targets. CTPS used the spreadsheet model and the Boston Region MPO's regional travel demand model set to estimate the projected ridership loss associated with the proposed fare increase and the net revenue change that would result from the lower ridership and higher fares. By employing both techniques, CTPS produced a range of estimates of potential impacts on ridership and revenue. Staff also used the travel demand model set to predict the effects of the fare increase on regional air quality and populations protected under Title VI and environmental justice.

Table E-1 presents a summary of the total ridership and revenue projections for SFY 2015. As the table indicates, revenue should increase by approximately three-to-four percent with a loss of slightly less than one percent of ridership. Compared to the spreadsheet model, the regional travel demand model set predicted a slightly lower ridership loss and a lower revenue gain. Most of the difference lies in the greater loss in ridership and smaller revenue gains for the more expensive modes—commuter rail and ferry.

TABLE E-1.
Range of Revenue and Ridership Projections
for the Proposed Fare Increase: SFY 2015

Analysis Category	Existing Values	Spreadsheet Model			Regional Travel Demand Model		
		SFY 2015 Projected	Projected Change	Projected % Change	SFY 2015 Projected	Projected Change	Projected % Change
Ridership	403.4M	399.7M	-3.8M	-0.9%	400.6M	-2.8M	-0.7%
Revenue	\$603M	\$627.2M	\$24.5M	4.1%	\$622.8M	\$20.0M	3.3%

We expect changes in travel behavior resulting from the fare changes to cause only very minor negative impacts on air quality in terms of all pollutants. The estimated magnitude of the air quality impacts reflect the increase in vehicle-miles traveled and vehicle-hours traveled projected to occur as transit riders divert to automobile trips and cause additional congestion on the region's roads.

CTPS performed a fare equity analysis using the spreadsheet model and the regional travel demand model set. In this analysis, we compared the absolute and relative fare increases between riders who are minorities and all riders and between riders who are low-income and all riders. We applied the MBTA's disparate-impact and disproportionate-burden policies and found neither the presence of a disparate impact nor a disproportionate burden.

CHAPTER 1. INTRODUCTION

In recent years, the MBTA has managed to balance its budget through cost reductions, special appropriations by the Legislature, and fare and fee increases. In 2007, simultaneous with the introduction of the Automated Fare Collection (AFC) technology, the MBTA restructured its fare system and raised fares an average of 21%. The Authority did not raise fares again until July 2012, when it implemented a 23% average increase. Almost a year later, the state Legislature—in Chapter 46, An Act Relative to Transportation Finance—required that the MBTA attain revenue benchmarks, which it could satisfy by changing fares, fees, or any other funds directly collected by the Authority.^{1,2} In response, the MBTA proposed to establish a pattern of modest, regularly scheduled fare changes, as needed, beginning with a 5% fare increase in SFY 2015. Modest, predictable fare increases will be less disruptive for the Authority and its customers compared to past major fare increases.

CTPS, using an elasticity-based spreadsheet model, provided technical assistance to the MBTA in determining fare levels for each mode and fare category necessary to reach the MBTA's fare revenue targets in SFY 2015. CTPS used the spreadsheet model and the Boston Region MPO's regional travel demand model set to estimate the projected ridership loss associated with the proposed fare increase and the net revenue change that would result from the lower ridership and higher fares. By employing both techniques, CTPS produced a range of estimates of potential impacts on ridership and revenue. Staff analysts also used the travel demand model set to predict the effects of the fare increase on regional air quality and on populations protected under Title VI and environmental justice.

1.1 Document Structure

The remainder of this document is organized according to the following structure:

- A review the methodology used for the analysis (Chapter 2)

¹ Bill H. 3535: An Act Relative to Transportation Finance: malegislature.gov/Bills/188/House/H3535.

² Bill H. 3535; Section 61(a),(b), and (c)

- A description of the proposed fare changes (Chapter 3)
- The results of our ridership and revenue analyses (Chapter 4)
- The results of an air-quality analysis (Chapter 5)
- The results of a fare-equity analysis (Chapter 6)
- Conclusions (Chapter 7)

This report contains four appendices comprised of:

- A more detailed review of the spreadsheet model's methodology (Appendix A)
- An environmental-justice analysis (Appendix B)
- A description of the potential fares the MBTA could implement in SFY 2016 (Appendix C)
- An example application of the MBTA's proposed disparate-impact policy (Appendix D)

CHAPTER 2. METHODS USED TO ESTIMATE RIDERSHIP AND REVENUE

CTPS used two separate approaches to estimate the impact of the proposed fare increase on MBTA ridership and revenue. One approach utilized a set of spreadsheets created by CTPS in consultation with the MBTA specifically to perform such calculations. The second approach applied the Boston Region MPO's regional travel demand model set to estimate demand for each MBTA mode using the existing and proposed fare levels.

CTPS also employed the travel demand model set as a complement to the spreadsheet model when estimating the effects of the SFY 2007 fare restructuring and three proposed fare increase and service-change scenarios for SFY 2013. Together, the two models showed the potential range of impacts on ridership and revenue. Unlike the spreadsheet model, the travel demand model set provides the data necessary for CTPS to perform air-quality analyses and more comprehensive environmental justice impact analyses.

2.1 CTPS Spreadsheet Model Approach

The spreadsheet model estimates the revenue and ridership impacts of the proposed fare-increase scenario. This model reflects the many fare-payment categories of the MBTA pricing system and applies price elasticities to analyze various changes across these categories. CTPS determined that this methodology met expectations through two post-fare increase analyses: one following the SFY 2007 fare restructuring and one following the SFY 2013 fare increase.

Modeling of Existing Ridership and Revenue

Inputs to the spreadsheet model include existing ridership in the form of unlinked trips by mode, fare-payment method, and fare-media type. An unlinked trip is an individual trip on any single transit vehicle; a single journey composed of many unlinked trips on multiple vehicles is a “linked trip.”

The MBTA provided CTPS with existing ridership statistics (to which the spreadsheet model applies price elasticity values—see Section 2.1.2) for the local bus, express bus, and rapid transit networks in the form of automated fare-collection (AFC) data.³ The MBTA provided the ridership data by station, fare payment type (for example, cash, monthly pass, and weekly pass), fare media (the physical instrument used to pay a fare, for example, CharlieCard, CharlieTicket, and cash), day of the week, and route for buses and the light rail system.

Because the MBTA has not deployed AFC equipment on the commuter rail or commuter boat systems, CTPS estimated the number of trips made on these modes using sales figures. Single-ride trips on commuter rail and ferry were set equal to the number of single-ride fares sold. The number of trips made using passes on these modes was estimated by multiplying the number of pass sales by the estimated average number of trips made using the respective pass type, calculated using survey responses from a corporate pass-users survey conducted in the spring of 2008. Because the underlying pass-usage patterns likely have not changed significantly from the initial survey, we have not conducted additional surveys.

The MBTA also provided data for the number of trips made on THE RIDE by fare payment type and the number of cars that parked at MBTA parking lots. The spreadsheet model calculates revenue for single-ride trips by multiplying the number of trips in each fare/mode category by that category’s price.⁴ The spreadsheet model calculates revenue for pass trips by pass type by multiplying the number of pass sales by the pass price. The model distributes pass revenue between mode categories based on each category’s ridership and most-equivalent single-ride fare (generally, the lowest-priced adult fare).

³ “Existing ridership” is for SFY 2013 (July 1, 2012–June 30, 2013).

⁴ For example, if there were 30 million adult CharlieCard fares paid at stations, the revenue generated is equal to 30 million multiplied by \$2.00—the adult CharlieCard fare—or \$60 million.

Estimation of Ridership Changes Resulting from a Fare Increase

Fares are one of many factors that influence the level of ridership on transit services. Price elasticity is a measure of the rate of change in ridership relative to a change in fares if all other factors remain constant. On a traditional demand curve that describes the relationship between price, on the y-axis, and demand, on the x-axis, elasticities are equivalent to the slope along that curve. Price elasticities are usually negative, meaning that a price increase will lead to a decrease in demand (with a price decrease having the opposite effect). The larger the negative value of the price elasticity (the greater its distance from zero), the greater the projected impact on demand. Larger (more negative) price elasticities are said to be relatively “elastic,” while smaller negative values (closer to zero), are said to be relatively “inelastic.”⁵ Thus, if the price elasticity of the demand for transit were relatively elastic, a given fare increase would cause a greater loss of ridership than if demand were relatively inelastic. Appendix A.5 presents an example of how the concept of price elasticity is applied.

The spreadsheet model permits the use of various ranges of elasticities to estimate different possible ridership impacts of price increases. Performing calculations in the spreadsheet model with the same prices but with a range of higher and lower elasticities provides a range of estimates. In the present analysis, the model uses the middle range of elasticities, called the base elasticities, as these represent the best estimate of where the elasticities should be set based on past experience and a post-SFY 2013-fare increase analysis. For a description of how we determined the base elasticities, see Appendix A.4. However, we also use both more inelastic and more elastic elasticities to determine a range of possible effects; the lower and higher ranges are plus or minus 0.10 the base value. If subtracting 0.10 from the base elasticity would result in an elasticity of 0.00, we subtracted 0.05 instead. This serves as a sensitivity analysis of the model’s projections of the ridership losses and revenue gains. Table 2-1 presents the three elasticity ranges used in the spreadsheet model for this study’s analysis.

⁵ More specifically, an elasticity of less than -1 is considered “elastic”—a 1% increase in price will cause a greater than 1% decrease in demand; an elasticity of -1 is called “unit elasticity”—a 1% increase in price will cause a 1% reduction in demand; and elasticity greater than -1 is called “inelastic”—a 1% increase in price will result in a lower than 1% decrease in demand; an elasticity of 0 is called “perfectly elastic demand”—an increase in price does not affect demand.

The elasticity of transit ridership with respect to small fares changes is generally considered inelastic.

The spreadsheet model also uses ridership diversion factors. These factors reflect estimates of the likelihood of a switch in demand from one MBTA product type or mode to another resulting from a change in the relative prices of the product types or modes. The diversion factors essentially work to redistribute demand between two product types or modes after the model applies the respective price elasticities. Appendix A.5 provides examples of the application of diversion factors and the methodology for combining the use of price elasticities and diversion factors. While diversion factors estimate the migration of riders between MBTA product types and modes based on their price, the spreadsheet model can only estimate the total loss of riders from the MBTA transit system, not the diversion of riders to specific non-MBTA modes such as driving, biking, or walking. The ability to predict diversions to other modes is one of the primary strengths of the Boston Region MPO's regional travel demand model set.

TABLE 2-1.
Single-Ride and Pass Elasticities by Fare Type and Mode

Modal Category	Low	Base	High
Cash Elasticities			
Bus and Trackless Trolley			
Bus-Adult	-0.15	-0.25	-0.35
Bus-Senior	-0.10	-0.20	-0.30
Bus-Student	-0.05	-0.15	-0.25
Subway			
Subway-Adult	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
Subway-Senior	-0.15	-0.25	-0.35
Subway-Student	-0.05	-0.15	-0.25
Surface Light Rail			
Surface Light Rail-Adult	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
Surface Light Rail-Senior	-0.20	-0.30	-0.40
Surface Light Rail-Student	-0.10	-0.20	-0.30
Commuter Rail			
Commuter Rail-Adult	-0.05	-0.15	-0.25
Commuter Rail-Senior	-0.10	-0.20	-0.30
Commuter Boat			
Commuter Boat-Adult	-0.20	-0.30	-0.40
Commuter Boat-Senior	-0.15	-0.25	-0.35
THE RIDE	-0.25	-0.35	-0.45
Parking	-0.10	-0.20	-0.30
Pass Elasticities			
Bus	-0.05	-0.15	-0.25
Inner Express	-0.15	-0.25	-0.35
Outer Express	-0.15	-0.25	-0.35
LinkPass	-0.05	-0.15	-0.25
1-Day LinkPass	-0.05	-0.15	-0.25
7-Day LinkPass	-0.05	-0.15	-0.25
Commuter Rail	-0.05	-0.10	-0.20
Commuter Boat	-0.10	-0.20	-0.30
Senior	-0.05	-0.10	-0.20
Student	-0.05	-0.10	-0.20

2.2 Boston Region MPO Travel Demand Model Set Approach

CTPS's regional travel demand model set simulates travel on the road and transit networks in eastern Massachusetts. It represents all MBTA modes (commuter rail, rapid transit, and bus services, as well as all private express and other regional transit authority bus services).⁶ The model set reflects service frequency (how often trains and buses arrive at a given transit stop), routing, travel time, and fares for all of these services. When modeling the highway system, the regional travel demand model set includes all express highways, all principal arterial roadways, and many minor arterial and local roadways.

The travel demand forecasting procedure used in this analysis is based on a traditional four-step, sequential process: 1) trip generation, 2) trip distribution, 3) mode choice, and 4) trip assignment. The travel demand model uses this process to estimate average daily transit ridership, primarily based on estimates of population and employment, and projected highway travel conditions (including downtown parking costs). CTPS used such a process to analyze MBTA ridership and revenue impacts based on the proposed fare increase.

The eastern Massachusetts geographic area is represented as 2,727 subareas known as transportation analysis zones (TAZs). A TAZ is a relatively homogenous geographic area defined by, among other characteristics, population and employment.

To model transportation choices, the travel demand model set employs complex techniques in each of the four sequential steps of the process:

Trip Generation: Estimates the number of trips produced in and attracted to each TAZ. The model uses estimates of the population, employment, and other socioeconomic and household characteristics of each TAZ to perform this step.

Trip Distribution: Links the trip ends estimated in the trip-generation step to determine movements between pairs of zones. The output of this step is a trip table. A trip table is a matrix containing the number of trips occurring between every origin-zone and every destination-zone; it includes travel within each TAZ.

⁶ In recent years, MBTA stations have opened outside of the regional travel demand model's boundaries. In the future, CTPS hopes to fully incorporate these few stations into the model. These stations are: Grafton, Worcester, North Leominster, Fitchburg, Providence, T.F. Green, and Wickford Junction. These stations are discussed in more detail in Chapter 6: Consideration of Off-Model Stations.

Mode Choice: Allocates the person-trips estimated in the trip distribution step to the primary competing modes, single-occupancy vehicle (SOV), high-occupancy vehicle (HOV), walk-access transit (WAT), drive-access transit (DAT), and non-motorized modes (walking and biking). This allocation is based on the desirability, or utility, of the modes a traveler can select based on the attributes of each mode and the characteristics of the individual. The output of this step results in the percentage of all travelers using each mode (SOV, HOV, WAT, DAT, and non-motorized modes).

Trip Assignment: Assigns the transit trips to the various transit lines, such as bus routes, rapid transit lines, commuter rail lines, and others. The model assigns each trip to one of several possible transit paths from one zone to another; each of these assignments is based on minimizing the generalized “cost” (including not only the transit fare, but also in-vehicle travel time, number of transfers, and other factors). These paths may involve just one mode, such as express bus or commuter rail, or multiple modes, such as a local bus and a transfer to the subway. The trip assignment step also assigns the highway trips to the highway network. The output of this step enables us to obtain traffic volumes on the highways and ridership on each transit mode.

Population and employment data are key inputs to the demand forecasting process; the Metropolitan Area Planning Council (MAPC) provided this data to CTPS. Recent CTPS studies provided inputs for highway travel times and downtown parking costs. The travel demand model set assumes that, in general, people wish to minimize transfers, travel time, and cost.

Note that the travel demand model set does not have the capability to model THE RIDE. As a result, the ridership and revenue impacts on THE RIDE included with the travel demand model set results are taken from the spreadsheet model results.

CTPS estimated existing revenue by multiplying the estimated number of trips for each mode combination (boarding mode and feeding mode) by the average fare for that mode combination. The regional travel demand model uses the spreadsheet model’s average fares as inputs.

We used two steps to estimate revenue from the regional travel demand model set. First, we input the new average fare, which is based on input from the spreadsheet model, for each transit mode combination. The model estimates the resulting changes in ridership and revenue. Next, we applied these proportional changes to the base SFY 2013 systemwide figures.

2.3 Differences between the Two Estimation Methodologies

There are several differences between the two methodologies. The chief strengths of the spreadsheet model are that it accounts for every distinct type of fare that can be paid for an MBTA transit mode and that it assigns the fare to the correct number of passengers who use that fare-payment/mode category. In comparison, the travel demand model set does not permit analysis of fares at such a detailed level, but rather assumes for each more-generalized modal category an average fare for all fare types. However, unlike the travel demand model set, the spreadsheet model cannot predict how many riders who leave the system because of a fare increase are switching to modes other than transit (driving alone, carpooling, bicycling, or walking). The travel demand model set provides the outputs necessary for conducting the air-quality and environmental justice impact analyses; the spreadsheet model provides no information on air quality and limited information on environmental justice impacts.

There is another key difference between the two approaches in how they estimate ridership changes. The use of elasticities in the spreadsheet model has a relatively simple premise: The greater the percentage change in price, the greater the percentage change in demand. In the travel demand model set, while a greater percentage increase in fares will undoubtedly trigger a greater decline in transit ridership, it is not the percentage change in transit fares that is important for determining the overall ridership change. Rather, it is the comparison of the resulting transit fares to the comparable cost of making the same trip via a different mode. For example, if the price of transit increases relative to the cost of driving, the travel demand model set will show transit diversions to driving.

Given a specific relative fare increase, one would expect a greater percentage of riders to shift away from modes with higher fares than those with lower fares since the absolute change is significantly greater. For example, a 10% increase on a \$1.00 fare is only \$0.10, while the same percentage increase on a \$10.00 fare is \$1.00. For the lower-priced mode, 5% of the riders might shift away from the previous \$1.00 fare, while 8% of the riders on the more expensive mode might switch to a different mode.

Note: Neither model purports to project the future transportation system characteristics. Rather, each model estimates what the base year, SFY 2013, might have looked like if the MBTA's fares were the proposed fares. The models do not account for changes to the transportation network, gas prices, or the Consumer Price Index.

CHAPTER 3. DESCRIPTION OF PROPOSED FARE INCREASE SCENARIO

This chapter describes recent changes to the MBTA's fare structure and the proposed SFY 2015 fares.

3.1 Fare Structure Changes

The MBTA did not propose any new fare structure changes for SFY 2015. However, the MBTA did implement several changes to the fare structure as part of the latest fare increase at the beginning in SFY 2013, including:

- Using the CharlieTicket single-ride adult price rather than the CharlieCard single-ride adult price for setting the adult base fare.
- Instituting a premium fare for trips using THE RIDE outside of the Americans with Disabilities Act (ADA)-mandated service area or hours—when the trip origin and/or destination is greater than three-quarter miles from, or outside of operating hours for, MBTA bus or rapid transit service—and for same-day and will-call trips.⁷
- Eliminating tokens. The MBTA allowed token-holders to redeem their tokens for CharlieCard or CharlieTicket value until late July 2012.
- Adding a monthly student pass that is valid seven days per week to the existing five-day student pass, which is valid only Monday through Friday.
- Removing time restrictions on student passes.
- Changing the multi-ride ticket structure. Multi-ride tickets are now available for 10 rides for both commuter rail and ferry service, and the previous 12-ride commuter rail ticket and 60-ride ferry ticket were eliminated. In addition, the duration of the validity for the multi-ride ticket was reduced from 180 days to 90 days.
- Providing a lower fare for all commuter rail tickets that are purchased off-board (in stations or other retail locations).

The MBTA chose to retain each of these fare structure changes in the SFY 2015 proposal.

3.2 Fare Changes: Single-Ride Fares and Pass Prices

Table 3-1 presents the key existing and proposed single-ride fares for each fare category, along with the percentage change in price from the existing to the proposed price. Table 3-2 presents the same information for the pass prices. Table 3-2 also presents the value of monthly passes in terms of their single-ride

⁷ Will-call trips are a type of same-day trip in which, although the passenger selects a time range for pick-up before the day of the trip, the passenger only specifies the exact pick-up time on the day of the trip.

equivalents, a concept discussed at the end of this section. This report did not analyze parking cost increases.

The overall price increase across all modes and fare/pass categories is 5.0%. This systemwide average is based on the percentage change between the existing average fare (total revenue divided by existing ridership) and the proposed average fare (total projected revenue divided by total projected ridership). Table 3-3 presents these average percentage increases by mode category. Note that the percentage changes in price can differ between modes that are similarly priced (such as local bus and the Silver Line–Washington Street, or subway and surface light rail) because of differences in how the riders on these modes pay for their trips (more riders use a monthly pass on the subway compared to the surface light rail system, for example).

The percentage changes in prices are relatively consistent across fare payment types. The most notable departures from the baseline are:

- THE RIDE's ADA fares decrease 25%—because of a policy decision made in January 2014
- Commuter rail interzone fares 1-3 increase almost 10%—a result of rounding
- One-day link pass cost increases 9%—a result of rounding

Another factor the MBTA considers when raising fares is the pass-ride value, which is the number of trips required at the lowest cost single-ride fare to expend the cost of the pass.⁸ Lower pass-ride values indicate that a passenger needs to make fewer trips to make the pass financially worthwhile. Table 3-2 presents the changes to the single-ride to-pass ratios. The changes in the single-ride to-pass ratios from the current fare structure are minimal, and the pass-ride values tend to be close to 32 trips per month.

⁸ For example, the monthly bus pass will cost \$50. The lowest price single-ride bus fare is \$1.60, which a passenger may obtain by using a CharlieCard. Thus, a \$50 monthly bus pass is equal to 31.25 single-ride CharlieCard bus trips.

TABLE 3-1.
Key Single-Ride Fares: Existing and Proposed

Fare Category	Existing Fare	Proposed Fare	Percent Change	Absolute Change
CharlieCard				
<i>Adult</i>				
Local Bus	\$1.50	\$1.60	6.7%	\$0.10
Rapid Transit	2.00	2.10	5.0	0.10
Bus + Rapid Transit	2.00	2.10	5.0	0.10
Inner Express	3.50	3.65	4.3	0.15
Outer Express	5.00	5.25	5.0	0.25
<i>Senior</i>				
Local Bus	\$0.75	\$0.80	6.7%	\$0.05
Rapid Transit	1.00	1.05	5.0	0.05
Bus + Rapid Transit	1.00	1.05	5.0	0.05
<i>Student</i>				
Local Bus	\$0.75	\$0.80	6.7%	\$0.05
Rapid Transit	1.00	1.05	5.0	0.05
Bus + Rapid Transit	1.00	1.05	5.0	0.05
CharlieTicket or Cash				
<i>Adult</i>				
Local Bus	\$2.00	\$2.10	5.0%	\$0.10
Rapid Transit	2.50	2.65	6.0	0.15
Bus + Rapid Transit	4.50	4.75	5.6	0.25
Inner Express	4.50	4.75	5.6	0.25
Outer Express	6.50	6.80	4.6	0.30
<i>Commuter Rail</i>				
Zone 1A	\$2.00	\$2.10	5.0%	\$0.10
Zone 1	5.50	5.75	4.5	0.25
Zone 2	6.00	6.25	4.2	0.25
Zone 3	6.75	7.00	3.7	0.25
Zone 4	7.25	7.50	3.4	0.25
Zone 5	8.00	8.50	6.3	0.50
Zone 6	8.75	9.25	5.7	0.50
Zone 7	9.25	9.75	5.4	0.50
Zone 8	10.00	10.50	5.0	0.50
Zone 9	10.50	11.00	4.8	0.50
Zone 10	11.00	11.50	4.5	0.50
InterZone 1	\$2.50	\$2.75	10.0%	\$0.25
InterZone 2	3.00	3.25	8.3	0.25
InterZone 3	3.25	3.50	7.7	0.25
InterZone 4	3.50	3.75	7.1	0.25
InterZone 5	4.00	4.25	6.3	0.25
InterZone 6	4.50	4.75	5.6	0.25
InterZone 7	5.00	5.25	5.0	0.25
InterZone 8	5.50	5.75	4.5	0.25
InterZone 9	6.00	6.25	4.2	0.25
<i>Ferry</i>				
F1: Hingham	\$8.00	\$8.50	6.3%	\$0.50
F2: Boston	8.00	8.50	6.3	0.50
F2: Cross Harbor	13.00	13.75	5.8	0.75
F2: Logan	16.00	17.00	6.3	1.00
F4: Inner Harbor	3.00	3.25	8.3	0.25
<i>THE RIDE</i>				
ADA Service Area	\$4.00	\$3.00	-25.0%	-\$1.00
Premium Service Area	5.00	5.25	5.0	0.25

**TABLE 3-2.
Pass Prices: Existing and Proposed**

Pass Category	Existing Fare	Proposed Fare	Percent Change	Absolute Change	Existing Pass Ride	Proposed Pass Ride
Local Bus	\$48.00	\$50.00	4.2%	\$2.00	32.00	31.25
LinkPass	70.00	75.00	7.1	5.00	35.00	35.71
Senior/TAP	28.00	29.00	3.6	1.00	28.00	27.62
Student 5-Day Validity	25.00	26.00	4.0	1.00	25.00	24.76
Student 7-Day Validity	28.00	29.00	3.6	1.00	28.00	27.62
1-Day	11.00	12.00	9.1	1.00	5.50	5.71
7-Day	18.00	19.00	5.6	1.00	9.00	9.05
Inner Express	110.00	115.00	4.5	5.00	31.43	31.51
Outer Express	160.00	168.00	5.0	8.00	32.00	32.00
<i>Commuter Rail</i>						
Zone 1A	\$70.00	\$75.00	7.1%	\$5.00	35.00	35.71
Zone 1	173.00	182.00	5.2	9.00	31.45	31.65
Zone 2	189.00	198.00	4.8	9.00	31.50	31.68
Zone 3	212.00	222.00	4.7	10.00	31.41	31.71
Zone 4	228.00	239.00	4.8	11.00	31.45	31.87
Zone 5	252.00	265.00	5.2	13.00	31.50	31.18
Zone 6	275.00	289.00	5.1	14.00	31.43	31.24
Zone 7	291.00	306.00	5.2	15.00	31.46	31.38
Zone 8	314.00	330.00	5.1	16.00	31.40	31.43
Zone 9	329.00	345.00	4.9	16.00	31.33	31.36
Zone 10	345.00	362.00	4.9	17.00	31.36	31.48
InterZone 1	\$82.00	\$86.00	4.9%	\$4.00	32.80	31.27
InterZone 2	100.00	105.00	5.0	5.00	33.33	32.31
InterZone 3	109.00	114.00	4.6	5.00	33.54	32.57
InterZone 4	118.00	124.00	5.1	6.00	33.71	33.07
InterZone 5	134.00	141.00	5.2	7.00	33.50	33.18
InterZone 6	151.00	159.00	5.3	8.00	33.56	33.47
InterZone 7	167.00	175.00	4.8	8.00	33.40	33.33
InterZone 8	184.00	193.00	4.9	9.00	33.45	33.57
InterZone 9	201.00	211.00	5.0	10.00	33.50	33.76
Commuter Boat	\$262.00	\$275.00	5.0%	\$13.00	32.75	32.35

**TABLE 3-3.
Weighted Average Percentage Change in Average Fares,
by Mode Category, for Unlinked Passenger Trips**

Mode Category	Percent Change
Bus	6.5%
Rapid Transit	5.7%
Subway	5.7
Silver Line–Washington St.	6.5
Silver Line–Waterfront	5.8
Surface Light Rail	5.7
Commuter Rail	4.9%
Zone 1A	5.4
Zone 1	4.9
Zone 2	4.4
Zone 3	4.3
Zone 4	4.4
Zone 5	5.6
Zone 6	5.2
Zone 7	5.2
Zone 8	5.0
Zone 9	4.8
Zone 10	4.8
InterZone	5.7
Onboard	5.0
Ferry	6.3%
F1: Hingham-Boston	6.2
F2: Boston	6.0
F2: Cross Harbor	5.7
F2: Logan	6.2
F4: Inner Harbor	7.6
THE RIDE	-19.3%
ADA Service Area	-24.2
Premium Service Area	4.8
Total System	5.0%

CHAPTER 4. RIDERSHIP AND REVENUE IMPACTS

4.1 Overview of Results

We project the proposed fare changes would increase the MBTA's revenue by between \$18.0 million (according to the travel demand model set) and \$24.5 million (according to the CTPS spreadsheet model). The estimated annual ridership losses are 2.8 million and 3.8 million, respectively. We expect to see additional utilization of THE RIDE—approximately 120,000 additional trips.

4.2 Spreadsheet Model Estimates

Projections

Table 4-1 presents CTPS's estimates of the fare revenue and ridership impacts of the fare increase produced using the spreadsheet model and its base elasticities.⁹ The existing fare revenue and ridership numbers, also presented, represent existing conditions prior to the fare increase.

The total projected fare revenue increase from the scenario is \$24.5 million, a 4.1 percent increase. We estimate the total projected ridership loss to be 3.8 million unlinked passenger trips, a 0.9 percent decrease. The projected revenue increases are, on a relative basis, fairly similar for all modes except for THE RIDE's ADA-fare, which received a significant price reduction in January 2014—no further fare increase is proposed for SFY 2015. The MBTA will derive the plurality of its new fare revenue from the heavy rail system (\$8.6 million). The ferry system is expected to have the highest percentage—but lowest absolute—decrease in ridership (-1.6 percent). Ferry riders are more sensitive to the price of their fares compared to the riders on other modes.

We expect THE RIDE's January 2014 ADA-fare decrease to increase use of the service. With the combined effect of the decrease of the ADA-fare and increase of the premium fare, we estimate that there will be an additional 120,000 trips made on THE RIDE. The current average variable cost of operating a trip on THE RIDE is approximately \$43.¹⁰ These new trips will cost the MBTA slightly more than \$5 million to operate—eroding a significant portion of the new revenue generated by the fare increase.

⁹ See Chapter 2 for a discussion of the range of elasticities used in this analysis.

¹⁰ A variable cost is a cost that changes as the quantity of service provided changes. This includes fuel costs and driver wages. Fixed costs do not change as the quantity of service provided changes. Fixed costs could include costs associated with storage facilities and certain administrative costs.

**TABLE 4-1.
Spreadsheet Model Estimates of Annual Ridership Impacts
(in Unlinked Passenger Trips)**

Mode	Existing Fare Revenue	Revenue Change	Revenue Change	Existing Ridership	Ridership Change	Ridership Change
Bus	\$105,816,930	\$5,692,577	5.4%	117,087,612	-1,167,676	-1.0%
Heavy Rail	185,661,914	8,623,282	4.6	162,113,109	-1,573,044	-1.0
Light Rail	73,156,619	3,323,908	4.5	78,532,906	-831,085	-1.1
Commuter Rail	183,512,995	7,674,689	4.2	35,323,276	-247,526	-0.7
Ferry	8,504,104	390,059	4.6	1,256,705	-19,701	-1.6
THE RIDE	6,997,234	-1,002,010	-14.3	1,936,098	119,219	6.2
Parking	39,109,795	-202,923	-0.5	7,166,047	-35,818	-0.5
Total System	602,759,591	24,499,582	4.1%	403,415,753	-3,755,632	-0.9%

Notes: The average variable cost of each RIDE trip to the MBTA is \$42.66. The combined changes to THE RIDE's fares will induce ridership, causing the MBTA to pay approximately \$5 million in additional operating expenses. Subtracting these new operating costs from the new revenue, the net fiscal impact would be \$19,414,000.

Note that parking ridership and revenue losses are not a result of parking price increases, but rather they are a result of riders who once parked no longer parking because another part of their trip became more expensive.

In this table, "Fare Revenue" includes revenue generated from parking at lots where the MBTA retains the revenue. "Ridership" includes the number of vehicles that parked at these lots.

Sensitivity Analysis

Table 4-1 presents the results of the spreadsheet model using the base elasticities. Table 4-2 presents a sensitivity analysis of the spreadsheet model, showing the range of estimated fare revenue and ridership impacts using the range of elasticities shown in Table 2-1. In the ranges of ridership-change estimates in the table, the greater losses are those resulting from the higher range of elasticities, while in the ranges of fare-revenue-increase estimates, the greater increases are those resulting from the lower range of elasticities.

The use of the higher range of elasticities results in much greater estimates of ridership losses: 6.0 million unlinked trips, compared to 1.7 million using the lower range of elasticities; using the base range of elasticities results in a loss of 3.8 million unlinked passenger trips. As a result, the projected revenue gain from the fare increase estimated using the higher range of elasticities is approximately \$21.1 million, compared to \$27.5 million using the lower range of elasticities; using the base range of elasticities results in an increase of \$24.5 million as shown in Table 4-1.

TABLE 4-2.
Spreadsheet Model Ranges of Estimates of Annual Ridership and
Fare Revenue Impacts using Low and High Elasticities

Mode	Range of Increases in Revenue (\$ in Millions)	Range of Revenue Percent Increases	Difference between Maximum and Minimum	Range of Ridership Changes (Trips in Millions)	Range of Ridership Percent Changes	Difference between Maximum and Minimum
Bus	\$5.0 to \$6.4	4.7% to 6.0%	\$1.4	-0.55 to -1.81	-1.5% to -0.5%	1.26
Heavy Rail	7.4 to 9.8	4.0 to 5.3	2.3	-0.69 to -2.49	-1.5 to -0.4	1.80
Light Rail	2.9 to 3.8	3.9 to 5.2	0.9	-0.39 to -1.28	-1.6 to -0.5	0.89
Commuter Rail	6.7 to 8.4	3.7 to 4.6	1.6	-0.11 to -0.43	-1.2 to -0.3	0.32
Ferry	0.3 to 0.4	3.9 to 5.2	0.1	-0.01 to -0.03	-2.2 to -1.0	0.01
THE RIDE	-1.1 to -0.9	-15.7 to -12.9	0.2	0.15 to 0.09	4.4 to 7.9	0.07
Parking	-0.4 to -0.1	-0.9 to -0.2	0.3	-0.01 to -0.06	-0.9 to -0.2	0.05
Total System	\$21.1 to 27.5	3.5% to 4.6%*	\$6.4	-1.69 to -5.95	-1.5% to -0.4%*	4.26

*These values refer to the percentage increase for the total changes in revenue or ridership systemwide compared to the existing systemwide values. That is, the 4.6% revenue increase means the total revenue increase for the low elasticity iteration of the spreadsheet model represents a 4.6% increase systemwide in revenue over the existing systemwide revenue. The 4.6% relative increase corresponds to a \$27.5 million increase.

In this table, "Fare Revenue" includes revenue generated from parking at lots where the MBTA retains the revenue. "Ridership" includes the number of vehicles that parked at these lots.

Where applicable, the MBTA also accounts for the cost of changing the levels of service provided on the system. While the MBTA recognizes the inherent value to its customers of each trip made on its system, it is necessary to consider the cost associated with increased utilization of THE RIDE—a significant item in the MBTA's budget. Table 4-3 explores the change in the cost of operating the RIDE based on riders' reaction to the fare changes.

Although we account for increased operating costs for the additional ridership on THE RIDE, we do not account for decreased operating costs resulting from decreased ridership on other modes. Decreased demand on the other modes would only translate to savings in operating costs if the MBTA reduces service levels, which the MBTA does not plan to do.¹¹

¹¹ It is relatively easy to save on operating costs with THE RIDE: If a trip is not taken, the MBTA does not pay for the service. On the MBTA's other modes, given constant service levels, if a passenger does not take a trip, the bus, train, or boat must still operate to serve the remaining passengers.

TABLE 4-3.
Spreadsheet Model Estimates of Annual Ridership and Fare Revenue Impacts Using Low, Base, and High Elasticities (THE RIDE)

Analysis Category	Low Elasticity	Base Elasticity	High Elasticity
Change of Ridership	85,156	119,219	153,281
Change of Revenue	-\$1,101,196	-\$1,002,010	-\$902,823
Additional Operating Costs	3,632,767	5,085,874	6,538,980
Net Impact (Revenue-Operating Costs)	-\$4,733,963	-\$6,087,884	-\$7,441,804

4.3 Regional Travel Demand Model Set Estimates

Projections

Table 4-4 presents estimates of the annual fare revenue and ridership impacts of the proposed changes using the regional travel demand model set. The travel demand model set projects that the greatest *absolute* increase in fare revenue would occur on heavy rail, and the greatest relative increase would occur on *bus*—comparatively few riders leave the bus system because its fares are low relative to the other modes. The greatest percentage decreases in ridership are on ferry and commuter rail. Riders on these modes already pay relatively high fares and pass prices. Given the relatively large absolute fare increase, the travel demand model predicts that riders on these modes would be much more likely to switch to a less expensive mode. Some riders might switch to the heavy or light rail system, offsetting some of those modes' ridership losses.

TABLE 4-4.
Travel Demand Model Set Estimates of Annual Revenue and Ridership Impacts

Mode	SFY 2013 Existing Fare Revenue	Revenue Change	Revenue Change	SFY 2013 Existing Ridership	Ridership Change	Ridership Change
Bus	\$105,816,930	\$6,215,418	5.9%	117,087,612	-439,573	-0.4%
Heavy Rail	185,661,914	9,015,380	4.9	162,113,109	-1,115,992	-0.7
Light Rail	73,156,619	3,569,269	4.9	78,532,906	-525,366	-0.7
Commuter Rail	183,512,995	2,714,341	1.5	35,323,276	-744,964	-2.1
Ferry	8,504,104	-282,075	-3.3	1,256,705	-102,552	-8.2
THE RIDE	<i>see spreadsheet model results</i>			<i>see spreadsheet model results</i>		
Parking	39,109,795	-169,021	0.4	7,166,047	-40,071	-0.6
Total System	\$602,759,591	\$20,061,301	3.3%	403,415,753	-2,849,299	-0.7%

Notes: This table does not show the additional cost to operate the additional trips on THE RIDE—approximately \$5 million.

Total system values include the spreadsheet model's results (Table 4-1) for the effects on THE RIDE users; the regional travel demand model set does not account for trips made on THE RIDE. In this table, "Fare Revenue" includes revenue generated from parking at lots where the MBTA retains the revenue. "Ridership" includes the number of vehicles that parked at these lots.

The results from the regional travel demand model set suggest that the proposed fare increase has a significantly greater impact on ferry customers compared to other riders.

4.4 Comparison of Model Results: Ranges of Projected Impacts

Table 4-5 and Table 4-6 present the projected ranges of ridership impacts and fare revenue impacts resulting from the proposed SFY 2015 fare increase. By using both the spreadsheet and travel demand model set, we created a range of probable impacts. Tables 4-5 and 4-6 show that the travel demand model set estimates a smaller loss of ridership and a smaller increase in revenue compared to the spreadsheet model using the base elasticities.

Using the travel demand model set, CTPS projects a decrease of 2.8 million unlinked trips, or a 0.7 percent decrease, compared to a decrease of 3.8 million unlinked trips, or a 0.9 percent decrease, using the spreadsheet model. The projections from the travel demand model set show similar ridership decreases in the heavy rail, light rail, and bus modes and larger ridership decreases in the commuter rail and ferry categories compared to the spreadsheet model.

While the travel demand model set appears to estimate a less elastic response of riders overall to the fare increase than the spreadsheet model, on a mode-by-mode basis, the results are quite similar for the heavy and light rail systems. The regional travel demand model set predicts a smaller shift away from the bus system. These riders have less choice and few cheaper modes to which they can switch.

The regional travel demand model set predicts a large decrease in commuter rail and ferry ridership partly because the already high cost of these modes makes driving a relatively more competitive option than it is for users of other transit modes.

TABLE 4-5.
Spreadsheet Model and Travel Demand Model Set Ridership Impacts

Mode	Existing Ridership	Spreadsheet Model			Travel Demand Model Set		
		Projected	Change	Change	Projected	Change	Change
Bus	117,087,612	115,919,936	-1,167,676	-1.0%	116,648,039	-439,573	-0.4%
Heavy Rail	162,113,109	160,540,065	-1,573,044	-1.0	160,997,117	-1,115,992	-0.7
Light Rail	78,532,906	77,701,821	-831,085	-1.1	78,007,541	-525,366	-0.7
Commuter Rail	35,323,276	35,075,750	-247,526	-0.7	34,578,312	-744,964	-2.1
Ferry	1,256,705	1,237,004	-19,701	-1.6	1,154,153	-102,552	-8.2
THE RIDE	1,936,098	2,055,317	119,219	6.2	<i>see spreadsheet model results</i>		
Parking	7,166,047	7,130,229	-35,818	-0.5	7,125,975	-40,071	-0.6
Total System	403,415,753	399,660,121	-3,755,632	-0.9%	400,566,454	-2,849,299	-0.7%

Notes: Total system values include the spreadsheet model's results (Table 4-1) for the effects on THE RIDE users; the regional travel demand model set does not account for trips made on THE RIDE.

In this table, "Fare Revenue" includes revenue generated from parking at lots where the MBTA retains the revenue. "Ridership" includes the number of vehicles that parked at these lots.

TABLE 4-6.
**Spreadsheet Model and Travel Demand Model Set
Fare Revenue Projections**

Mode	Existing Revenue	Spreadsheet Model			Travel Demand Model Set		
		Projected	Change	Change	Projected	Change	Change
Bus	\$105,816,930	\$111,509,507	\$5,692,577	5.4%	\$112,032,348	\$6,215,418	5.9%
Heavy Rail	185,661,914	194,285,196	8,623,282	4.6	194,677,294	9,015,380	4.9
Light Rail	73,156,619	76,480,527	3,323,908	4.5	76,725,888	3,569,269	4.9
Commuter Rail	183,512,995	191,187,684	7,674,689	4.2	186,227,336	2,714,341	1.5
Ferry	8,504,104	8,894,163	390,059	4.6	8,222,029	-282,075	-3.3
THE RIDE	6,997,234	5,995,224	-1,002,010	-14.3	<i>see spreadsheet model results</i>		
Parking	39,109,795	38,906,872	-202,923	-0.5	38,940,774	-169,021	-0.4
Total System	\$602,759,591	\$627,259,173	\$24,499,582	4.1%	\$622,820,893	\$20,061,301	3.3%

Notes: Total system values include the spreadsheet model's results (Table 4-1) for the effects on THE RIDE users; the regional travel demand model set does not account for trips made on THE RIDE.

In this table, "Fare Revenue" includes revenue generated from parking at lots where the MBTA retains the revenue. "Ridership" includes the number of vehicles that parked at these lots.

In terms of annual fare revenue, projections from the travel demand model set show a gain of \$20.0 million, or a 3.3 percent increase, compared to a gain of \$24.5 million, or a 4.1 percent increase, from the spreadsheet model. Comparing modes, the travel demand model set and the spreadsheet model arrive at similar results for the bus, heavy rail, and light rail systems. The bus revenue estimate

from the travel demand model set is slightly higher than those for the other modes; we primarily attribute this to fewer bus riders leaving the system.

While the results from the travel demand model set and the spreadsheet model are similar for the bus, heavy rail, and light rail systems, their projected revenues are notably different for the ferry system: the travel demand model set predicts that revenue will decrease, and the spreadsheet model predicts that revenue will increase. The spreadsheet model provided a more accurate representation of the change in ferry ridership resulting from the SFY 2013 fare increase than the regional travel demand model, which predicted a significantly higher loss in ridership for the ferry system than actually occurred. Given the results from the previous fare increase, we are more confident in the spreadsheet model's projections for the ferry system. Regardless, the MBTA will pay close attention to the revenue from the ferry system to inform the assessment of future fare increases.

As was the case in the ridership projections, it appears that the differences between the models' revenue estimates can be at least partly explained by the travel demand model set's projected diversion of commuter rail and ferry riders to other, cheaper transit modes. Overall, this diversion represents a loss in fare revenue, as riders switch from a higher-priced travel option to a lower-priced option. Further, the travel demand model set projects that riders on higher-priced modes are more likely to switch modes. When riders switch from high-priced modes, they contribute a greater loss in revenue per passenger than riders switching from less expensive modes. Indeed, the revenue estimates projected by the travel demand model set for the commuter rail and ferry modes result in the travel demand model set's overall projection of total fare revenue being less than that of the spreadsheet model.

Taken together, the projections shown in these tables provide a range of outcomes from the proposed fare increase in terms of ridership and fare revenue impacts.

CHAPTER 5. AIR QUALITY IMPACTS

5.1 Background

The Boston Region MPO's travel demand model set can determine air quality impacts resulting from the proposed fare increase. Typically, CTPS uses the travel demand model set to estimate future traffic characteristics—traffic volumes, average highway speeds, vehicle-miles and vehicle-hours traveled—within the region's transportation network. Since the amount of air pollution emitted by highway traffic depends on the prevailing highway speeds, vehicle-

miles traveled, and other factors, it is possible to estimate these air quality impacts with reasonable accuracy.

Air pollutants produced by vehicles generally fall into two groups: gaseous and particulate. Examples of gaseous pollutants include carbon monoxide (CO), volatile organic compounds (VOC) (or compounds that easily evaporate at room temperature), nitrogen oxides (NO_x), and carbon dioxide (CO₂). In addition, there are the photochemical oxidants (such as ozone), which are not directly emitted from vehicles but form when VOC and NO_x chemically react in the presence of sunlight and warm temperatures. Particulate pollutants produced by vehicles are commonly broken into two categories: fine particulates—those with a diameter of 2.5 micrometers or less (particulate matter (PM)-2.5); and coarse particulates—those with a diameter between 2.5 and 10 micrometers (PM-10).

Under the Clean Air Act, the US Environmental Protection Agency (EPA) sets standards for various types of emissions. Historically, the EPA has regulated particulates, CO, and ground-level ozone, all of which are hazardous to human health. The Boston Region MPO is currently required to report the amount of CO, NO_x, and VOC produced by the regional transportation system in such documents as the Transportation Improvement Program and the Long-Range Transportation Plan. Because of its contribution to climate change, CO₂ also is an important type of emission to measure.

CTPS employs emission rates for the year 2012 from the EPA Motor Vehicle Emission Simulator (MOVES) 2010b model for calculating amounts of pollutants. For each link within the highway network, the travel demand model set applies the MOVES emission factors corresponding to the link's average speed, land use (urban or rural), and roadway type (freeway or arterial), and estimates the emissions of pollutants based on the vehicle-miles traveled on that link by vehicle type. We obtain the total amount of emissions of a pollutant in the entire region by summing the quantities associated with the individual links in the system.

5.2 Estimated Air Quality Impacts

With respect to the proposed fare increase, transit users who switch to private automobiles are a primary cause of negative air quality impacts. A reduction in transit trips and an escalation of automobile trips generally increases CO, VOC, NO_x, CO₂, and particulate matter, which we quantify in the manner described in the previous section. Note that as the numbers of automobile trips and vehicle-hours increase, the congestion on area roadways also increases. This additional congestion results in lower travel speeds, which are associated with higher emissions of most pollutants, for all vehicles—not just those of former transit users.

After calculating the ridership impacts as described earlier in this report, CTPS used the model set to estimate the change in regional vehicle-miles traveled and average speed for automobiles and transit vehicles. Specifically, for automobiles, the path of each automobile trip made by a former transit user was identified and the travel times for all automobile trips were estimated. CTPS applied emission factors provided by the EPA to these data.

Table 5-1 shows the results of the model set's air quality analysis. We expect automobile vehicle-miles and vehicle-hours traveled to increase and average speeds to decrease. The projected regional change in emissions of each of the selected pollutants is the sum of automobile and transit emissions.

The proposed scenario results in extremely small increases in all pollutant emissions—none of the emissions increase by more than one-tenth of one percent. Air quality should remain fundamentally unchanged.

TABLE 5-1.
Projected Average Weekday Changes in Selected Pollutants
(MBTA Service Area)

Indicator/Pollutant	Initial Value	Absolute Change	Percent Change
Automobile vehicle-miles traveled	680,450,717	39,228	0.04%
Automobile vehicle-hours traveled	2,266,007	2,681	0.09
Automobile average miles-per-hour	30.21	-0.02	-0.05
Carbon monoxide (kg)	265,470	167	0.04
Nitrogen oxides (kg)	40,138	20	0.03
Volatile organic compounds (kg)	7,963	6	0.06
Carbon dioxide (kg)	31,623,622	24,471	0.05
Fine particulates, PM-2.5 (kg)	1,102.9	0.4	0.03
Coarse particulates, PM-10 (kg)	1,163.0	0.4	0.02

CHAPTER 6. FARE EQUITY ANALYSIS

6.1 Requirements

Title VI of the Civil Rights Act of 1964 prohibits discrimination, either intentionally or unintentionally, by recipients of federal financial assistance on the basis of race, color or national origin. To comply with 49 CFR Section 21.5(b) (2), 49 CFR Section 21.5(b) (7), and Appendix C to 49 CFR Part 21, the MBTA must evaluate any fare changes to *fixed-route* modes prior to implementing them to determine if the proposed changes would have a discriminatory effect. This requirement applies to any fare change. The FTA provides guidance for conducting fare equity analyses in FTA Circular 4702.1B ("Circular"), Section IV.7.b. Prior to a fare change, the MBTA must analyze any available information generated from ridership surveys that indicates whether minority and/or low-income riders are disproportionately more likely to use the mode of service, payment type, or

payment media that would be subject to fare change. In addition, the MBTA must describe the datasets and collection methods used in its analysis.

The Circular states that the transit provider shall:

1. Determine the number and percentage of users of each fare media subject to change
2. Review fares before and after the change
3. Compare the relative cost burden impacts of the proposed fare change between minority and overall users for each fare media
4. Compare the relative cost burden impacts of the proposed fare change between low-income and overall users for each fare media

Under Title VI of the Civil Rights Act of 1964 and other directives, the FTA requires that transit agencies develop a policy to assess whether a proposed fare change would have a “disparate impact” on minority populations or “disproportionate burden” on low-income populations. The FTA Title VI guidelines define “disparate impact” as “a facially neutral policy or practice that disproportionately affects members of a group identified by race, color, or national origin, where the recipient’s policy or practice lacks a substantial legitimate justification and where there exists one or more alternatives that would serve the same legitimate objectives, but with less disproportionate effects on the basis, of race, color, or national origin,” and “disproportionate burden” as “a neutral policy or practice that disproportionately affects low-income populations more than non-low income populations. A finding of disproportionate burden requires the recipient to evaluate alternatives and mitigate burdens where practicable.

6.2 Proposed Disparate-Impact and Disproportionate-Burden Policies

Policies

The MBTA has proposed the following policy thresholds for determining a disparate impact or disproportionate burden from a fare increase:

- A disparate benefit would be found if minority riders receive less than 80 percent of the benefit that all riders receive.
- A disproportionate benefit would be found if low-income riders receive less than 80 percent of the benefit that all riders receive.
- A disparate burden would be found if minority riders sustain more than 20 percent additional burden than the total burden that all riders sustain.
- A disproportionate burden would be found if low-income riders sustain more than 20 percent additional burden than the total burden that all riders sustain.

The draft policy is encapsulated in the following equations:

A disparate impact would be found if:

- $\text{Minority Benefit} < 80\% \times \text{All-Rider Benefit}$
- $\text{Minority Burden} > 120\% \times \text{All-Rider Burden}$

A disproportionate burden would be found if:

- $\text{Low-income Benefit} < 80\% \times \text{All-Rider Benefit}$
- $\text{Low-income Burden} > 120\% \times \text{All-Rider Burden}$

Upon finding a disparate impact or disproportionate burden based on a Title VI evaluation using the above proposed threshold policy definition, the MBTA shall consider modifying the proposed changes in order to avoid, minimize, or mitigate the disparate impacts or disproportionate burdens of the proposed changes.

Demographics and Definitions

Demographics

The systemwide demographic profile in Table 6-1 below shows how the MBTA's ridership characteristics in terms of minority and income status vary by mode. Minority and low-income profile data of the MBTA's ridership is from the MBTA 2008–09 Systemwide Passenger Survey report published in July 2010.

**TABLE 6-1.
Demographic Profile of MBTA Riders by Mode**

Mode	Minority	Nonminority	Low-Income	Non-Low-Income
Rapid Transit	27.5%	72.5%	24.1%	75.9%
Bus and Trackless Trolley	46.5	53.5	41.5	58.5
Commuter Rail	13.9	86.1	7.2	92.8
Commuter Ferry and Boat	5.7	94.3	4.5	95.5
Total	33.0%	67.0%	28.5%	71.5%

Minority- and Low-Income Populations

The MBTA uses both United States Census data and passenger survey data to define minority- and low-income populations. The census data is used when considering impacts on area residents. The survey data is used to assess impacts on riders.

Using the census data, the MBTA defines minority- and low-income populations based on the average percentage of minority residents and average income levels for the service area. For the MBTA service area, these were identified for each census tract and TAZ. Minority census tracts and TAZs were defined as

those in which the percentage of the non-white population (including the Hispanic population) was greater than the average for the MBTA service area. The average percentage of minority residents is 26.2 percent in the service area. A census tract or TAZ is classified as low-income if its income level is at or below 60 percent of the median household income in the service area. For the 175-community MBTA service area 60% of household median income is \$41,636.¹²

When using the MBTA Systemwide Passenger Survey as a basis for analysis, the definition of a minority rider mirrors the definition provided above: a minority rider is a person who is non-white or Hispanic. A low-income individual is a person whose household income is less than \$40,000—the income category from the survey that most closely matched the census-defined low-income threshold.

Please see Appendix D for a sample application of the proposed disparate-impact policy.

Public-Engagement Process

It is the MBTA's policy that a proposed fare increase would be developed with extensive public input and would be adopted only after consultation with the Rider Oversight Committee (ROC), public comment, public meetings/hearings, MBTA Advisory Board review, and MBTA Board of Directors approval. The MBTA met with an MBTA stakeholder group, which consists of various community groups, transit advocacy groups (including the ROC), and other parties in early December 2013, to discuss the upcoming fare increase.

The MBTA plans to conduct an outreach program to inform the public about the proposed fare increase and solicit comment. During this period, the MBTA will hold public meetings and a hearing and accept written comments via mail, email, telephone, and the MBTA website. The MBTA will send a press release to area newspapers, announce the proposed fare increase on the MBTA and MassDOT websites, and send a blast email message to the MBTA, MassDOT, and Boston Region MPO's contact lists.

The MBTA will post documents relevant to the proposed fare increase on its website, including an informational brochure that describes the reasons for the need to increase fares; summarizes the impact of the proposed fare increase; and invites members of the public to attend public meetings, a public hearing, and comment via email or the MBTA website. The brochure will be posted in

¹² Median household income was determined based on the 2007-2011 American Community Survey. Minority percentages were determined based on the 2010 US Census.

English and in the languages of the largest limited-English-proficiency populations in the MBTA service area. The MBTA will also post notices about the proposed fare increase and opportunities for public engagement throughout the system, which will be in languages other than English as determined by the four-factor analysis.

As stipulated in the MBTA's public process for changing fares, the MBTA must hold at least five public meetings for fare increases of less than 10%.¹³ One or more of these meetings may be designated as a public hearing, which will be held in a central location within the MBTA service district. At these meetings, interpreters will be present and translated documents will be available.

The MBTA will hold five meetings at the following dates and locations:

- April 7 Roxbury Community College
- April 9 Lynn City Council Chambers
- April 16 Braintree Town Hall
- April 16 Shriners Auditorium
- April 22 State Transportation Building (public hearing)

The MBTA chose these meeting locations to offer access to stakeholders through the MBTA service area and to include locations with significant minority, low-income, and limited-English proficiency (LEP) populations. All of the meeting locations are accessible to people with disabilities, and assistance such as handouts in alternate formats and interpretation (American Sign Language or other non-English languages) will be provided as needed.

While the trigger for these meetings is the minor fare increase, the MBTA also will use them as an opportunity to engage the public in the decision-making process to develop the disparate-impact and disproportionate-burden policies.

6.3 Datasets, Data Collection Efforts, and Descriptions

CTPS used several datasets in the fare equity analysis:

- 2010 census and 2007–11 American Community Survey demographic data
- Boston Region MPO travel demand model set
- CTPS spreadsheet model
- MBTA 2008–09 Systemwide Passenger Survey, published in July 2010
- The Rhode Island Commuter Rail Service Passenger Surveys Summary Report

¹³ www.mbta.com/about_the_mbta/news_events/?id=17437

The US Census provides a count of total population and population by ethnicity every 10 years; the most recent Census occurred in 2010. Data on population by income level is no longer collected as part of the decennial Census. Instead, we used more recent estimates from the American Community Survey (ACS)—which has replaced the long form of the decennial US Census, and provides estimates of total population as well as population by ethnicity and income level. We used ACS five-year estimates for the 2007–11 period—the most recently available data at the time we began our Title VI analysis. We used data from these sources to determine whether the units of analysis (census tracts or TAZs) were minority, nonminority, low-income, or non-low-income.

The Boston Region MPO travel demand model set simulates travel on the transportation network in eastern Massachusetts, including both the transit and highway systems—which includes all express highways, principal arterial roadways, and many minor arterial and local roadways. It also covers all MBTA commuter rail, rapid transit, and bus services, as well as all private express bus services. The model set reflects service frequency, routing, travel time, and fares for these services. The travel demand model set uses a traditional four-step, sequential process: trip generation, trip distribution, mode choice, and trip assignment. The results of this process are used to estimate average daily transit ridership and projected highway travel conditions, among other measures. We used the model set to analyze MBTA ridership and revenue impacts as a result of the proposed fare increase. (See Chapter 2 for more detailed information about this process.)

The CTPS spreadsheet model is elasticity based. CTPS has used this model in the past to provide inputs to the fare-increase analysis process. The spreadsheet model takes existing ridership in the form of unlinked trips by mode, fare-payment type, and fare media as inputs. The MBTA provides CTPS with ridership data from the automated fare collection system. For modes that are not yet part of the AFC system, the MBTA provides data (most notably, sales data for transit passes) to estimate ridership. Using these input data, the spreadsheet model employs elasticities and diversion factors to model a range of possible impacts resulting from changes to the MBTA's fares. (See Appendix A and Chapter 2 for further detail.)

The MBTA 2008–09 Systemwide Passenger Survey report, published in July 2010, included all of the modes operated by the MBTA—the Red, Blue, Orange, and Green Lines; the commuter rail system; the bus system; and the ferry system. The questions asked for each mode varied based on the specific characteristics of the given mode; but common among all of the surveys were questions regarding origins, destinations, frequency of travel, and most important to this equity analysis, fare payment method, usage frequency, race, and income.

In general, CTPS staff distributed the surveys from early morning until midafternoon. Each survey result was expanded to represent typical boardings during the survey hours. The systemwide survey was used in conjunction with the CTPS spreadsheet model to estimate the number of riders using each fare type and the fare changes for low-income, minority, and all riders.

The Rhode Island Department of Transportation (RIDOT) published the Rhode Island Commuter Rail Service Passenger Surveys Summary Report in August 2012.¹⁴ RIDOT conducted the survey in June 2012. It distributed 245 surveys containing questions regarding race, ethnicity, and income at two MBTA stations (Wickford Junction and T.F. Green); 195 surveys were returned. Assuming the agency attempted to hand a survey to each rider, this represents an 80% return rate.

6.4 Equity Analysis and Results

We used two approaches to project the impacts of the proposed fare increase on MBTA riders. One approach utilized the elasticity-based spreadsheet model to evaluate projected changes in fares for minority and low-income riders versus those for all riders. The second approach consisted of applying the Boston Region MPO's regional travel demand model set to evaluate the impacts on these same classifications of riders.

Analysis Using the Spreadsheet Model

CTPS used the MBTA Systemwide Survey in conjunction with the spreadsheet model to determine the number of riders using each fare type and the price change by fare type for minority, low-income, and all riders. Because the model's ridership values are in trips and the survey's values are in riders, CTPS used the survey responses for the frequency of travel, fare type, and minority status to translate surveyed riders into trips per surveyed rider by fare type by minority status and income status.

We used the equation below to determine the number of days per week a fare is used by a demographic classification by weighting each survey response by the number of days per week the pass is used—data we also obtained from the systemwide survey. If 1,000 minority riders use monthly passes five days per week and 200 minority riders use monthly passes seven days per week, the average weighted usage per week for the minority riders using passes is equal to 5.33 days per week:

¹⁴ Rhode Island Commuter Rail Service Passenger Surveys: Summary Report. Aug. 2012 www.dot.ri.gov/documents/intermodal/2012_Commuter_Rail_Survey.pdf.

$$\text{Minority Pass Usage} = \frac{1,000 \times 5 + 200 \times 7}{1,000 + 200} = 5.33$$

If minority riders used passes 5.33 days per week, and nonminority riders used passes 4.25 days per week, and minority riders made up 25% of the total pass fares, the percentage of minority riders using that fare type is:

$$\text{Minority Pass Percentage} = \frac{5.33 \times 25\%}{(5.33 \times 25\%) + (4.25 \times 75\%)} = 29.5\%$$

We used this procedure for each of the pass types to estimate the share of riders by demographic classification who use each fare type. We multiplied the resulting percentage by the total number of trips made using a fare type to estimate the number of riders by classification by fare. If the MBTA recorded 50 million total trips made using passes, the minority usage would be:

$$\text{Total Minority Usage} = 29.5\% \times 50 \text{ million trips} = 14.8 \text{ million trips}$$

Table 6-2 provides a data snapshot of fare type usage by demographic group.¹⁵ Low-income riders are somewhat more likely to use single-ride fares. When using a single-ride fare, minority riders and low-income riders are more likely to be on a bus and paying a student or senior fare. In an effort to minimize the impact of the fare increase on minority and low-income riders, the MBTA increased senior and student bus fares as little as possible—\$0.05. While the single-ride bus fare was increased \$0.10, which is slightly more than average on a relative basis, riders who currently use a CharlieTicket can obtain a CharlieCard to gain access to lower single-ride fares.

¹⁵ Minority and low-income riders share some of the same payment characteristics; however, the difference between how low-income riders and all riders pay is significantly more notable than the difference between payment trends of minority riders and all riders.

TABLE 6-2.
Minority, Low-Income, and All Riders Using
Each Principal Fare-Payment Type

Fare-Payment Type	Price		Change		Annual Usage by Group: Total Trips			Annual Usage by Group: Percent of Group Total		
	Existing	Proposed SFY 2016	Absolute	Percent	Minority	Low-Income	All Riders	Minority	Low-Income	All Riders
SINGLE-RIDE FARES								26.9%	30.0%	27.2%
<i>CharlieCard</i>										
Adult										
Local Bus	\$1.50	\$1.60	\$0.10	6.7%	8,983,000	7,725,000	17,090,000	6.4%	5.9%	4.4%
Rapid Transit	2.00	2.10	0.10	5.0%	10,436,000	10,263,000	38,134,000	7.4%	7.9%	9.8%
Bus + Rapid Transit	2.00	2.10	0.10	5.0%	3,553,000	3,193,000	8,715,000	2.5%	2.4%	2.2%
Inner Express	3.50	3.65	0.15	4.3%	226,000	201,000	540,000	0.2%	0.2%	0.1%
Outer Express	5.00	5.25	0.25	5.0%	24,700	12,400	102,000	0.0%	0.0%	0.0%
Senior										
Local Bus	\$0.75	\$0.80	\$0.05	6.7%	1,718,000	3,449,000	4,582,000	1.2%	2.6%	1.2%
Rapid Transit	1.00	1.05	0.05	5.0%	1,032,000	2,283,000	4,179,000	0.7%	1.7%	1.1%
Bus + Rapid Transit	1.00	1.05	0.05	5.0%	533,000	1,104,000	1,645,000	0.4%	0.8%	0.4%
Inner Express	2.25	2.35	0.10	4.4%	4,400	38,300	75,700	0.0%	0.0%	0.0%
Outer Express	3.25	3.40	0.15	4.6%	NR	NR	13,700	0.0%	0.0%	0.0%
Student										
Local Bus	\$0.75	\$0.80	\$0.05	6.7%	1,522,000	1,477,000	1,979,000	1.1%	1.1%	0.5%
Rapid Transit	1.00	1.05	0.05	5.0%	807,000	658,000	1,252,000	0.6%	0.5%	0.3%
Bus + Rapid Transit	1.00	1.05	0.05	5.0%	333,000	309,000	456,000	0.2%	0.2%	0.1%
Inner Express	2.25	2.35	0.10	4.4%	19,800	30,600	32,600	0.0%	0.0%	0.0%
Outer Express	3.25	3.40	0.15	4.6%	NR	NR	500	0.0%	0.0%	0.0%
CharlieTicket										
Adult										
Local Bus	\$2.00	\$2.10	\$0.10	5.0%	2,001,000	2,016,000	3,406,000	1.4%	1.5%	0.9%
Rapid Transit	2.50	2.65	0.15	6.0%	5,288,000	5,501,000	14,442,000	3.8%	4.2%	3.7%
Bus + Rapid Transit	4.50	4.75	0.25	5.6%	7,600	7,600	14,100	0.0%	0.0%	0.0%
Inner Express	4.50	4.75	0.25	5.6%	40,600	46,800	90,200	0.0%	0.0%	0.0%
Outer Express	6.50	6.80	0.30	4.6%	4,900	NR	8,700	0.0%	0.0%	0.0%
Commuter Rail										
Zone 1A-10	\$2.00-\$11.00	\$2.10-\$11.50	\$0.10-\$0.50	3.4%-6.3%	1,092,000	774,000	8,324,000	0.8%	0.6%	2.1%
InterZone 1-9	\$2.50-\$6.00	\$2.75-\$6.25	\$0.25	4.2%-10.0%	20,600	14,600	157,400	0.0%	0.0%	0.0%
Ferry										
F1: Hingham	\$8.00	\$8.50	\$0.50	6.3%	19,100	7,300	541,000	0.0%	0.0%	0.1%
F2: Boston	8.00	8.50	0.50	6.3%	1,400	31,500	205,000	0.0%	0.0%	0.1%
F2: Cross Harbor	13.00	13.75	0.75	5.8%	200	500	1,900	0.0%	0.0%	0.0%
F2: Logan	16.00	17.00	1.00	6.3%	3,100	8,300	28,800	0.0%	0.0%	0.0%
F4: Inner Harbor	3.00	3.25	0.25	8.3%	20,900	14,700	220,000	0.0%	0.0%	0.1%
PASSES								50.3%	46.4%	49.1%
Local Bus	\$48.00	\$50.00	\$2.00	4.2%	3,243,000	2,527,000	5,498,000	2.3%	1.9%	1.4%
LinkPass	70.00	75.00	5.00	7.1%	30,072,000	20,774,000	91,766,000	21.5%	15.9%	23.5%
Senior/TAP	28.00	29.00	1.00	3.6%	3,919,000	7,561,000	11,532,000	2.8%	5.8%	2.9%
Student 5-Day	25.00	26.00	1.00	4.0%	5,943,000	5,383,000	9,007,000	4.2%	4.1%	2.3%
Student 7-Day	28.00	29.00	1.00	3.6%	622,000	564,000	943,000	0.4%	0.4%	0.2%
1-Day	11.00	12.00	1.00	9.1%	665,000	494,000	799,000	0.5%	0.4%	0.2%
7-Day	18.00	19.00	1.00	5.6%	21,249,000	21,505,000	44,721,000	15.2%	16.5%	11.4%
Inner Express	110.00	115.00	5.00	4.5%	639,000	351,000	2,190,000	0.5%	0.3%	0.6%
Outer Express	160.00	168.00	8.00	5.0%	107,000	30,100	375,000	0.1%	0.0%	0.1%
Commuter Boat	262.00	275.00	13.00	5.0%	8,000	7,400	265,000	0.0%	0.0%	0.1%
<i>Commuter Rail</i>										
Zone 1A-10	\$70.00-\$345.00	\$75.00-\$362.00	\$5.00-\$17.00	4.7%-7.1%	4,074,000	1,430,000	24,644,000	2.9%	1.1%	6.3%
Zone 1A	\$70.00	\$75.00	\$5.00	7.1%	706,000	394,000	2,261,000	0.5%	0.3%	0.6%
Zone 1	173.00	182.00	9.00	5.2%	247,000	82,400	1,609,000	0.2%	0.1%	0.4%
Zone 2	189.00	198.00	9.00	4.8%	471,000	156,000	3,871,000	0.3%	0.1%	1.0%
Zone 3	212.00	222.00	10.00	4.7%	558,000	150,000	3,931,000	0.4%	0.1%	1.0%
Zone 4	228.00	239.00	11.00	4.8%	671,000	215,000	3,646,000	0.5%	0.2%	0.9%
Zone 5	252.00	265.00	13.00	5.2%	285,000	89,700	2,035,000	0.2%	0.1%	0.5%
Zone 6	275.00	289.00	14.00	5.1%	561,000	139,000	3,689,000	0.4%	0.1%	0.9%
Zone 7	291.00	306.00	15.00	5.2%	323,000	104,000	1,762,000	0.2%	0.1%	0.5%
Zone 8	314.00	330.00	16.00	5.1%	245,000	93,400	1,782,000	0.2%	0.1%	0.5%
Zone 9	329.00	345.00	16.00	4.9%	5,800	4,900	45,200	0.0%	0.0%	0.0%
Zone 10	345.00	362.00	17.00	4.9%	900	1,000	12,700	0.0%	0.0%	0.0%
InterZone 1-9	\$82.00-\$201.00	\$86.00-\$211.00	\$4.00-\$10.00	4.6%-5.3%	18,300	5,400	113,800	0.0%	0.0%	0.0%
FREE TRANSFERS AND OTHER FARES								22.8%	23.7%	23.8%

Note: Values greater than 100,000 are rounded to the nearest 1,000. Values less than 100,000 are rounded to the nearest 100. Percentages are calculated using unrounded values.

NR indicates that no riders from a given classification responded to the survey.

Minority and low-income riders are more likely to use a 7-Day LinkPass than a monthly LinkPass compared to all riders.¹⁶ The MBTA added the 7-Day LinkPass during the 2007 fare structure changes to allow passengers who cannot afford to—or for some other reason do not—purchase a monthly pass at the beginning of the month to spread their purchases out over a longer period. Four 7-Day LinkPasses essentially cost the same as a monthly LinkPass (\$76 compared to \$75, respectively), unless an individual purchases a 7-Day LinkPass for all 52 weeks of the year. The 7-Day LinkPass is also somewhat more flexible—if someone knows s/he is not going to make enough trips in a given week for the pass to be worthwhile (say, during the winter holidays or school vacation), s/he can choose not to purchase it for that week. Further, the MBTA proposal includes relatively low fare increases to the monthly bus, senior, and student pass prices—fare products that likely would be used by minority and low-income riders.

At the beginning of SFY 2013, the MBTA introduced a monthly student pass that is valid seven days a week, in addition to the existing five-day student pass. This fare product was designed to provide more access at the lower pass prices for minority- and low-income students. However, sales of the seven-day student monthly pass appear to be lower than expected.¹⁷ The MBTA is reviewing ways to improve access to the seven-day student pass.

Minority Riders Compared to All Riders and Low-income Riders Compared to All Riders

Table 6-3 presents the existing and proposed average fares, the absolute price changes, and the relative price changes for minority riders, low-income riders, and all riders. As the Circular indicates, fare equity analyses are only applicable to fixed-route modes; neither THE RIDE nor parking is included in the following analysis. Minority and low-income riders pay lower average fares compared to the overall average fare for all riders. This is largely because nonminority and non-low-income riders use the commuter rail system and other more expensive modes more than minority and low-income riders. At the proposed fare levels, minority and low-income riders would continue to pay lower average fares.

¹⁶ The 7-Day LinkPass and the monthly LinkPass provide unlimited access to all local bus and rapid transit services.

¹⁷ The seven-day student pass was, and is proposed to remain, \$3 more than the five-day student pass. Many of the students likely would make at least three trips in a given month—the extra cost of the seven-day pass.

TABLE 6-3.
Existing and Proposed Average Fares and Price Changes
(Weighted by Fare Usage Frequency)

Rider Classification	Existing Average Fare	Proposed Average Fare	Absolute Price Change	Percentage Price Change
Minority	\$1.14	\$1.20	\$0.06	5.3%
Low-income	\$1.01	\$1.06	\$0.05	5.1%
All Riders	\$1.41	\$1.48	\$0.07	5.3%

Note: The values in this table are rounded to the nearest cent or the nearest tenth of a percent. All calculations were performed using unrounded values.

Results from Applying the Proposed Disparate-Impact and Disproportionate-Burden Policies

The results of the analysis show that there is no disparate impact on minority riders and no disproportionate burden on low-income riders when considering both the absolute and relative fare changes.

Application of the proposed disparate-impact policy shows:

The **absolute increase** in the average fare for minority riders is **81%** of the **absolute increase** in the average fare for all riders.

The **relative increase** (or the change taken as a percentage if the initial fare) in the average fare for minority riders is **101%** of the **relative increase** in the average fare for all riders.

Application of the proposed disproportionate-burden policy shows:

The **absolute increase** in the average fare for low-income riders is **69%** of the **absolute increase** in the average fare for all riders.

The **relative increase** in the average fare for low-income riders is **96%** of the **relative increase** in the average fare for all riders.

The fare changes affect the overall ridership more severely than minority or low-income riders when considering the absolute changes in fares; and affect overall ridership more than low-income riders when considering the relative changes in fares. While the relative change in fares is greater for minority riders than for all riders, the relative increase for minority riders is 1% greater than the increase for all riders. Because this is less than the 20% threshold in the disparate-impact policy, we do not find a disparate impact.

Analysis Using the MPO Travel Demand Model Set

CTPS used the regional travel demand model set to evaluate the impacts of the fare changes on minority and low-income populations for all modes except THE RIDE. There are three important issues to note concerning this analysis:

- The fares reported in Tables 6-4 and 6-5 are greater than the average fares quoted in other places in this report because they are linked rather than unlinked trips.
- The regional travel demand model set uses Census-based demographic data. As mentioned in the Circular, this is *not* FTA's preferred method of analysis. The regional travel demand model accounts for ridership by mode for each TAZ.
- Parking utilization and revenue is included in this analysis; a fare equity analysis does not generally include parking. Isolating parking revenue from the rest of the fares was not possible at the time of analysis.

Minority Riders Compared to All Riders and Low-income Riders Compared to All Riders

Table 6-4 presents the average prices, the absolute price changes, and the relative price changes for minority riders, low-income riders, and all riders.

Minority- and low-income riders pay lower average fares compared to all riders. This is largely because nonminority and non-low-income riders use the commuter rail system and other more expensive modes more than minority and low-income riders. At the proposed fare levels, minority- and low-income riders would continue to pay lower average fares.

TABLE 6-4.
Existing and Proposed Average Fares and Price Changes
(as Calculated by the Regional Travel Demand Model Set in Linked Trips)

Rider Classification	Existing Average Fare	Proposed Average Fare	Absolute Price Change	Percent Price Change
Minority	\$2.26	\$2.34	\$0.08	3.7%
Low-income	\$2.14	\$2.22	\$0.08	3.8%
All Riders	\$2.59	\$2.68	\$0.09	3.4%

Note: The values in this table are rounded to the nearest cent or the nearest tenth of a percent. All calculations were performed using unrounded values.

Results from Applying the Proposed Disparate-Impact and Disproportionate-Burden Policies

The results of the analysis show that there is no disparate impact on minority riders and no disproportionate burden on low-income riders when considering both the absolute and relative fare changes.

Application of the proposed disparate-impact policy shows:

The **absolute increase** in the average fare for minority riders is **93%** of the **absolute increase** in the average fare for all riders.

The **relative increase** (or the change taken as a percentage if the initial fare) in the average fare for minority riders is **107%** of the **relative increase** in the average fare for all riders.

Application of the proposed disproportionate-burden policy shows:

The **absolute increase** in the average fare for low-income riders is **93%** of the **absolute increase** in the average fare for all riders.

The **relative increase** in the average fare for low-income riders is **112%** of the **relative increase** in the average fare for all riders.

The relative fare increase for minority riders is 7% greater than the increase for all riders. Because this is less than the 20% threshold in the proposed disparate-impact policy, we do not find a disparate impact. We also do not find a disproportionate burden. The relative fare increase on low-income riders is 12% that of all riders. Because this is less than the 20% threshold in the MBTA's disparate-impact policy, we do not find a disparate impact. If parking revenue and ridership were removed from this analysis, the relative fare increases would be more similar. This is because people who park then take transit are more likely to be nonminority and non-low-income and parking costs did not increase.

Consideration of Off-Model Stations

Seven MBTA commuter rail stations are outside of the model region. The ridership associated with these stations is therefore not included in the preceding analysis. These stations are Grafton Station and Worcester Station on the Framingham-Worcester Line; North Leominster Station and Fitchburg Station on the Fitchburg Line; and Providence Station, T.F. Green Station, and Wickford Junction on the Providence-Stoughton Line. Because these stations are outside of what CTPS is able to directly model, we conducted a separate analysis for them. The MBTA's most recent systemwide survey and a RIDOT commuter rail survey serve as sources of data for this section. Table 6-5 and Table 6-6 present demographic data for these stations.

According to the MBTA Systemwide Survey and the RIDOT commuter rail survey, riders who use these stations tend to have higher income and be nonminority.

TABLE 6-5.
Off-Model Station Characteristics: Income Status

Station Name	Total Riders	Less than \$40k	Percent of Total	More than \$40K	Percent of Total	Community Type
Grafton	406	16	3.9%	390	96.1%	Non-low-income
Worcester	559	45	8.1%	514	91.9%	Non-low-income
North Leominster	263	29	11.0%	234	89.0%	Non-low-income
Fitchburg	212	31	14.6%	181	85.4%	Non-low-income
Providence	1,219	124	10.2%	1,095	89.8%	Non-low-income
T.F. Green*	164	18	11.0%	146	89.0%	Non-low-income
Wickford Junction*	241	19	8.0%	222	92.0%	Non-low-income
Total	3,064	282	9.2%	2,782	90.8%	—

* RIDOT's 2012 commuter rail survey provided the data for T.F. Green and Wickford Junction Stations. Ridership data for those stations comes from counts made by the conductors.

TABLE 6-6.
Off-Model Station Characteristics: Minority Status

Station Name	Total Riders	Minority	Percent of Total	Non-minority	Percent of Total	Community Type
Grafton	511	99	19.4%	412	80.6%	Nonminority
Worcester	675	222	32.9%	453	67.1%	Minority
North Leominster	295	47	15.9%	248	84.1%	Nonminority
Fitchburg	266	48	18.0%	218	82.0%	Nonminority
Providence	1,341	400	29.8%	941	70.2%	Nonminority
T.F. Green*	164	21	13.0%	143	87.0%	Nonminority
Wickford Junction*	241	17	7.0%	224	93.0%	Nonminority
Total	3,493	854	24.5%	2,639	75.5%	—

* RIDOT's 2012 commuter rail survey provided the data for T.F. Green and Wickford Junction Stations. Ridership data for those stations comes from counts made by the conductors.

Except for Providence and Worcester Stations, relatively few riders use these stations. The ridership of these stations represents about five percent of the commuter rail system's total ridership, and it represents less than one-hundredth of a percent of the total trips made on the MBTA system. Because not many riders use these stations, and the fare increases at these stations are similar to

those of the rest of the system, it is highly unlikely that our conclusions would change if the regional travel demand model set included these stations.

CTPS is presently working to incorporate these stations into the regional travel demand model set.

6.5 Summary of Equity Analysis

Our analysis of the SFY 2015 fare increase, using the spreadsheet model and the MBTA Systemwide Passenger Survey, estimated that not only are minority- and low-income riders currently paying a lower existing average fare than all riders, but the absolute change in the average fare also is less for minority- and low-income riders. A greater percentage of riders paying with single-ride fares—especially on the bus and with senior and student fares—or a 7-Day LinkPass are minority and low-income.

Using the spreadsheet model coupled with the MBTA systemwide survey and the regional travel demand model set, we calculated the absolute and relative fare increases for minority riders, low-income riders, and all riders. Our analysis indicates that neither a disparate impact on minority riders nor a disproportionate burden on low-income riders should occur if the MBTA enacts the proposed fare changes.

CHAPTER 7. CONCLUSION

CTPS conducted two analyses of the impacts of the fare changes on ridership and revenue, each using a methodology based on established data inputs. These analyses show that the MBTA fare proposal would generate approximately \$20–\$25 million of additional revenue, with an anticipated ridership decrease by 3-to-4 million trips annually. Additional trips made on THE RIDE system, induced by the January 2014 reduction in the ADA paratransit fare, should increase annual operating costs by approximately \$5 million. The fare increase would cause a small number of transit riders to divert to other transportation modes; riders who switch to driving would minimally degrade air quality and increase congestion on the roadway network.

Staff applied the MBTA's draft disparate-impact and disproportionate-burden policy thresholds in assessing the estimated regional equity impacts of the proposed fare changes. We do not expect the fare increase to cause disparate impacts or disproportionate burdens.

CTPS also measured the effects of the fare increase in terms of several environmental-justice metrics. The details, which can be found in Appendix B,

show that all of the differences between the minority and nonminority riders (and communities) and between low-income and non-low-income riders (and communities) are fundamentally very minor.

Throughout SFY 2015, the MBTA intends to conduct a thorough review of its fare structure and fare-collection policies, including whether it is feasible or desirable in SFY 2016 to:

- Offer means-tested fares
- Simplify the fare structure
- Establish incentives for more efficient payment methods on buses
- Implement a university pass program
- Broaden the availability of student fares
- Introduce time-of-day pricing
- Change the parking pricing structure
- Assimilate new fare payment technologies

The MBTA will be leading continuous dialogues and civic engagements with customers and service-area residents concerning these fare policy issues in the coming year.

Because the proposed 5% fare increase is minor, as defined by the MBTA, fare or fare structure changes in SFY 2016 likely would generate the additional revenue required to meet the legislated own-source revenue benchmark mandated for SFY 2016 of 33.25%. Another reason the MBTA has been considering a move toward smaller, more regular fare increases, in addition to limiting the impact on riders, is to facilitate planning and budgeting. The MBTA will make final decisions regarding changes to fare levels in SFY 2016 based, in part, on operating revenue received in SFY 2015. Appendix C presents one set of potential SFY 2016 fares—in this scenario, fares increase by approximately 5% roughly evenly across all modes.

APPENDIX A: SPREADSHEET MODEL METHODOLOGY

A.1 Apportionment of Existing Ridership

One of the first steps in starting a new iteration of the spreadsheet model is the collection of new AFC and pass sales data—this data represents the largest share of the MBTA's ridership and revenue—and revenue and ridership reports for the ferries, THE RIDE, and the MBTA's parking lots.

The MBTA provides CTPS with AFC data summarized by hour, by day for the various combinations of fare type, fare mode, and fare media (Table A-1). After processing, the AFC data can be attributed to each mode, fare type, and station (or Green Line branch). The fares for approximately 85% of all trips made on the system are paid using the AFC system.

The remaining trips are made using modes on which fares are not paid using the AFC system: commuter rail, commuter boat, THE RIDE, and parking. For these modes, we rely on fare-mix reports (that indicate how riders pay), various passenger surveys CTPS has conducted, and other ridership and revenue reports provided by the MBTA.

TABLE A-1.
AFC Fare Categories

Fare Type	Fare Mode	Fare Media
Adult/Senior/TAP/Student/Free	Single-Ride	CharlieCard CharlieTicket Onboard Cash
Adult/Senior/TAP/Student	Transfer	CharlieCard CharlieTicket
Short (fares below the full value)	Single-Ride	Onboard Cash
Bus/Inner Express/Outer Express	Pass	CharlieCard CharlieTicket
LinkPass: Monthly/1-Day/7-Day	Pass	CharlieCard CharlieTicket
Commuter Rail Zone and InterZone/Commuter Boat	Pass	CharlieTicket
Senior/TAP/Student	Pass	CharlieCard CharlieTicket

A.2 Price Elasticity

Price elasticity is the measure of the rate of change in ridership relative to a change in fares if all other factors remain constant. On a traditional demand curve that describes the relationship between price, on the y-axis, and demand,

on the x-axis, elasticities are equivalent to the slope along that curve. Therefore, price elasticities are generally expected to be negative, meaning that a positive price increase would lead to a decrease in demand (with a price decrease having the opposite effect). The more negative (farther from zero) the value of a price elasticity, the larger the projected decrease in demand. More negative price elasticities are said to be relatively “elastic,” while smaller negative values, closer to zero, are said to be relatively “inelastic.” Thus, if the price elasticity of the demand for transit is assumed to be elastic, a given fare increase would cause a greater loss of ridership than if demand were assumed to be inelastic.

At its most elemental level, the spreadsheet model is based on this simple price elasticity relationship, and requires four inputs: original demand, original fare, new fare, and price elasticity. The formula for calculating new demand is:

$$\text{New Demand} = \text{Original Demand} \times [1 + \text{Price Elasticity} \times (\text{New Fare} \div \text{Old Fare} - 1)]$$

As an example, assume that original demand equals 100 and that the impact we are modeling is a 10 percent fare increase from \$1.00 to \$1.10. Also assume that the price elasticity is -0.25.

$$\text{New Demand} = 100 \times [1 + -0.25 \times (\$1.10 \div \$1.00 - 1)] = 97.50$$

Thus, using an elasticity of -0.25, a simple price elasticity model projects that a 10 percent increase in price will lead to a 2.50 percent decrease in demand. With the fare increased from \$1.00 to \$1.10, this simplified example projects a 7.25 percent increase in revenue (\$100.00 to \$107.25).

A.3 Diversion Factors

The spreadsheet model’s calculations are more comprehensive than a simple elasticity calculation. Its greater detail lies in its use of ridership diversion factors. Diversion factors reflect estimates of the likelihood of a switch in demand for one type of good to another resulting from a change in the relative prices of those goods. In the spreadsheet model, we use such factors to estimate the number of riders who would choose to divert from one fare/mode category to another.

Using cash tickets and passes as an example, assume that original ridership equals 100 cash riders and 1,000 pass riders. Also assume that original prices for cash tickets and passes equal \$2.00 and \$100.00, respectively, and that the new prices are set at \$1.50 for cash tickets and \$50.00 for passes, representing price decreases of 25 percent and 50 percent. Assume that the cash price elasticity equals -0.35 and the pass price elasticity equals -0.25. Finally, assume a cash-to-pass diversion factor of 0.05 and a pass-to-cash diversion factor of 0.00.

In these calculations of diversion, one of the diversion factors must always equal zero, indicating that the diversion is expected to occur in one direction only. The direction of the diversion, and thus the diversion factor value, depends on the respective price changes of the two types of goods. The category with the greater relative price decrease (or the smaller relative price increase)—in this case, pass, for which the price decrease is 50 percent, compared to 25 percent for cash tickets—would gain riders from the diversion, while the other category, with the smaller relative price decrease (or the greater relative price increase), would lose riders from the diversion. One would therefore expect that cash customers would switch to passes, but not that pass customers would switch to cash tickets, resulting in the 0.05 cash-to-pass and 0.00 pass-to-cash diversion factors.

The diversion factors essentially work to redistribute demand between the two categories after the respective price elasticities have been applied. For instance, after the cash fare is decreased from \$2.00 to \$1.50, the projected effect of price elasticity is that cash demand grows to 108.75 riders. Similarly, the pass price decrease from \$100 to \$50 leads to a projected increase in pass demand, because of price elasticity, to 1,125, for a total ridership of 1,233.75. However, the percentage decrease in the pass price is larger than that in cash fares (50 percent versus 25 percent); thus, one would expect some customers to switch from cash to pass.

This diversion is estimated by taking the ratio of new-to-original cash prices (\$1.50÷\$2.00, or 75 percent), dividing that ratio by the ratio of new-to-original pass prices (\$50÷\$100, or 50 percent), subtracting 1, and multiplying this result by the 0.05 diversion factor and the price-elasticity-estimated cash ridership (108.75). The number of riders “diverted” from cash to pass equals 2.72, giving final ridership estimates of 106.03 for cash and 1,127.72 for pass (still summing to a total ridership of 1,233.75).

New Cash Demand (Price Effect),

$$C_p = 100 \times [1 + -0.35 \times (\$1.50 \div \$2.00 - 1)] = 108.75$$

New Pass Demand (Price Effect),

$$P_p = 1,000 \times [1 + -0.25 \times (\$50 \div \$100 - 1)] = 1,125.00$$

Total Demand = 108.75 + 1,125.00 = 1,233.75

$$\text{Diverted Riders from Cash to Pass} = \left(\frac{\$NewCash/\$OldCash}{\$NewPass/\$OldPass} - 1 \right) \times \text{Diversion} \times C_p$$

$$\text{Diverted Riders from Cash to Pass} = \left(\frac{\$1.50/\$2.00}{\$50/\$100} - 1 \right) \times 0.05 \times 108.75 = 2.72$$

New Cash Demand = C_p - Diverted Riders from Cash to Pass = 106.03
New Pass Demand = P_p + Diverted Riders from Cash to Pass = 1,127.72
Total Demand = 106.03 + 1,127.72 = 1,233.75

We used diversion factors to estimate diversions between:

- Cash and pass categories (for example, bus cash versus bus pass, subway cash versus subway pass)
- Bus and rapid transit (in other words, bus cash versus subway cash, bus pass versus subway pass)
- CharlieTicket/onboard cash and CharlieCard (for example, bus onboard cash versus bus CharlieCard, subway CharlieTicket versus subway CharlieCard)

We initially developed a range of diversion factors based on results of the 2007 Post-Fare Increase Impacts Analysis. We used these factors in the SFY 2013 fare increase analysis, and continued to use them in the SFY 2015 analysis. After reviewing the impacts of the SFY 2013 fare increase, we found sufficient evidence to slightly increase the willingness of people to divert between passes and cash on the subway and light rail system.

Given that the fare increases are relatively level across all modes and fare media, these factors have a negligible effect on the results.

A.4 Price Elasticity Estimation

CTPS estimated the price elasticity of demand for the SFY 2015 version of the fare increase model based on a review of the changes in ridership, revenue, and price following the implementation of the SFY 2013 fare increase. We used the demonstrated elasticities—which we calculated following our analysis of the impact of the SFY 2013 fare increase—to guide our decisions about modifying the previously used set of elasticities. However, because the changes in ridership likely also were influenced by factors in addition to the fare changes, we did not directly use the demonstrated elasticities for the SFY 2015 iteration of the spreadsheet model.

The following sections explain the process CTPS used to modify the elasticities for the SFY 2015 iteration of the spreadsheet model using the SFY 2013 demonstrated elasticities.

A.5 Calculating the Demonstrated Elasticity of Each Fare Type

Before we performed projections using the latest iteration of the spreadsheet model, we reviewed how ridership changed after past price changes to calculate demonstrated elasticities.

To calculate the demonstrated elasticity for a given fare, we used two pieces of information: the percentage change in fares and the percentage change in ridership. For each fare payment type on each mode, we calculated the percentage change between full SFY 2012 (before the fare increase) and full SFY 2013 (after the fare increase) ridership and fares using the formula:

$$\text{Percentage Change} = \frac{X_2 - X_1}{\left(\frac{X_2 + X_1}{2}\right)}$$

Where:

X_1 = SFY 2012 value (the year before the fare changes)

X_2 = SFY 2013 value (the year after the fare changes)

This formula provides the percentage change between X_1 and X_2 relative to the midpoint of X_1 and X_2 . If $X_1 = 10$ and $X_2 = 20$, the formula would indicate that the percentage change relative to the midpoint (15) is equal to 66%.

For example in SFY 2012, the single-ride bus ridership was 22,441,080. SFY 2013 ridership was 21,237,096. The percentage change in ridership between these two years is:

$$\text{Percentage Change} = \frac{21,237,096 - 22,441,080}{\left(\frac{21,237,096 + 22,441,080}{2}\right)} = -5.5\%$$

For each relevant fare payment type, we calculated the demonstrated elasticity with respect to fares using the following formula:

$$\text{Elasticity} = \frac{\Delta \text{Ridership (in \%)}}{\Delta \text{Fare (in \%)}}$$

For example, the percentage change in single-ride ridership on MBTA buses from SFY 2012 to SFY 2013 was -5.5%. The percentage change in the fare was 19.5%. The demonstrated elasticity is calculated as follows:

$$\text{Elasticity} = \frac{\Delta \text{Ridership (in \%)}}{\Delta \text{Fare (in \%)}} = \frac{-5.5\%}{19.5\%} = -0.28$$

As another example, the total change in LinkPass ridership was -0.3%. The change in the average LinkPass trip price was 17.4%. The demonstrated elasticity is calculated as follows:

$$\text{Elasticity} = \frac{\Delta \text{Ridership (in \%)}}{\Delta \text{Fare (in \%)}} = \frac{-0.3\%}{17.4\%} = -0.02$$

Modifying the Elasticities of Each Fare Type for the Current Projection

Because the demonstrated elasticity values only incorporate the changes in fares and do not account for other factors that affect transit ridership—such as gas prices, employment levels, and development—we do not advise using the elasticities calculated based on the results from the SFY 2013 fare increase in the SFY 2015 model. Some of the demonstrated elasticities indicate that other factors are affecting ridership, especially those with positive values that indicate ridership increased in response to the fare increase. Therefore, we only used the demonstrated elasticities, along with the following heuristics, to inform the modification of the SFY 2012 elasticities.

- If the value of a demonstrated elasticity was close to zero or positive, we modified the value to make it more inelastic (closer to zero)
- No elasticity was set to be greater than -0.10
- If an elasticity was used in SFY 2012 and the demonstrated elasticity was roughly similar, we did not modify the elasticity
- If the demonstrated elasticity was significantly more negative than the one we used in SFY 2012, we decreased the elasticity (made it more negative)

Table A-2 presents the elasticities we used to predict what might have happened following the SFY 2013 fare increase, the elasticities we calculated based on the actual changes between SFY 2012 and SFY 2013, and the elasticities we used to project the effects of the SFY 2015 fare changes.

**TABLE A-2.
SFY 2012, Demonstrated, and SFY 2013 Elasticities**

Modal Category	Estimated SFY 2013 Elasticity	Demonstrated SFY 2013 Elasticity	Estimated SFY 2015 Base Elasticity
Cash Elasticities			
Bus and Trackless Trolley			
Bus-Adult (<i>from example</i>)	-0.20	-0.28	-0.25
Bus-Senior	-0.15	-0.26	-0.20
Bus-Student	-0.15	0.30	-0.15
Subway			
Subway-Adult	-0.25	-0.26	-0.25
Subway-Senior	-0.15	-0.18	-0.15
Subway-Student	-0.15	1.80	-0.10
Surface Light Rail			
Surface Light Rail-Adult	-0.25	-0.29	-0.30
Surface Light Rail-Senior	-0.20	-0.19	-0.20
Surface Light Rail-Student	-0.20	1.96	-0.15
Commuter Rail			
Commuter Rail-Adult	-0.35	0.01	-0.20
Commuter Rail-Senior	-0.25	0.37	-0.15
Commuter Boat			
Commuter Boat-Adult	-0.30	-0.34	-0.30
Commuter Boat-Senior	-0.20	-0.75	-0.25
THE RIDE	-0.12	-0.39	-0.35
Parking	-0.20	-0.18	-0.20
Pass Elasticities			
Bus	-0.30	-0.09	-0.15
Inner Express	-0.20	-0.33	-0.25
Outer Express	-0.20	-0.33	-0.25
LinkPass (<i>from example</i>)	-0.30	-0.02	-0.15
1-Day LinkPass	-0.35	0.41	-0.15
7-Day LinkPass	-0.35	0.09	-0.15
Commuter Rail	-0.10	-0.17	-0.10
Commuter Boat	-0.25	-0.17	-0.20
Senior	-0.15	0.23	-0.10
Student	-0.15	-0.04	-0.10

Note: The estimated SFY 2013 elasticity is the elasticity we used to estimate the effects of the SFY 2013 fare increase.

The demonstrated SFY 2013 elasticity is the elasticity we calculated based on ridership changes following the SFY 2013 fare increase.

The estimated SFY 2015 base elasticity is the elasticity we used to estimate the effects of the SFY 2015 fare increase.

A.6 Examples of Ridership and Revenue Calculations

Simple Example: Price Elasticity Only

Given:

Original Demand: 100,000

Original Fare: \$1.50

New Fare: \$2.50

Price Elasticity: -0.05

New Demand =

$$\text{Original Demand} \times [1 + \text{Price Elasticity} \times (\text{New Fare} \div \text{Old Fare} - 1)]$$

$$\text{New Demand} = 100,000 \times [1 + -0.05 \times (\$2.50 \div \$1.50 - 1)] = 96,666.67$$

More Complex Example: Price Elasticity plus Ridership Diversion – Cash to Pass

Given:

Original Cash Demand: 10,000

Original Cash Fare: \$2.25

New Cash Fare: \$2.00

Cash Price Elasticity: -0.30

New Demand =

$$\text{Original Demand} \times [1 + \text{Price Elasticity} \times (\text{New Fare} \div \text{Old Fare} - 1)]$$

New Cash Demand (Price Effect),

$$C_p = 10,000 \times [1 + -0.30 \times (\$2.00 \div \$2.25 - 1)] = 10,333.33$$

Given:

Original Pass Demand: 5,000

Original Pass Price: \$71.00

New Pass Price: \$50.00

Pass Price Elasticity: -0.25

New Pass Demand (Price Effect),

$$P_p = 5,000 \times [1 + -0.25 \times (\$50 \div \$71 - 1)] = 5,369.72$$

$$\text{Total Demand} = 10,333.33 + 5,369.72 = 15,703.05$$

Percentage Change in Cash Price: \$2.25 to \$2.00: -11%

Percentage Change in Pass Price: \$71 to \$50: -30%

Given:

Cash-to-Pass Diversion Factor: 0.05

Pass-to-Cash Diversion Factor: 0.00

$$\text{Diverted Riders from Cash to Pass} = \left(\frac{\$ \text{NewCash} / \$ \text{OldCash}}{\$ \text{NewPass} / \$ \text{OldPass}} - 1 \right) \times \text{Diversion} \times C_p$$

$$\text{Diverted Riders from Cash to Pass} = \left(\frac{\$2.00 / \$2.25}{\$50 / \$71} - 1 \right) \times 0.05 \times C_p = 135.48$$

New Cash Demand = C_p – Diverted Riders from Cash to Pass = 10,197.85
 New Pass Demand = P_p + Diverted Riders from Cash to Pass = 5,505.20
 Total Demand = 10,197.85 + 5,505.20 = 15,703.05

Another Complex Example: Price Elasticity plus Two Ridership Diversions – Single-Ride CharlieCard (SR-CC) to Pass, and Single-Ride CharlieTicket (SR-CT) to Single-Ride CharlieCard (SR-CC)

Given:

Original Single-Ride CharlieCard Demand: 10,000
 Original Single-Ride CharlieCard Fare: \$2.20
 New Single-Ride CharlieCard Fare: \$3.50
 Single-Ride CharlieCard Price Elasticity: -0.30
 New SR-CC Demand (Price Effect),
 $CC_p = 10,000 \times [1 + -0.30 \times (\$3.50 \div \$2.20 - 1)] = 8,227.27$

Given:

Original Pass Demand: 50,000
 Original Pass Price: \$71.00
 New Pass Price: \$90.00
 Pass Price Elasticity: -0.25
 New Pass Demand (Price Effect),
 $P_p = 50,000 \times [1 + -0.25 \times (\$90 \div \$71 - 1)] = 46,654.93$

Given:

Original Single-Ride CharlieTicket Demand: 5,000
 Original Single-Ride CharlieTicket Fare: \$2.50
 New Single-Ride CharlieTicket Fare: \$4.50
 Single-Ride CharlieTicket Price Elasticity: -0.30
 New SR-CT Demand (Price Effect),
 $CT_p = 5,000 \times [1 + -0.30 \times (\$4.50 \div \$2.50 - 1)] = 3,800.00$
 Total Demand = 8227.27 + 46,654.93 + 3,800.00 = 58,682.20

Given:

Single-Ride CharlieCard-to-Pass Diversion Factor: 0.05
 Pass-to-Single-Ride CharlieCard Diversion Factor: 0.00
 Single-Ride CharlieCard to Single-Ride CharlieTicket Diversion Factor: 0.00
 Single-Ride CharlieTicket to Single-Ride CharlieCard Diversion Factor: 0.25

Note:

Percentage Change in Single-Ride CharlieCard Fare: \$2.20 to \$3.50: 59.09%

Percentage Change in Pass Price: \$71 to \$90: 26.76%

Percentage Change in Single-Ride CharlieTicket Fare: \$2.50 to \$4.50: 80.00%

$$\text{Diverted Riders from SR-CC to Pass} = \left(\frac{\$3.50/\$2.20}{\$90/\$71} - 1 \right) \times 0.05 \times CC_p = 104.92$$

$$\text{Diverted Riders from SR-CT to SR-CC} = \left(\frac{\$4.50/\$2.50}{\$3.50/\$2.20} - 1 \right) \times 0.25 \times CT_p = 124.86$$

New Single-Ride CharlieCard Demand =

$CC_p - \text{Diverted Riders from SR-CC to Pass} + \text{Diverted Riders from SR-CT to SR-CC} = 8,247.21$

New Pass Demand = $P_p + \text{Diverted Riders from SR-CC to Pass} = 46,759.85$

New Single-Ride CharlieTicket Demand =

$CT_p - \text{Diverted Riders from SR-CT to SR-CC} = 3,675.14$

Total Demand = $8,202.15 + 46,759.85 + 3,720.20 = 58,682.20$

Note that as we introduce additional ridership diversion factors, and more cells in the spreadsheet become linked, the complexity of the spreadsheet model increases significantly. However, the basics of the methodology explained above with regard to price elasticities and ridership diversion factors remain the same.

APPENDIX B: ENVIRONMENTAL JUSTICE ANALYSIS

B.1 Definition of Environmental Justice Communities

To assess the impacts of the proposed SFY 2015 fare increase on minority and low-income communities, CTPS conducted an environmental justice impact analysis. Environmental justice communities were identified based on definitions developed by the MBTA for their environmental justice and Title VI analyses. The methodology used is consistent with that employed by the Boston Region MPO in the Long-Range Transportation Plan. For the MBTA's service area, we identified the median household income and average percentage of minority residents for each TAZ. Minority census tracts and TAZs were defined as those in which the percentage of the non-white population (including the Hispanic population) was greater than the average for the MBTA service area. The average percentage of minority residents is 26.2 percent in the service area. A census tract or TAZ is classified as low-income if its income level is at or below 60 percent of the median household income in the service area; for the 175-community MBTA service area 60% of household median income is \$41,636.¹⁸

B.2 Equity Determination

After identifying the environmental justice communities in the MBTA service area, CTPS analyzed areawide equity in terms of both the existing and proposed conditions—that is, conditions before and after the proposed fare changes—using the Boston Region MPO's travel demand model set. We estimated each TAZ's "score" in terms of various metrics (discussed below) using the model set for both the existing and projected system. To measure the areawide results, we calculated the averages across TAZs, by community classification—minority and nonminority communities; low-income and non-low-income communities. In this calculation, we weighted the scores for transit-based metrics according to each TAZ's existing number of transit trips; and we weighted the scores for regionally applicable metrics by each TAZ's existing population. We also used statistical tests to compare whether the estimated differences between the changes experienced by each pair of community classifications are significant. If there is a statistically significant difference, an area in one community classification is more likely to experience a larger change than an area in the other community classification; if there is not such a significant difference, an area is likely to experience about the same level of change no matter which community classification it falls under.¹⁹ The difference between the pair of community

¹⁸ Median household income was determined based on the 2007–2011 American Community Survey. Minority percentages were determined based on the 2010 US Census.

¹⁹ CTPS used a two-sample t-test to determine if the samples of minority (and low-income) communities and nonminority (and non-low-income) communities in the MBTA service area

classifications is considered significant if the variations of the changes within the classifications are together smaller than the difference between the average changes experienced by the community classifications. For example, if the change experienced by Group A is expressed as 2% \pm 0.5% and the change experienced by Group B is expressed as 5% \pm 1.0%, there is a significant difference because the high end of the range in Group A (2.5%) is below the low end of the Group B range (4.0%).

We analyzed three general categories of metrics with respect to their projected equity impact.

For the first category, *transit equity*, the measures are the average fare (in dollars), the average total travel time—the total of the in- and out-of-vehicle travel times in minutes—and the average number of transfers. All averages are weighted by the number of trips produced in each TAZ.

The second category is *highway congestion and air quality*. We use congested vehicle-miles traveled (VMT) to represent local levels of congestion and average carbon monoxide (CO) emissions per square mile (in kilograms) to represent the local level of air pollution. The results are weighted by the population of each TAZ.

The third category is *accessibility*. We used the travel demand model set to estimate the number of jobs within the average transit commute time for the Boston region, 40 minutes. Again, the results are weighted by the population of each TAZ.

Transit – Equity Metrics

Tables B-1 and B-2 present the existing and projected values for the three transit equity metrics: average fare, average total travel time, and average number of transfers.

Compared to nonminority and non-low-income riders, minority riders and low-income riders pay lower average fares, have fewer transfers, and endure shorter travel times. Considerably more of the commuter rail riders are nonminority or non-low-income, which causes their average fares and travel times to be higher. While the absolute change in average fares is greater for nonminority riders and non-low-income riders, the relative changes are greater for minority riders and low-income riders.

were different at the 95% confidence level. A t-test can be used to examine whether the difference between the averages of two groups is statistically significant.

When comparing both minority versus nonminority riders and low-income versus non-low-income riders, the difference in the comparative relative changes number of transfers and average travel times is very small. For both pairs of comparisons, the difference between the changes to the average fare and the difference between the changes to the number of transfers is statistically significant, but the difference in total travel time is not.

Accessibility to Jobs – Equity Metrics

Tables B-1 and B-2 present the existing and projected accessibility metric, access to jobs, which is measured by the number of jobs within a 40-minute transit commute (the average Boston-region transit commute time).

In Tables B-1 and B-2:

- Basic jobs are those for companies or organizations whose primary purpose is to create a product (such as manufacturing, agriculture, construction).
- Retail jobs are those for companies or organizations whose primary purpose is to sell a product to the public.
- Service jobs are those for companies or organizations whose primary purpose is to provide a service for the public (such as government, education, finance, health care).

As seen in the tables, there are more jobs within reasonable access to people who live in minority- or low-income communities than to people who live in nonminority or non-low-income communities—which largely is a function of these populations living in the urban core. The projected difference in both absolute and relative terms is very small, although nonminority and non-low-income communities benefit more than their counterparts from the access to jobs.

The differences between minority and nonminority communities and the differences between low-income and non-low-income communities are *not* statistically significant for the changes to this metric.

TABLE B-1.
Minority and Nonminority Equity Impacts

Category/ Metric	Existing		Projected		Absolute Change		Percent Change	
	Minority	Non-minority	Minority	Non-minority	Minority	Non-minority	Minority	Non-minority
<i>Transit Equity</i>								
Average fare*	\$2.26	\$3.09	\$2.34	\$3.19	\$0.08	\$0.10	3.67%	3.15%
Transfers*	0.90	0.91	0.90	0.91	0.00	0.00	-0.07%	-0.26%
Total travel time (min.)	70.55	79.94	70.54	79.95	-0.01	0.00	-0.02%	0.00%
<i>Accessibility to Jobs</i>								
Total jobs	628,457	306,542	628,368	306,758	-88.93	216.34	-0.01%	0.07%
Basic	90,243	58,013	90,245	58,063	1.65	49.37	0.00%	0.09%
Retail	75,873	43,007	75,864	43,032	-8.31	24.41	-0.01%	0.06%
Service	462,341	205,522	462,259	205,664	-82.26	142.57	-0.02%	0.07%
<i>Highway Congestion and Air Quality</i>								
CO per square-mile*	140.3	67.1	140.6	67.1	0.27	0.03	0.19%	0.04%
Congested VMT	3,194.5	6,012.6	3,211.6	6,016.2	17.14	3.53	0.54%	0.06%

Notes: *Indicates that the difference in the percentage change in the metric resulting from the proposed fare increase for the minority population and the nonminority population is statistically significant.

Values shown in this table are rounded to the level of precision shown. Changes are calculated using unrounded values.

TABLE B-2.
Low-Income and Non-Low-Income Equity Impacts

Category/ Metric	Existing		Projected		Absolute Change		Percent Change	
	Low-income	Non-low-income	Low-income	Non-low-income	Low-income	Non-low-income	Low-income	Non-low-income
<i>Transit Equity</i>								
Average fare*	\$2.14	\$2.79	\$2.22	\$2.88	\$0.08	\$0.09	3.84%	3.28%
Transfers*	0.80	0.95	0.80	0.94	0.00	0.00	-0.05%	-0.18%
Total travel time (min.)	64.09	78.66	64.08	78.65	-0.01	0.00	-0.02%	-0.01%
<i>Accessibility to Jobs</i>								
Total jobs	705,363	375,464	705,246	375,608	-116.90	144.20	-0.02%	0.04%
Basic	97,896	64,921	97,892	64,959	-4.64	38.38	0.00%	0.06%
Retail	83,889	50,019	83,874	50,036	-15.08	17.25	-0.02%	0.03%
Service	523,578	260,525	523,481	260,613	-97.18	88.57	-0.02%	0.03%
<i>Highway Congestion and Air Quality</i>								
CO per square-mile*	181.0	79.3	181.2	79.3	0.22	0.09	0.12%	0.12%
Congested VMT	2,090.6	5,474.3	2,102.7	5,482.0	12.07	7.70	0.58%	0.14%

Notes: * Indicates that the difference in the percentage change in the metric resulting from the proposed fare increase for the minority population and the nonminority population is statistically significant.

Values shown in this table are rounded to the level of precision shown. Changes are calculated using unrounded values.

Highway Congestion and Air Quality – Equity Metrics

Tables B-1 and B-2 present the existing and projected measures of average CO emissions per square mile and average congested VMT per square mile. The first metric represents impacts on local air pollution; the second represents impacts on local congestion.

Existing CO emissions per square-mile are greater for minority communities and low-income communities than their counterparts. Current congested VMT per square-mile are greater for nonminority communities and non-low-income communities than their counterparts, but the changes in the metric are very small. Projected congested VMT per square mile increases more for minority communities and for low-income communities than their counterparts. Projected CO increases per square mile are relatively similar for low-income and non-low-income communities, although the increases in the CO emission metric are greater for minority communities than nonminority communities.

The differences between minority and nonminority communities and the differences between low-income and non-low-income communities are statistically significant for the changes in CO emissions per square-mile, but not for the changes in congested VMT per square-mile. The changes in CO emission levels are well within the established CO emissions budget developed to ensure that the area maintains its attainment with the CO air quality standard. These levels will not affect the region's conformity status.

Summary of Equity Impacts

Before and after the fare increase, minority communities and low-income communities pay lower average fares, make fewer transfers, have shorter travel times, have more jobs within the average commute time, and have less congested roads than their counterparts; however, before and after the fare increase, CO emissions per square-mile are higher for minority communities and low-income communities than their counterparts.

The projected changes for most metrics are very small across all communities. The only metric that increases by more than 1% is the average fare for all communities. The only metrics for which the differences between the comparative projected changes are statistically significant are average fare and CO emissions per square-mile.

- For metrics where the difference between the changes to minority communities and nonminority communities is statistically significant, the model projects that with the fare increase proposed:

- Minority riders might experience *slightly* higher rate of fare increases compared to nonminority riders.
 - Nonminority riders might make relatively fewer transfers compared to minority riders.
 - Carbon monoxide emissions might increase *slightly* more in minority communities compared to nonminority communities.
- For metrics where the difference between the changes to low-income communities and non-low-income communities is statistically significant, the model projects that with the proposed increase:
 - Low-income riders might experience slightly higher rate of fare increase compared to non-low-income riders.
 - Non-low-income riders might make relatively fewer transfers compared to low-income riders.
 - Carbon monoxide emissions might increase slightly more in low-income communities compared to non-low-income communities.

APPENDIX C. SFY 2016 FARE CHANGES

During SFY 2015, the MBTA intends to conduct a thorough review of fares, parking fees, fare structure, and fare-collection policies to examine possible changes for SFY 2016.

The MBTA has indicated it intends to review the feasibility and policy implications of:

- Offering means-tested fares
- Simplifying the fare structure
- Establishing incentives for more efficient payment methods on buses
- Implementing a university pass program
- Broadening the availability of student fares
- Introducing time-of-day pricing
- Changing the parking pricing structure
- Assimilating new fare payment technologies

While the MBTA plans to work on these topics throughout SFY 2015, the Authority also must start planning to present a balanced budget in SFY 2016. The SFY 2016 proposed fares in the next section represent a second year of roughly level across-the-board fare increases, using the proposed SFY 2015 fares as the base. These fares are highly tentative and will be revisited before the end of SFY 2015, with opportunity for public review and input.

C.1 Description of Potential SFY 2016 Fare Increase Scenario *SFY 2016 Proposed Fares*

Table C-1 presents the key existing and proposed single-ride fares for each fare category, along with the percentage change in price from the existing to the proposed price. Table C-2 presents the same information for the pass prices. Table C-2 also presents the value of monthly passes in terms of their single-ride equivalents, a concept discussed at the end of this section. Neither Table C-1 nor C-2 reflect any potential fare structure changes that may be considered by the Authority. The proposed scenario for SFY 2016 also includes \$1.00 increases in parking prices at stations that are near, at, or greater than capacity.²⁰ Until data exists that suggests raising fares on the commuter boat system will truly reduce revenue, the commuter boat system fares would increase at the same rate as the other fares.

²⁰ These parking lots are, in alphabetical order: Alewife, Braintree, Chestnut Hill, Eliot, Forest Hills, Lechmere, Malden, Oak Grove, Suffolk Downs, Sullivan, Waban, Wellington, Wollaston, and Wonderland.

The overall price increase across all modes and fare/pass categories is 4.8%. This systemwide average is based on the percentage change between the existing average fare (total revenue divided by existing ridership) and the proposed average fare (total projected revenue divided by total projected ridership).

The percentage changes in prices are relatively consistent across fare payment types. The MBTA may elect to hold the following fares constant in SFY 2016 because in SFY 2015 they experienced a greater-than-average fare increase:

- Commuter rail interzone fares 1–3
- Inner harbor single-ride fares
- One-day link passes

Another factor the MBTA considers when raising fares is the pass-ride value, which is the number of trips required at the lowest-cost single-ride fare to expend the cost of the pass.²¹ Lower pass-ride values indicate that a passenger needs to make fewer trips to make the pass financially worthwhile. Table C-2 presents the changes to the single-ride to-pass ratios. The changes in the single-ride to-pass ratios from the current fare structure are minimal, and the pass-ride values tend to be approximately 32 trips per month.

C.2 Potential Results

The results of this analysis will vary depending upon the impacts of the SFY 2015 fare changes. However, using the same base elasticities as used in the SFY 2015 analysis, revenue could reasonably be expected to increase by approximately \$25 million (a 4% increase over projected SFY 2015 revenue), and ridership might decrease by 3 million unlinked passenger trips (slightly less than a 1% decrease from projected SFY 2015 ridership).

The potential fare increase might decrease THE RIDE usage by 30 thousand trips or 2%.

²¹ For example, the monthly bus pass would cost \$52. The lowest-price single-ride bus fare is \$1.70, which a passenger may obtain by using a CharlieCard. Thus, a \$52 monthly bus pass would be equal to 30.59 single-ride CharlieCard bus trips.

TABLE C-1.
Key Single-Ride Fares: Proposed SFY 2015 and Potential SFY 2016

Fare Category	Proposed SFY 2015 Fare	Potential SFY 2016 Fare	Percent Change	Absolute Change
CharlieCard				
Adult				
Local Bus	\$1.60	\$1.70	6.3%	\$0.10
Rapid Transit	2.10	2.20	4.8	0.10
Bus + Rapid Transit	2.10	2.20	4.8	0.10
Inner Express	3.65	3.85	5.5	0.20
Outer Express	5.25	5.50	4.8	0.25
Senior				
Local Bus	\$0.80	\$0.85	6.3%	\$0.05
Rapid Transit	1.05	1.10	4.8	0.05
Bus + Rapid Transit	1.05	1.10	4.8	0.05
Student				
Local Bus	\$0.80	\$0.85	6.3%	\$0.05
Rapid Transit	1.05	1.10	4.8	0.05
Bus + Rapid Transit	1.05	1.10	4.8	0.05
CharlieTicket or Cash				
Adult				
Local Bus	\$2.10	\$2.25	7.1%	\$0.15
Rapid Transit	2.65	2.75	3.8	0.15
Bus + Rapid Transit	4.75	5.00	5.3	0.25
Inner Express	4.75	5.00	5.3	0.25
Outer Express	6.80	7.00	2.9	0.20
Commuter Rail				
Zone 1A	\$2.10	\$2.20	4.8%	\$0.10
Zone 1	5.75	6.00	4.3	0.25
Zone 2	6.25	6.75	8.0	0.50
Zone 3	7.00	7.50	7.1	0.50
Zone 4	7.50	8.00	6.7	0.50
Zone 5	8.50	9.00	5.9	0.50
Zone 6	9.25	9.75	5.4	0.50
Zone 7	9.75	10.25	5.1	0.50
Zone 8	10.50	11.00	4.8	0.50
Zone 9	11.00	11.50	4.5	0.50
Zone 10	11.50	12.00	4.3	0.50
InterZone 1 (no increase)	\$2.75	\$2.75	0.0%	\$0.00
InterZone 2 (no increase)	3.25	3.25	0.0	0.00
InterZone 3 (no increase)	3.50	3.50	0.0	0.00
InterZone 4	3.75	4.00	6.7	0.25
InterZone 5	4.25	4.50	5.9	0.25
InterZone 6	4.75	5.00	5.3	0.25
InterZone 7	5.25	5.50	4.8	0.25
InterZone 8	5.75	6.00	4.3	0.25
InterZone 9	6.25	6.50	4.0	0.25
Ferry				
F1: Hingham	\$8.50	\$9.00	5.9%	\$0.50
F2: Boston	8.50	9.00	5.9	0.50
F2: Cross Harbor	13.75	14.50	5.5	0.75
F2: Logan	17.00	18.00	5.9	1.00
F4: Inner Harbor (no increase)	3.25	3.25	0.0	0.00
THE RIDE				
ADA Territory	\$3.00	\$3.15	5.0%	\$0.15
Premium Territory	5.25	5.50	4.8	0.25

**TABLE C-2.
Pass Prices: Proposed SFY 2015 and Potential SFY 2016**

Pass Category	Proposed SFY 2015 Fare	Potential SFY 2016 Fare	Percent Change	Absolute Change	Proposed SFY 2015 Pass Ride	Potential SFY 2016 Pass Ride
Local Bus	\$50.00	\$52.00	4.0%	\$2.00	31.25	30.59
LinkPass	75.00	78.00	4.0	3.00	35.71	35.45
Senior/TAP	29.00	30.00	3.4	1.00	27.62	27.27
Student 5-Day Validity	26.00	27.00	3.8	1.00	24.76	24.55
Student 7-Day Validity	29.00	30.00	3.4	1.00	27.62	27.27
1-Day (<i>no increase</i>)	12.00	12.00	0.0	0.00	5.71	5.45
7-Day	19.00	20.00	5.3	1.00	9.05	9.09
Inner Express	115.00	121.00	5.2	6.00	31.51	31.43
Outer Express	168.00	176.00	4.8	8.00	32.00	32.00
Commuter Rail						
Zone 1A	\$75.00	\$78.00	4.0%	\$3.00	35.71	35.45
Zone 1	182.00	191.00	4.9	9.00	31.65	31.83
Zone 2	198.00	208.00	5.1	9.00	31.68	30.81
Zone 3	222.00	233.00	5.0	11.00	31.71	31.07
Zone 4	239.00	251.00	5.0	12.00	31.87	31.38
Zone 5	265.00	278.00	4.9	13.00	31.18	30.89
Zone 6	289.00	303.00	4.8	14.00	31.24	31.08
Zone 7	306.00	321.00	4.9	15.00	31.38	31.32
Zone 8	330.00	347.00	5.2	17.00	31.43	31.55
Zone 9	345.00	362.00	4.9	17.00	31.36	31.48
Zone 10	362.00	380.00	5.0	18.00	31.48	31.67
InterZone 1	\$86.00	\$90.00	4.7%	\$4.00	31.27	32.73
InterZone 2	105.00	110.00	4.8	5.00	32.31	33.85
InterZone 3	114.00	119.00	4.4	5.00	32.57	34.00
InterZone 4	124.00	130.00	4.8	6.00	33.07	32.50
InterZone 5	141.00	148.00	5.0	7.00	33.18	32.89
InterZone 6	159.00	167.00	5.0	8.00	33.47	33.40
InterZone 7	175.00	184.00	5.1	9.00	33.33	33.45
InterZone 8	193.00	203.00	5.2	10.00	33.57	33.83
InterZone 9	211.00	222.00	5.2	11.00	33.76	34.15
Commuter Boat	\$275.00	\$289.00	5.1%	\$14.00	32.35	32.11

APPENDIX D. EXAMPLE APPLICATION OF THE PROPOSED DISPARATE-IMPACT POLICY

Below is a sample application of the proposed disparate-impact policy for a fictitious fare increase.

Based on staff analysis, the estimated existing average fares for minority riders and all riders are:

Minority riders:	\$2.00
All riders:	\$2.25

Further analysis shows that the predicted average fares following the proposed fare increase would be:

Minority riders:	\$2.25
All riders:	\$2.50

The relative changes between the proposed and existing average fares are:

Minority riders:	12.50%	$(\$2.25 - \$2.00) \div \$2.00$
All riders:	11.11%	$(\$2.50 - \$2.25) \div \$2.25$

To calculate whether a disparate impact is present, one first needs to determine which part of the policy to use. A fare increase would cause a “burden,” so we use the burden portion of the proposed disparate-impact policy. We use the relative change in fare as the indicator of the burden.

The next step is to apply the disparate-impact policy. To calculate this, we multiply the all-rider relative change (the burden) by the proposed threshold, and check to see if the minority relative change is greater than or less than the result. If the following inequality is true, there is a disparate impact; otherwise, there is no disparate impact.

$$\begin{aligned} \text{Minority Burden} &> 120\% \times \text{All Rider Burden} \\ 12.50\% &> 120\% \times 11.11\% \\ 12.50\% &> 13.33\% \end{aligned}$$

Because 12.50% is not greater than 13.33%, the resulting statement is not true; the minority riders did not sustain more than 20% additional burden than the burden sustained by all riders. We do not find a disparate impact.

As an alternative, one could test whether the ratio of the burden to minority riders compared to the burden to all riders is greater than 120%. If so, then we would find that a disparate impact exists; otherwise no disparate impact exists:

$$\frac{\text{Minority Burden}}{\text{All Rider Burden}} > 120\%$$

$$\frac{12.50\%}{11.11\%} > 120\%$$

$$112.50\% > 120\%$$

Because 112.50% is not greater than 120%, the statement is false; we do not find a disparate impact.

Appendix R

Service and Fare

Equity Analysis

for the Silver Line

Gateway Project

Appendix R

Silver Line Gateway Service Equity Analysis

Introduction

The proposed Silver Line Gateway project is the outcome of MassDOT's recently completed Alternatives Analysis, which reviewed the potential benefits, costs, and impacts of high-quality bus rapid transit (BRT) service in Chelsea and East Boston. MassDOT presented the recommended alternative—the busway to Mystic Mall—at the September 19 public meeting at Chelsea City Hall. The preferred alternative was projected to have the fastest travel times, largest number of new transit riders, and overall highest ridership. The preferred alternative was also the product of an extensive civic engagement effort that focused on residents, businesses, community organizations, and elected officials in Chelsea and Boston.

The Silver Line Gateway would fill a critical gap in access between residents in Chelsea, East Boston and other Blue Line communities and the rapid growth in employment opportunities across Boston Harbor in the Seaport District. In Chelsea, which has the greatest proportion of transit-dependent residents in greater Boston and the most densely populated residential neighborhoods outside of the city of Boston, extending the Silver Line would represent a much-needed transit alternative.

The Silver Line Gateway would follow the existing Silver Line route in the Seaport District, and would provide a new connection to the Blue Line and East Boston residents at Airport Station. In Chelsea, the Silver Line Gateway would operate in a new dedicated busway, built in the former Grand Junction railroad right-of-way (now owned by the Commonwealth). There would be four new stations built in the busway—Eastern Avenue, Box District, Downtown Chelsea, and Mystic Mall. In addition, the Silver Line Gateway would leverage recent public infrastructure investments, such as the Chelsea Street Bridge, Massport's Coughlin Bypass Road, and the new Airport Blue Line Station.

Analysis Framework

The proposed Silver Line Gateway service would improve travel time and accessibility for residents in Chelsea, East Boston, and other Blue Line communities. The extension of the Silver Line to Chelsea would not be implemented at the expense of reductions in service on other routes, and no adverse effects have been identified.

The Service Equity Analysis was performed to compare the demographic makeup of the population that would receive the benefits of the new transit service to the demographic makeup of the MBTA service area as a whole.

Demographic data were drawn from the 2010 US census to determine minority status, and the 2011 American Community Survey to determine low-income status, both at the census-tract level. The MBTA's definition of a low-income household was used; it defines a low-income household as one in which the household income is less than 60 percent of the median household income of the entire MBTA service area, or \$41,636. Since the US census household income data are reported by ranges which do not provide a break at \$41,636, an additional procedure was performed to apportion a certain percentage of households that fall within the \$40,000–\$49,999 household income bracket as low-income. Since \$41,636 falls approximately 16 percent of the way between \$40,000 and \$49,999, 16 percent of households that fell within this income bracket in each census tract were apportioned as low-income.

The demographic profile of the affected area was developed for the geographic areas around each proposed new Silver Line stop: Mystic Mall, Downtown Chelsea, Box District, Eastern Avenue, the Airport rapid transit station, and the proposed relocation site of the Chelsea commuter rail station. The population density of each census tract within each affected area was calculated, and a one-quarter-mile buffer zone was generated around each station in the service area using the existing pedestrian network and geographic information system (GIS) software. Once the buffer zones were generated, the area of each tract that was contained in each buffer zone was calculated, and was then multiplied by the population density to obtain the population within the buffer zone. Finally, minority and low-income populations within each buffer zone were each summed to obtain a total for each category.

The proposed service change, affected areas, and demographic information are shown in Figure 1.

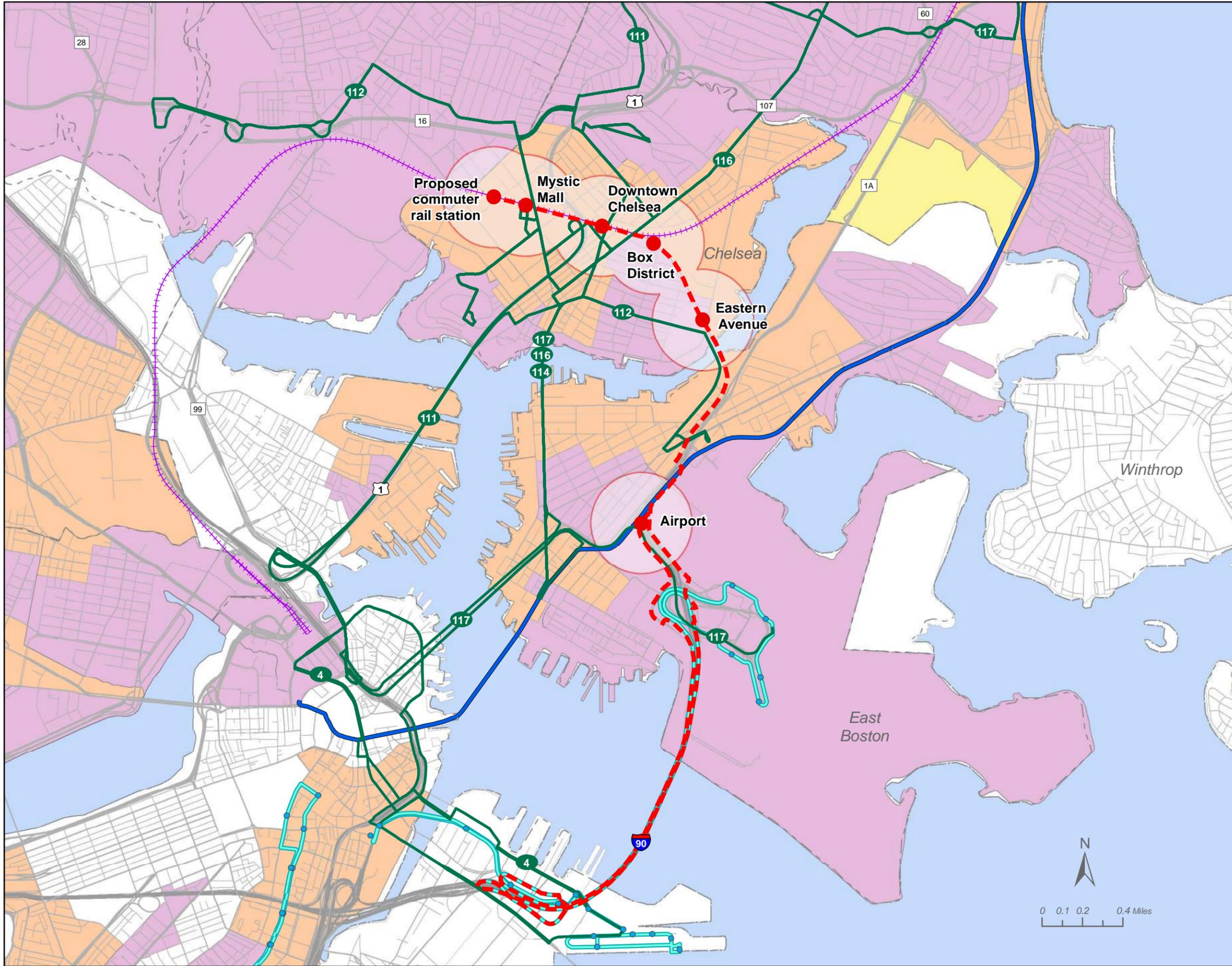


FIGURE 1

Silver Line Gateway:
Demographic Analysis

- MBTA Transit**
- Proposed Silver Line station
 - Proposed Silver Line route
 - Existing MBTA bus route
 - Existing Silver Line route
 - Existing Blue Line
 - Commuter rail
 - 1/4-mile buffer, proposed Silver Line station
- Minority and/or Low-Income Status**
- Minority tract
 - Minority and low-income tract
 - Low-income tract
 - Not minority or low-income

NOTES:

In the 175 municipalities of the MBTA service area, 26.19% of the residents were members of minority groups in 2010. A minority census tract is defined as one in which the minority percentage exceeds 26.19%.

The median household income for the years 2007 through 2011 for the 175-municipality MBTA service area was \$69,393. A low-income census tract is defined as one in which the median household income in 2011 was less than 60% of that level, or \$41,636.



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Assessing Impacts

The results of the demographic analysis are provided in Table 1, which indicates that the percentage of minority and low-income populations in the area directly surrounding the new Silver Line Gateway transit service is significantly higher than the percentage of minority and low-income populations in the MBTA service area as a whole. The minority percentage in the Silver Line Gateway service area, 77.1 percent, is 2.9 times the minority percentage of the MBTA service area, and the low-income percentage in the Silver Line Gateway service area, 48.1 percent, is 1.6 times the low-income percentage of the MBTA service area.

**Table 1
Silver Line Gateway Demographic Analysis**

Facility	Affected Population	Minority Population	Percent Minority	Total Households	Low-Income Households	Percent Low-Income
MBTA service area	4,833,606	1,266,019	26.2%	1,859,979	577,349	31.0%
Silver Line Gateway	5,273	4,214	77.1%	1,740	972	48.1%

The findings of the demographic analysis show that minority and low-income populations would be more likely to benefit from the Silver Line Gateway service than nonminority and non-low-income populations, and that there would be no disparate impact on minority populations and no disproportionate burden on low-income populations with the addition of this service.