

HEALTH IMPACT ASSESSMENT OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MassDOT) GROUNDING McGRATH STUDY



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Massachusetts Department of Public Health
Bureau of Environmental Health

EXECUTIVE SUMMARY

Background

In 2009, Massachusetts enacted a transportation reform law that significantly modified the state's transportation agency in order to streamline operations, share services, and reduce costs. A key public health feature of the law was the establishment of a Healthy Transportation Compact (HTC) that was charged with adopting best practices to achieve positive health outcomes through the coordination of land use, transportation, and public health policy. The HTC is co-chaired by the Secretary of the Executive Office of Health and Human Services (EOHHS) and the Massachusetts Department of Transportation (MassDOT). There are four other members including the Commissioner of Public Health.

Section 33 of the transportation reform law directs the HTC to:

- (v) establish methods to implement the use of health impact assessments (HIAs) to determine the effect of transportation projects on public health and vulnerable populations; and
- (x) institute a health impact assessment for use by planners, transportation administrators, public health administrators, and developers.

HIAs seek to improve the quality of policy decisions by evaluating the likely positive and negative health impacts from proposed projects, programs or policies, and making recommendations to improve positive health impacts and mitigate negative impacts. The Massachusetts Department of Public Health Bureau of Environmental Health (MDPH/BEH) applied for and received funds from the Health Impact Project, a collaboration of the Robert Wood Johnson Foundation and The Pew Charitable Trusts, to assist MDPH and the HTC in implementing the HIA directives by conducting a pilot HIA of a transportation planning study.

MassDOT worked closely with MDPH/BEH to select the Grounding McGrath Study for the pilot HIA. MassDOT's Grounding McGrath Study (MassDOT GM Study) was a planning study to determine the future of the Route 28 corridor in Somerville and Cambridge. While McGrath Highway carries a high volume of both local and regional traffic, McGrath Highway has physically deteriorated since it was built in the 1950s and is in need of substantial repairs. In addition, the highway structure creates a significant barrier between Somerville neighborhoods and the Inner Belt and Brickbottom areas on its east side, and the rest of Somerville on its west side. Due to the investment necessary to restore the elevated portion of McGrath Highway (i.e., McCarthy Overpass), long-term maintenance costs of the structure, changes to the area from various transit and development projects (e.g., the Green Line Extension project; Inner Belt and Brickbottom development), and the longstanding desire of the community to transform the corridor, MassDOT initiated the Grounding McGrath Study.

Working closely with MassDOT and their contractors, the pilot HIA was structured to be conducted in tandem with an active MassDOT study to provide supplemental health

data to better inform the MassDOT GM Study. The geographical scope of the study area for the GM HIA was determined by extending the study area defined in the MassDOT GM Study to the boundaries of zip code areas adjacent to the McGrath Highway. Zip code areas represent the smallest geographical area that some health data (in this case, hospitalization data) are available.

An important feature of MassDOT's existing protocol that lends uniquely to the HIA stakeholder process is the establishment of the Grounding McGrath Working Group at the beginning of the transportation planning study. As part of the stakeholder process, HIA training was conducted in October 2011. The staff from MDPH bureaus active in HIA work, MassDOT, Executive Office of Energy and Environmental Affairs, other state agencies, and representatives of the City of Somerville participated in the training, with a focus on screening and scoping of the pilot HIA. MDPH/BEH also shared updates and received feedback on the HIA at Grounding McGrath Working Group meetings and two community meetings. Engagement activities also involved meetings with Somerville officials to identify relevant health and infrastructure data for the study area and posting all documents and presentations related to the HIA on the MassDOT Grounding McGrath webpage. MDPH/BEH also met regularly with the experts at the Health Impact Project and Human Impact Partners who provided guidance throughout the HIA process. Working together with MassDOT and other stakeholders to pilot this HIA also provided the general framework for developing methods for use of HIAs in transportation planning.

The MassDOT protocol for conducting a transportation planning study requires development of alternatives that include 2035 No-Build, and alternative designs advanced through the public involvement process. In order to provide a comprehensive assessment of the long-term implications of the design alternatives, the GM HIA also evaluated 2010 existing conditions. All the alternatives (Boulevard; Access Road; Hybrid U-Turn/Rotary; and Boulevard with Inner Belt Connection) considered de-elevating the existing highway structure in 2035. Key features in analyzing the impacts/benefits of alternative designs included conducting air dispersion modeling to assess changes in potential exposure to vehicle-related air pollution concentrations in the study area, conducting a screening analysis of vehicle-related noise, and evaluating the influence of multimodal connections, a proposed bike path, and green space to promote increased physical activity.

The primary influences on health that were analyzed in the GM HIA were categorized as follows: air quality, noise, mobility and connectivity, public safety, and land use/economic development. Concerns about these health determinants have been raised by Somerville residents, area legislative representatives, and local and state government agencies. Baseline health data considered in the HIA included hospitalization data, cancer data, and pediatric asthma data from the MDPH/BEH Environmental Public Health Tracking Portal, and school health data on obesity, overweight, and depression in children living in Somerville. The community surrounding McGrath Highway is designated as an Environmental Justice community according to criteria established by the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA). Hence, socio-economic factors including income, housing availability/costs, and access

to goods and services were important factors that needed to be considered in the baseline health assessment of the transportation planning study.

Findings and Recommendations

- The study area is one of the most densely populated communities in Massachusetts. There is a 12% higher rate of Somerville residents that were foreign born or have a language other than English spoken in the home compared to the state as a whole. The fact that significantly more children are currently obese compared to the statewide average indicates that alternatives that promote healthy behaviors are paramount.
- Based upon data reviewed for the GM HIA, and the cumulative health impacts from multiple factors in the study area, the two optimal alternatives are the Boulevard Alternative and Boulevard with Inner Belt Connection Alternative because they offer the greatest opportunities for mobility and access.
- Given that the study area is classified as an Environmental Justice community it is critical that long-term plans that involve current residents are developed to ensure affordability of goods and services, stabilization of the cost of rental apartments, and that employment opportunities are made available.
- Future assessment of health impacts and benefits of proposed study alternatives should be conducted once more robust project-specific information and transportation data become available.
- Conducting an HIA in tandem with the first phase of a transportation planning study can provide good preliminary information on health impacts at an early stage of project development. However, a more detailed and precise assessment of health impacts and benefits of proposed alternatives would be possible at a later stage of project development, once more robust project-specific information and transportation data become available.
- The alternatives assume significant trip diversions from McGrath Highway that will impact roadways outside of the corridor. As a result, significant mode shift is needed to reduce volumes without adding capacity. Thus, additional analysis is needed to better understand and characterize the delays along the de-elevated roadway due to congestion and the potential for diversionary traffic from the de-elevated roadway into surrounding neighborhoods.
- Existing health data resources such as the MDPH Environmental Public Health Tracking portal provide publicly available information on a variety of health outcomes and environmental data that can be readily incorporated into future assessments of existing health conditions and potential health impacts associated with transportation projects.

The following study-specific recommendations were generated based on the assessment of public health impacts/benefits associated with the pilot GM HIA:

Air Quality

- All future study alternatives, including the 2035 No-Build, will result in significant reductions in traffic-related air pollution largely attributed to advancements in vehicle emissions standards and technologies. Continued support for the implementation of MassDEP efforts to reduce motor-vehicle related emissions including the Low Emissions Vehicle (LEV) program, emission control retrofits on diesel buses and construction equipment, and vehicle inspection programs may further improve both local and regional air quality.
- De-elevation of the highway structure is anticipated to result in an increase in ground-level exposure to traffic-related air pollutant emissions (i.e., criteria pollutants, hazardous air pollutants, ultrafine particles). Thus, implementation of mitigation measures (e.g., locating sidewalks and bike paths further away from the roadway, installation of barriers, planting of trees) based on more comprehensive assessment of air pollution impacts should be explored where possible to reduce exposure to traffic-related air pollutants.
- When available, traffic density information can provide a reasonable surrogate for exposure to traffic-related pollutant emissions and should be considered as a viable screening tool in the early phases of the transportation planning process and potential alternative to more resource intensive air quality modeling efforts.
- The CTPS is expected to update the travel survey data and model used to estimate emissions in the Travel Demand Model. As a result, a sensitivity analysis to determine if major changes to the model output will occur when the Travel Demand Model is updated should be considered.

Noise

- A screening-level analysis of noise impacts in an area with the highest predicted traffic volumes indicated higher noise impacts would be expected with a de-elevated highway structure. A more comprehensive analysis of noise impacts to sensitive receptors from de-elevating the highway within the buffer area is recommended in order to identify areas where noise mitigation may be warranted.

Mobility and Connectivity

- Although detailed designs of all four future alternatives have not been developed at this stage of the MassDOT GM Study, it is anticipated that all future pedestrian and bicycling networks will conform to the Complete Streets guidelines by incorporating high quality design elements that encourage active transportation. Efforts to support and maintain improvements to the pedestrian and bicycling

network, including providing accessibility to disabled residents, are critical. In addition, support for a multifaceted approach to increase active transportation choices within the neighborhoods is vital, including consideration of cultural preferences and demographic diversity in Somerville, as well as socioeconomic status of residents.

- The significant improvements in mobility and connectivity associated with alternative designs demonstrate the need for continued support of local efforts to reduce childhood obesity in Somerville. Since 2002, the City of Somerville, and academic partners at Tufts University, have implemented initiatives to promote healthy eating, active living, and healthy weight, collectively referred to as Shape-Up Somerville (SUS) in partnership with the community. These efforts, along with infrastructure improvements with transportation design, are critical given that the current rate of childhood obesity in this area is 10% higher than the statewide average as documented in the GM HIA.

Public Safety

- Recommendations by DPH in the Highway Safety Plan to reduce injuries and fatalities should be incorporated into alternative designs.
- Efforts to support reduced travel speeds and volumes both on the de-elevated highway and in nearby neighborhoods will decrease injuries and fatalities.
- Developing and promoting plans with local law enforcement to ensure safety along sidewalks, the bike path and green space will increase the likelihood of selecting active transportation options.

Land Use and Economic Development

- The MassDOT GM Study and this HIA assume that future development of the area around the McGrath Highway, along with the operation of the Green Line Extension, will greatly increase the availability and accessibility of goods and services in the area. This, in turn, is likely to enhance employment opportunities presumably for local residents, as projected in the MassDOT GM Study. In addition, access to green space will increase. All of these improvements should result in better physical and mental health and social cohesion due to a greater sense of connection to the neighborhood and its goods and services. While these efforts will likely have a significant benefit to this neighborhood, the potential for gentrification is high. For that reason, future plans should consider significant community involvement in future housing plans such that current residents might best benefit.