

## **Abstract**

This project provides a series of four paths for light rail between the Downtown Central Hub and the Northwest Metropolitan Transit Authority of Harris County (METRO) Transit Center in Houston, Texas. These potential light rail routes are alternatives to a failed proposal for University and Uptown routes that would still connect Houston's downtown central business district (CBD) with its largest financial district, the Uptown District. Building such an additional line would have an immediate, positive impact by promoting traffic efficiency, health benefits, environmental renewal, business growth, and commuting options. The method used builds upon prior least-cost path (LCP) research by incorporating domain specific engineering standards, lessons learned from the prior failed proposal, and viable path corridors (VPC). The results of the study are paths that follow existing light rail, freight rail, and road rights-of-way (ROW). The results include four iterations of the model: VPC only, Population, Residential Roads, and All Cost Rasters runs. Based on lessons learned from the prior DOT and METRO light rail line study and the application of the combined VPC and LPC method, the study found several feasible route options that run in areas different than the failed Uptown and University routes. These alternatives are suggested as preliminary candidate routes that will later be refined by planners, engineers, and surveyors.