



THE ECONOMIC IMPACT OF COMPLETING THE MASS CENTRAL RAIL TRAIL

JUNE 22, 2022

For: Norwottuck Network
Attn: Craig Della Penna, Executive Director
62 Chestnut Street
Florence, MA 01062-1405
413.575.2277



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Cover Letter



Craig Della Penna, Executive Director
Norwottuck Network
62 Chestnut Street
Florence, MA 01062-1405

June 22, 2022



By: Kittelson & Associates, Inc.
One Washington Mall, Suite 1101
Boston, MA 02108
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RE: THE ECONOMIC IMPACT OF COMPLETING THE MASS CENTRAL RAIL TRAIL

Dear Mr. Della Penna,

Kittelison & Associates, Inc. (Kittelison) is pleased to submit our qualifications to the Norwottuck Network for The Economic Impact of Completing the Mass Central Rail Trail project. Kittelison is partnering with Cambridge Econometrics (CE) to form the Kittelison Team for this project. Kittelison will serve as the prime consultant, manage the project, and closely coordinate with the Norwottuck Board.

Kittelison provides comprehensive transportation planning, engineering, and research services to government and private organizations with a proven track record of bringing projects to completion on schedule and within budget. We are known by our clients for being prompt and efficient and for providing quality products that meet and exceed expectations. Founded in 1985 and incorporated in the state of Oregon in 1988, Kittelison is now made up of over 300 professionals in 24 offices across the United States. This project will be staffed primarily by our Boston office, but our one-firm philosophy gives clients direct access to a national network of skilled transportation professionals. Kittelison's skilled professionals and national experts offer decades of progressive research, technological innovation, and industry-leading work. We recognize that healthy, sustainable places depend on efficient, active, and safe multimodal transportation that is cost-effective to manage, operate, enhance, and use.

CE is a global economics consultancy with offices in Northampton, MA. CE specializes in the application of economic impact modeling and data analysis techniques for strategic planning, policy assessment, and investment analysis. The scope of CE's work includes: economy (regions, cities & local area economic development, transportation and infrastructure, innovation, sectors, trade & competitiveness); society (jobs & skills, inequality & poverty, population, migration & housing and health & social care); and environment (energy, climate, circular economy and natural resources). CE's Massachusetts office has extensive experience working on local plans, regional economic strategies, transportation investments, and a wide-range of policy issues throughout the Commonwealth. CE's MA staff has worked with an extensive list of municipal, regional, state and non-profit clients such as MassINC, MassDevelopment, MassDOT, Metro South Chamber of Commerce, Pioneer Valley Planning Commission, and Mass Department of Housing and Community Development.

The team's project manager (PM), Alex Garbier, is based in Kittelison's Boston office. He will be the primary point of contact for the Norwottuck Network and will provide leadership and vision to the team. He will be responsible for the overall performance of each task. Alex has led multiple efforts to measure and provide context for transformative investments in bicycle and pedestrian infrastructure. In addition, he has experience identifying innovative solutions that incorporate disparate data sources to create illuminating stories and visuals for describing complex transportation issues. Alex will be supported by the project principal, Juliet Walker, AICP; and the Quality Manager, Conor Semler. Juliet brings decades of public and private sector experience working with communities to develop implementable solutions that support their vision and goals. Conor is a reliable expert in active transportation and complete street design with extensive pedestrian and bicycle guidebook experience. Juliet and Conor will provide project guidance and coordinate the quality assurance and quality control (QA/QC) reviews.

Our team is committed to improving safety, walkability, and livability through our work, and this project aligns perfectly with these goals. Kittelison has helped plan and design shared use paths and trails through partnerships with state agencies like MassDOT, community collaborators, and national transportation research organizations, such as NACTO, FHWA, and NCHRP. We have also led post-construction evaluation to monitor use and gauge project success. We have the necessary staff to complete projects within the required performance schedule, along with internal tools to help us manage these resources and commitments. All key staff members are anticipated to have sufficient time to dedicate over this project's duration if awarded.

We look forward to the opportunity and hope to successfully deliver assignments and provide technical services that support a fuller understanding of the potential benefits of a completed Mass Central Rail Trail for MA residents and visitors.

Sincerely,

DocuSigned by:

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Alex Garbier, TE
Project Manager | Engineering Associate
agarbier@kittelison.com | 510.433.8071

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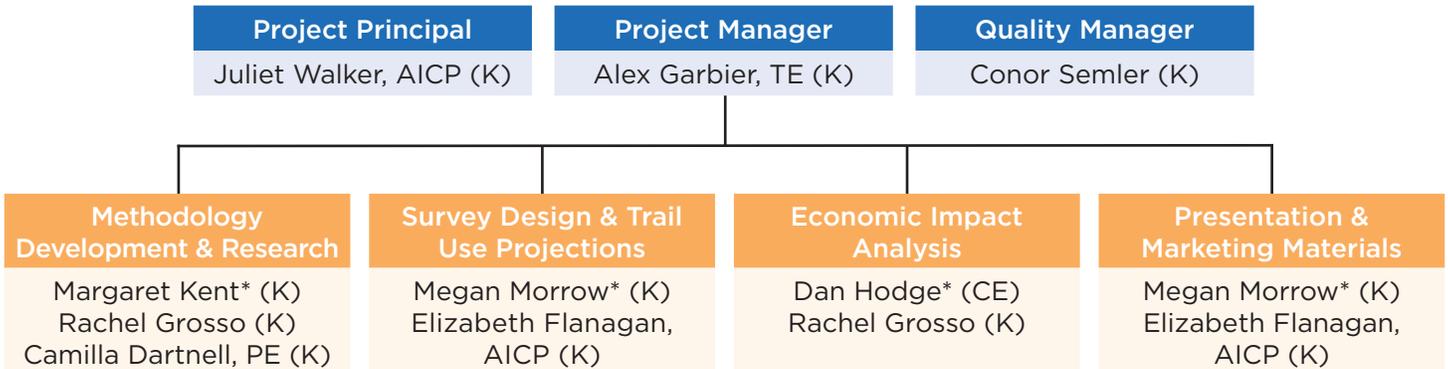
Conor Semler
Quality Manager & Authorized Signer

Staff



ORGANIZATIONAL CHART

The Kittelson team understands that proactive and attentive project management is critical to a project's success. We have a proven history of delivering quality projects and tasks to clients on time and on budget. Kittelson approaches every project with a results-oriented, outcome-based, real-world practitioner mentality. Kittelson will coordinate with the Norwottuck Network to focus on asking the right questions and determining the appropriate methodology, performance measures, tools, analysis, and deliverables to suit the project goals, schedule, and budget. This right-sized approach provides efficient, implementable, and cost-effective solutions.



Key		
(K)=Kittelson	(CE)=Cambridge Econometrics	*=Task Lead



JULIET WALKER, AICP | PRINCIPAL PLANNER

Project Principal. Juliet Walker is a community planner with expertise in land-use management and regulation, development review, community development, and multimodal transportation. She has worked with communities throughout New England and, most recently, was the planning director for the City of Portsmouth, New Hampshire. She is skilled at managing and coordinating multi-disciplinary teams and complex projects. Juliet is enthusiastic about helping communities implement transformative and systemic changes to build a more equitable and sustainable future.



Previous Positions

City of Portsmouth, New Hampshire, Planning Director (2017-2021), Transportation Planner (2012-2016). As Planning Director, Juliet managed and administered the Planning and Community Development Departments. Juliet oversaw nine staff responsible for carrying out a wide range of comprehensive and strategic planning functions. Juliet also coordinated and managed staffing of six of the City’s boards and commissions. As Transportation Planner, Juliet coordinated transportation and infrastructure planning and design initiatives, including complete streets policies and standards, bicycle and pedestrian planning and implementation, and funding applications and proposals to support related transportation initiatives. She oversaw the development and implementation of the City’s wayfinding system and reviewed/evaluated land-use applications to ensure compliance with statutory requirements. Juliet served as City liaison with local and regional public transit service providers, coordinated with the New Hampshire DOT and the regional planning commission on regional transportation improvement projects, designed and implemented a Neighborhood Traffic Calming program, and initiated and managed the development of the City’s Complete Streets Design Guidelines. She was also responsible for achieving Walk Friendly Community (Silver Level 2019) and Bicycle Friendly Community (Bronze Level 2015 and 2019) designations on behalf of the City.

Brown Walker Planners, Inc. President and Co-Owner (2009-2012), Planning Associate (2003-2008). As a community planning consultant, Juliet provided a broad range of planning services to public sector and non-profit clients. She worked in communities ranging in size from 3,000 to over 30,000 as well as with local, state, and federal government agencies throughout New England. Juliet specialized in leading public outreach and facilitation, open space and recreation planning, comprehensive and master planning, and land-use analysis.

Project Experience

Massachusetts Shared Streets & Spaces; Statewide, MA. Kittelson provided technical assistance to municipalities for applications to MassDOT’s Shared Streets & Spaces quick-build COVID-relief grant program. Since June 2020, the \$26.4M grant program has provided grants ranging from \$5,000 to \$300,000 to cities and towns across the state to quickly implement transportation and public realm projects that support physical distancing and economic recovery during the COVID-19 pandemic. Through funding provided by the Barr Foundation, Kittelson provided planning and design services to help twelve municipalities win over \$1.6M in competitive grant funding for quick-build bike lanes, bus lanes, pedestrian crossings, expanded pedestrian zones, traffic calming projects, and outdoor dining areas (‘streateries’). In the latest round of funding in early 2022, Juliet provided technical assistance to communities on project scoping, cost estimating, and conceptual design development.

MassDOT Complete Streets On-Call; Statewide, MA. Kittelson has an on-call design, engineering, and technical support contract with the Massachusetts Department of Transportation (MassDOT) in connection with the State’s Complete Streets Program. Juliet is managing a project team that is evaluating the economic impacts of Complete Streets projects in Massachusetts communities.

Elwyn Road Side Path; Portsmouth, NH. As Planning Director, Juliet managed the Elwyn Road Side Path Project to create a separated path bicycles and pedestrians that completes a critical gap in the City’s bicycle and pedestrian network. The project also provided significant safety improvements for pedestrian crossings from nearby residential neighborhoods. To fund this project, Juliet successfully applied for federal grant funds through the Congestion Mitigation and Air Quality (CMAQ) program. *Previous Employer

Education

MRP, Regional Planning, University of Massachusetts Amherst, 2001

BA, International Relations/French, University of Pennsylvania, 1996

Licenses/Certifications

American Institute of Certified Planners #025651



ALEX GARBIER | ENGINEERING ASSOCIATE

Project Manager. Alex Garbier focuses on the intersection of engineering and planning. At Kittelson, Alex has contributed to a number of projects, including safety analysis, corridor studies, and freight management. He is adept at distilling large data sets into succinct findings and producing clear and attractive visualizations. Alex brings a unique set of skills—developed through prior work in government budgeting—for considering the impact of transportation projects. Alex holds a BA in economics, and graduate degrees in transportation engineering and city planning, from the University of California, Berkeley.



Project Experience

MassDOT Trail Demand Estimation; Statewide, MA. Kittelson developed a flexible and reproducible methodology for projecting potential bicycle use on proposed trail projects that made use of a new data source generated from cell phone record data. Alex led the evaluation of the data set to test reliability of the data and then to determine relationships, such as population near a trail, that could be used to estimate demand. The methodology was applied to the Northern Strand Trail extension to estimate demand generated by the extension and understand the impact of connections to specific destinations at the norther end of the trail.

Alameda County Transportation Commission, Alameda-Oakland Estuary Crossing; Oakland/Alameda, CA. Kittelson worked on a project to improve access for alternative modes across the Oakland Estuary between the cities of Oakland and Alameda. This had long been a critical issue due to constrained vehicle access through the Webster Street and Posey “tubes” (underwater tunnels) connecting Alameda with Oakland’s Chinatown and downtown areas. Alex created a custom Excel-based tool to forecast walking and biking demand for potential crossings of the estuary, including a bicycle/pedestrian bridge, a new tunnel, and ferry service. The tool included multiple user-input fields to evaluate specific design considerations, such as the grade of the crossing and how it connects to the existing transportation network. Kittelson informed the tool using “big data” origin-destination patterns from StreetLight, household interviews, bicycle and pedestrian counts, and factors derived from regional travel modeling.

Oregon City-West Linn Pedestrian and Bicycle Bridge Concept Plan; Clackamas County, OR. Kittelson led the planning and outreach processes for evaluating potential alignment corridors for a pedestrian and bicycle bridge over the Willamette River, connecting Oregon City to West Linn. Alex conducted an evaluation that considered existing travel data, and proposed land use changes, to measure potential impacts on pedestrian and bicycle demand from the different alignments. The approach considered level of traffic stress and the impact of hills in the study area. This was critical as, the project area included steep roadways not easily accessible to all bicyclists.

Alameda County Countywide Bike and Pedestrian Plan; Alameda, CA. Kittelson updated Alameda County’s Countywide Bicycle and Pedestrian Plan for the Alameda County Transportation Commission. The new Active Transportation Plan identified projects, programs, and policies to increase biking and walking while improving safety in the county. Alex conducted a countywide safety screening and identified a countywide High-Injury Network based on the results. In addition, Alex developed a white paper describing methods used nationally to managing and reporting crash data.

Traffic Calming Evaluation; San Francisco, CA. Kittelson holds an on-call contract with the San Francisco Municipal Transportation Agency (SFMTA), under which the firm has conducted a number of transportation studies to improve operations and safety for pedestrians, cyclists, transit, and vehicular traffic. The traffic calming evaluation project improved SFMTA understanding of traffic calming and resulted in a handbook to aid in the development and analysis of future traffic calming projects within the city. Alex evaluated the historic SFMTA vehicle data and helped conduct a survey of resident experience to identify how different traffic calming devices and road characteristics impact the effectiveness of calming. He also assisted in designing improved processes for recording data and evaluation devices on an ongoing basis.

Education

Master of City Planning,
University of California,
Berkeley

BA Economics, University of
Chicago

Licenses/Certifications

Roadway Safety Professional
(RSP)



CONOR SEMLER | ASSOCIATE PLANNER

Quality Manager. Conor has experience in urban planning, traffic engineering, and technical research in complete streets design and is highly regarded for his ability to leverage transportation design to create livable and healthy communities. He focuses on improving conditions for walking and bicycling through better evaluation and design. Conor is a national leader in the planning and design of innovative bicycle facilities and was involved in the development of the NACTO Urban Bikeway Design Guide and the FHWA Separated Bike Lane Planning and Design Guide.



Project Experience

Winthrop Greenway Feasibility Study; Winthrop, MA. Kittelson led a feasibility study in East Boston and Winthrop, Massachusetts, which recommended a preferred route alignment for the extension of the Mary Ellen Welch Greenway from Constitution Beach in East Boston to Orient Heights MBTA Station and into Winthrop. The Greenway Extension will provide a critical multimodal connection between these two communities which are currently separated by the Belle Isle Inlet and can only be accessed along a busy arterial. Conor served as the project principal and guided the project team in its analysis and recommendations.

Massachusetts Shared Streets & Spaces; Statewide, MA. Kittelson is providing technical assistance to municipalities for applications to MassDOT's Shared Streets & Spaces quick-build COVID-relief grant program. Since June 2020, the \$33M program has provided grants ranging from \$5,000 to \$300,000 to cities and towns across the state. Conor led the development of peak-hour bus lane concepts for the Cities of Medford and Somerville.

Medford Shared Streets and Spaces Grants; Medford, MA. Kittelson is providing technical assistance to municipalities for applications to MassDOT's Shared Streets and Spaces grant program. The \$1.3M grant program will provide grants ranging from \$5,000 to \$300,000 to cities and towns across the Commonwealth to quickly implement transportation and public realm projects that support physical distancing and economic recovery during the COVID-19 pandemic. Through this program, Kittelson worked with the City of Medford to develop plans for grant applications. Kittelson led the design of a bus lane on Mystic Ave, which was awarded \$223,000. As project principal, Conor led coordination with Medford and oversaw the design efforts.

MassDOT Shared-Use Path Design Guide; Statewide, MA. As a member of a team, Kittelson is leading the planning and intersection design elements of the Shared Use Path Planning and Design Guide that will inform the planning, design, and construction of shared-use paths in Massachusetts. Conor worked closely with the research team to develop a framework for the guide and provided strategic direction on the content. His experience with planning and designing for walking and bicycling gives insight into the development of the chapters and content.

City of Boston Neighborhood Slow Streets Program; Boston, MA. Kittelson holds an on-call contract with the City of Boston in support of its Neighborhood Slow Streets Program to develop innovative approaches to traffic calming. The program's goal is to reduce the number and severity of crashes on residential streets, lessen the impact of cut-through traffic, and add to the quality of life in neighborhoods. As the project manager, Conor works directly with the City and the neighborhood traffic calming teams to identify and develop solutions that will slow vehicle speeds and improve safety in Boston's neighborhoods. Conor coordinates the planning, engineering, and design for up to five neighborhood areas per year. Through this work, he leads the team in identifying targeted solutions aimed at speeding, visibility, and circulation challenges in each area.

Egleston Square Redesign; Boston, MA. Kittelson is supporting Boston Transportation Department (BTD) to improve safety conditions for all road users traveling through the Egleston Square area with a particular focus on vulnerable road users. The Kittelson team is providing planning, engineering analysis, concept design, public engagement, construction plans, specifications, estimates, construction management services, and before/after analysis for the redesign of Egleston Square, tactical interventions, and related bicycle improvements. As project principal, Conor is providing guidance and senior oversight of Kittelson's activities.

Education

MA, City and Regional Planning, Cornell University, 2007

BA, Government, Colby College, 2005



MEGAN MORROW | TRANSPORTATION ANALYST

Megan is a graduate of Tufts University, where she earned her master's degree in urban and environmental policy and planning as well as the Ann Urosevich Outstanding Student Award in Policy and Planning. Her love for transportation stems from a lifetime of active and multimodal commutes. Currently, Megan enjoys a five-mile ride to the office on her electric bike. Prior to starting full-time at Kittelson, Megan worked at Superpedestrian and spent a summer as a Kittelson intern in the Oakland office. Megan works on a variety of projects, with a focus on geospatial analysis, equitable transportation access, and active transportation.



Project Experience

Minuteman Bikeway Planning Project; Arlington, MA. The Kittelson team is developing an action plan to address safety and access on the Bikeway, identify community goals and priorities, and describe an implementation plan for improvements to the Bikeway. Megan is conducting field observations, assessing existing conditions, preparing engagement materials, developing the project vision and goals, and producing an implementation plan.

Massachusetts Shared Streets and Spaces Technical Assistance; Statewide, MA. Kittelson is providing technical assistance to municipalities for applications to MassDOT's Shared Streets and Spaces grant program. The \$1.3M grant program will provide grants ranging from \$5,000 to \$300,000 to cities and towns in across the Commonwealth to quickly implement transportation and public realm projects that support physical distancing and economic recovery during the COVID-19 pandemic. Megan is preparing project cost estimates, designing plan view and cross-section graphics using Illustrator and CAD software, and analyzing performance metrics at project sites.

Mystic River Crossing Volume Estimation; Arlington, MA. The Kittelson team estimated demand for a proposed pedestrian and bicycle bridge across the Mystic River. Megan used StreetLight, transit, and vehicle count data to estimate bicycle and pedestrian mode share and induced demand with the proposed crossing.

Statewide Trail Conditions Study; Statewide, MA. The Kittelson team is conducting a statewide study of bicycle trail pavement conditions in Massachusetts. Megan is preparing the data collection equipment, developing a best practices guide for data collection, and collecting data on bicycle trails.

Egleston Square Redesign; Boston, MA. The Kittelson team is conducting a multimodal needs assessment in the Egleston Square neighborhood and providing recommendations for tactical improvements and permanent design changes with a focus on people walking, biking, and taking transit. Megan is conducting the existing conditions analysis and needs assessment process, preparing project visuals for use in community engagement, analyzing existing and future traffic operations, and preparing concept designs using CAD software, and designing bicycle and pedestrian facilities using CAD software.

FDOT D5 Bicycle and Pedestrian Master Plan; Statewide, FL. The Kittelson team is preparing a district-wide Master Plan to outline preferred bicycle and pedestrian infrastructure in FDOT's District Five. identify and prioritize projects that will improve and expand the district's multimodal transportation network. Megan is performing data collection, analyzing existing conditions using GIS, coordinating public engagement, and preparing reports and presentations for the client.

Boston Traffic Safety and Design On-Call; Boston, MA. The Kittelson team is addressing community safety and transportation concerns with short-term, tactical implementations at sites across the City of Boston with short-term tactical implementations. Megan is performing field reviews and developing concept designs and installation guides using CAD software.

FDOT Ped/Bike Strategic Safety Plan; Statewide, FL. The Kittelson team prepared a statewide strategic plan to evaluate, analyze, and promote the implementation of safety strategies with the goal of reducing pedestrian and bicyclist fatalities and serious injuries. Megan conducted stakeholder engagement, created graphics, and developed the plan framework, goals, and objectives.

FHWA Quick Build Accessibility Guide. The Kittelson team is developing a research report addressing best practices for ensuring accessibility for visually impaired pedestrians in the design of innovative and quick-build pedestrian and bicycle facilities. Megan is compiling relevant literature and a state of practice review.

Education

MA, Urban and Environmental Policy and Planning, Tufts University, 2020

BA, Global Environmental Change and Sustainability, The Johns Hopkins University, 2015



MARGARET KENT | PLANNER

Margaret embraces the essential role of transportation in daily lives. She has worked on transportation initiatives addressing environmental, equity, and health impacts of transportation and land use systems. As an implementation-oriented planner, Margaret enjoys weaving together quantitative and qualitative data, community engagement, visual communication, concept design, and close collaboration with engineering teams to advance transportation projects. Her projects range from quick-build intersection redesigns to statewide bicycle and pedestrian plans and long-range transportation plans.



Project Experience

Massachusetts Shared Streets & Spaces Technical Assistance; Statewide, MA.

Kittelson provided technical assistance to municipalities for applications to MassDOT's Shared Streets and Spaces grant program, which has awarded \$33 million in total to 183 cities and towns from 2020 to 2021. Through funding provided by the Barr Foundation, Kittelson helped municipalities develop concepts and implement funded projects, which have included quick-build bike lanes, bus lanes, pedestrian crossings, expanded pedestrian zones, one-way conversions, traffic calming projects, and outdoor dining areas ('streateries'). Margaret serves as the project manager for the contract and as the task lead for nine municipalities. She was a core team member that created the Quick and Creative Street Projects: Measuring the Impact in Mass evaluation report. Margaret developed survey questionnaires to assess the impact and favorability of bicycle and pedestrian facilities, and her team conducted intercept surveys at multiple sites. She also provided technical assistance for the most recent round of grant funding in 2022.

Winthrop Greenway Feasibility Study; Boston and Winthrop, MA. Kittelson led a feasibility study in East Boston and Winthrop, MA to recommend a preferred route alignment for the extension of the Mary Ellen Welch Greenway from Constitution Beach in East Boston to Orient Heights MBTA Station and into Winthrop. The Greenway Extension will provide a critical multimodal connection between these two communities which are currently separated by the Belle Isle Inlet and can only be accessed along a busy arterial. Margaret worked on the existing conditions assessment, development of route alternatives, and community engagement, including virtual engagement during COVID-19 and on-site pop-up meetings using public health protocols.

MassDOT Shared-Use Path Design Guide II; Statewide, MA. Kittelson is on the team writing the Shared Use Path Design Guide, which will inform the planning, design, and construction of shared use paths in Massachusetts. Kittelson is leading the trail crossing and intersection design and performance measures chapters. Margaret's role includes conducting research, drafting written content, and participating in focus groups with stakeholders within the Massachusetts Department of Transportation (MassDOT) and the Department of Conservation & Recreation. The guide will recommend best practices for public engagement, planning, project development, and design of shared use path facilities across the Commonwealth. Topics include planning for path users, project timelines, context sensitivity, environmental planning and permitting, right-of-way, utilities, programming and funding, and design of paths and crossings/intersections.

Lynn Bicycle and Pedestrian Network Plan; Lynn, MA. Kittelson led the Bicycle and Pedestrian Network Plan for the City of Lynn to develop an extension of the Northern Strand Community Trail and a connective bicycle network. The project included a feasibility study and concept design of a shared use path and on-street two-way separated bike lane connecting West Lynn neighborhoods with the Lynn Common, downtown, and the Lynn Shore. Margaret worked on the analysis and mapping, route alternatives evaluation, public engagement, design concept, and network plan. The planning process aligned state and grassroots efforts, setting the City of Lynn up to leverage the Northern Strand extension as an equitable resource for connecting neighborhoods to the downtown and to the waterfront. The shared use path segment has been constructed, and the state is advancing the separated bike lane through the design process.

Palisades Trolley Trail Feasibility Study; Washington, DC. Kittelson led a study for the District Department of Transportation (DDOT) to determine the feasibility of a multi-use trail between downtown Georgetown and the Palisades and Foxhall neighborhoods in Washington, DC. Margaret worked on existing conditions mapping, analysis to inform the project Purpose and Need statement, public meeting graphics for five alignment alternatives, key crossing concepts, and trail termini connections to the street network, and the final report.

Education

MCRP, Transportation, Georgia Institute of Technology, 2017

BA, Environmental Studies, Oberlin College, 2010



RACHEL GROSSO | PLANNER

Rachel is a passionate planner with technical experience in planning, operations, and design for active transportation, transit, and emerging technology projects. She brings a research-oriented background and a wide knowledge of environmental sustainability to her practice. Rachel is focused on solving transportation challenges with innovative, equitable, and sustainable solutions.



Project Experience

MassDOT Complete Streets On-Call – Shared Use Path Benefits Study; Statewide, MA. Kittelson holds a three-year on-call design, engineering, and technical support contract with the Massachusetts Department of Transportation (MassDOT) in connection with the State’s Complete Streets Program. For this study, original bicycle and pedestrian intercept surveys, along with permanent counter data, empowered the research team to develop methodologies to quantify the health, safety, economic, environmental, social, and transportation benefits of shared use paths in Massachusetts. Rachel led the creation of a GIS-based methodologies for quantifying the accessibility and equity benefits of shared use paths in Massachusetts communities.

MassDOT Shared Use Path Planning & Design Guide; Statewide, MA. Kittelson led the planning elements of the Shared Use Path Planning and Design Guide that informs the planning, design, and construction of shared use paths in Massachusetts. For this guide, Rachel engaged with stakeholders to inform best planning practices, in addition to developing a performance measurement framework for the planning, design, construction, and maintenance of shared use paths.

MassDOT Economic Impacts of Complete Streets; Statewide, MA. Kittelson is currently leading research on the economic impacts of Complete Streets projects funded through the MassDOT Complete Streets Program. This project includes a literature review of best practices in economic impact measurement for active transportation, selecting and evaluating up to 6 Massachusetts Complete Streets projects case studies, and providing recommendations on data collection and program administration improvements. Rachel is leading the data collection, analysis, and outreach components of this project, which is expected to finish in early 2023.

NCHRP 15-78: Impacts of Roadway Reallocation; National. Kittelson is currently leading research on the impacts of roadway reallocations (also known as ‘road diets’) in 10 United States cities. These case studies analyzed the economic, safety, and transportation impacts of reallocating roadway space from vehicular lanes to bicycle lanes, wider sidewalks, or transit improvements across the US. Rachel led the transportation impacts analysis utilizing Streetlight data to calculate travel time and traffic volume changes before and after implementation.

MassDOT Systemic Safety Analysis – Springfield & Brockton; Statewide, MA. To address high crash areas, Kittelson is assisting MassDOT with targeted systemic safety projects in Springfield and Brockton. Utilizing Highway Safety Improvement Program (HSIP) data, raw crash data, and MassDOT roadway risk screening data, Rachel worked with MassDOT and the Cities of Springfield and Brockton to identify priority areas through a GIS screening. These priority intersections and corridors were then evaluated to recommend systemic safety improvements, most of which address pedestrian, bicycle, and transit rider safety.

NCHRP 03-133: Non-Motorized Users at Signalized Intersections; National. Kittelson led the research that will help improve the safety and efficiency of vulnerable users at signalized intersections. Rachel researched 32 bicycle and pedestrian treatments to identify research gaps and assemble a toolbox for creating safer, more comfortable, and more efficient intersections.

Education

BA, Environmental Studies & Science, Goucher College



CAMILLA DARTNELL, PE | SENIOR ENGINEER/PLANNER

Camilla specializes in active transportation planning and data analysis. She has experience in non-motorized transportation planning, safety, level of traffic stress, and GIS analysis, operational analysis, conceptual bicycle and pedestrian facility design, bicycle facility research, and transportation demand management. When working on transportation projects, she combines her research and planning experience with her passion for active transportation to develop solutions to establish multimodal transportation facilities, serving multiple users.



Project Experience

Massachusetts Department of Transportation Shared-Use Path Impact Study, MA. Camilla led the research of the health, safety, economic, environmental, social, and transportation impacts of several shared use paths in Massachusetts, including the Norwottuck Branch of the Mass Central Rail Trail. Camilla coordinated multi-day intercept surveys and implemented permanent bicycle and pedestrian counters along four shared use paths to generate data to support the study. The study has produced valuable insights about the benefits of active transportation infrastructure and provide a comparison of their various uses and impacts in different land use contexts. The study has also provided useful in determining gaps in available data necessary to determine social and economic and impacts of specific transportation infrastructure.

NCHRP 15-78: Guidebook for Urban and Suburban Roadway Cross-Sectional Reallocation. Camilla identified the social, economic, environmental, and safety impacts of adding, widening, narrowing, or removing each potential cross-sectional element, including bicycle lanes and sidewalks. This guidance is intended to help agencies make infrastructure decisions that support their broader community goals.

MassDOT Trail Use Estimation; Statewide, MA. Camilla led a team in the development of a methodology to estimate the number of bicyclists along different sections of urban trails. The team tested the impact that different land use and transportation characteristics have on the number of bicyclists that use shared use paths by comparing these characteristics to Streetlight Data and bicycle counts along the trail. The team is currently developing a methodology to estimate the number of bicyclists on different sections of rural trails, including the Norwottuck Branch of the Mass Central Rail Trail. These studies provide insight into the types of destinations and land uses along a trail that generate the most use.

MassDOT Trail Conditions Study; Statewide, MA. Camilla is leading the evaluation of trail pavement conditions along trails in Massachusetts. Her team is collecting and evaluating accelerometer data and images through use of a data bike along trails throughout the Commonwealth. This study will help inform maintenance and funding needs across these trails and will create a database of "trail-view" 360 degree images for trails across the state.

Oregon Coast Bike Route Plan; OR. Camilla performed a GIS-based prioritization analysis using level of traffic stress, crash data, barriers to bicycling, local urban/rural context, and overlapping segments with the Oregon Coastal Trail. She evaluated potential deviations from the existing route based on evaluation criteria determined by the project team and created an online mapping atlas to present the data to the team and public.

FAST Planning Non-Motorized Transportation Plan Fairbanks, AK. Camilla developed bicycle and pedestrian level of traffic stress analysis methodologies and transportation disadvantaged index specific to Fairbanks based on available data sources and local context to help inform the current low stress biking and walking networks. The analyses informed the development of projects to create low stress networks.

Beaverton Active Transportation Plan; Beaverton, OR. Camilla evaluated policies and codes and made recommendations for bicycle and pedestrian specific improvements; performed system-wide level of traffic stress, crash, crossing opportunities, and bicycle and pedestrian accessibility to essential destinations analyses; and identified barriers and needs based on these analyses and prioritized each roadway in the system to determine where projects will make the most impact for bicyclists and pedestrians. Based on the analysis, she then created a prioritized project list, which will facilitate constructing a complete network for pedestrians of all abilities and bicyclists of all skill levels.

Education

BS, Environmental Engineering, Georgia Institute of Technology

Licenses/Certifications

Professional Engineer, OR
97479PE



ELIZABETH FLANAGAN, AICP | SENIOR PLANNER

Elizabeth's research focused on mapping environmental justice considerations, such as the relationships between active transportation infrastructure investment and indicators of gentrification. After returning to Boston from Montreal, Elizabeth transitioned into transportation consulting, first as a public engagement specialist and then as a planner. In this position, she has developed a strong background working with communities to implement complete streets principles, better manage curbside uses, and implement safety, multimodal, and placemaking projects through quick build and permanent installations.



Project Experience

Winthrop Greenway Feasibility Study; Boston and Winthrop, MA. Kittelson is leading a feasibility study in East Boston and Winthrop, Massachusetts, which seeks to recommend a preferred route alignment for the extension of the Mary Ellen Welch Greenway from Constitution Beach in East Boston to Orient Heights MBTA Station and into Winthrop. The Greenway Extension will provide a critical multi-modal connection between these two communities which are currently separated by the Belle Isle Inlet and can only be accessed along a busy arterial. This project includes engagement with community groups, residents, and relevant agencies and property owners; this outreach has included a site walk, a survey that reached over 500 people, project updates at Greenway Council meetings, an on-site event at multiple locations throughout the study area, interviews with agency stakeholders, community and agency/property owner focus groups, and direct outreach to neighborhoods. Elizabeth is responsible for coordinating with the client and subconsultant team to develop feasibility study materials and facilitate engagement events.

Massachusetts Shared Streets & Spaces Technical Assistance; Statewide, MA. Kittelson is providing technical assistance to municipalities for applications to MassDOT's Shared Streets and Spaces grant program. The \$1.3M grant program will provide grants ranging from \$5,000 to \$300,000 to cities and towns in across the Commonwealth to quickly implement transportation and public realm projects that support physical distancing and economic recovery during the COVID-19 pandemic. Elizabeth has worked with the City of Medford and towns of Sterling and West Stockbridge to prepare concept plans and opinions of probable cost for quick-build or tactical COVID-relief projects. These have included a dedicated bus lane as well as various outdoor dining and open space improvements, Safe Routes to School improvements, and traffic calming.

MassDOT Shared Use Path Planning and Design Guide; Statewide, MA. Elizabeth is on the team developing the MassDOT Shared Use Path Planning and Design Guide. Her role includes coordinating with the client and project team across firms. Elizabeth is also involved in the development of planning and design guidance.

Minuteman Bikeway Planning Study; Arlington, MA. Kittelson is leading a team to assist the Town of Arlington, Massachusetts retrofit the Minuteman Commuter Bikeway to improve safety and access. The Town is seeking corridor-wide strategies to manage crowding and speeding, immediate and long-range maintenance needs, and policy guidance to address user behavior and new technologies, such as e-bikes. As a multimodal commuter and recreation corridor, the project sought input with an online and in-person intercept survey that received feedback from nearly 1,700 participants. Elizabeth is managing this project.

Solomon Foundation On-Call. Working with public and private partners, the Solomon Foundation identifies projects that will improve Greater Boston's major public parks and greenways. Through this On-Call, Kittelson provides preliminary services for greenway and trail planning and design. Elizabeth has been involved as a planner on tasks related to assessing shared use path planning level alignment alternatives and feasibility.

Gilbert Transportation Master Plan Update; Gilbert, AZ. The Town is in the process of developing a Transportation Master Plan. Elizabeth is part of the team focused on the plan's trails component. Elizabeth helped develop of the existing conditions assessment and worked with the trails team to develop trail and trail crossing typologies that will inform safety and amenities upgrades to the system. In addition, the trails team has developed a phased, town-wide vision for the future trails network buildout. The findings, trial typologies, and design guidance were crafted into a toolkit for the Town, and the team provided an implementation plan with project, policy, and programming recommendations.

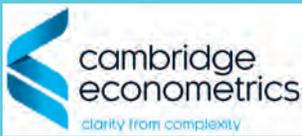
Education

MS, Urban Planning, McGill University, 2015

BS, Environmental Studies, Wellesley College, 2011

Licenses/Certifications

American Institute of Certified Planners (#31501)



ALEXANDER FROST | SENIOR ECONOMIST

Alexander Frost is a Senior Economist in the Regions, Cities and Local Areas team at Cambridge Econometrics, specializing in regional and local economic development policy and strategy, infrastructure, and housing and urban planning. Alex previously worked as Economic and Policy Analyst for New Anglia LEP, and before that as a Researcher for a Member of Parliament.



Project Experience

Economic Recovery Planning Services (Phase 2 and 3), Pioneer Valley Planning Commission. Senior Economist. During this project, Alex provided extensive support throughout the economic scenario planning process. He was primarily responsible for helping to identify the relevant themes for the regional scenario planning, and preparing and reviewing the accompanying literature, data, and methods. This was across a wide-range of socio-economic variables, including demography, housing and urban planning, income and poverty, and labor markets. He is leading the data collection, analysis and economic impact modeling of scenarios in the Pioneer Valley related to: 1) increasing workforce participation; 2) enhancing BIPOC home and small business ownership; 3) reversing stagnant population trends; 4) expanding the region's clean energy industry; and 5) growing the emerging cybersecurity sector.

Economic Impacts of Industrial Development in Newtown (CT), Wharton Equity Partners. Senior Economist. Alex recently led the economic impact analysis of a major greenfield development project in Connecticut. This project proposes to develop one (or more) industrial buildings on approximately 40 acres for warehousing, distribution, or other light industrial/manufacturing uses. Alex worked with client inputs to apply the US BEA's RIMS II economic impact model to estimate the total economic impacts of both: a) near-term construction and capital expenditures; and b) sustained operations and employment at the planned industrial facility.

Assessment of Northern Georgia Communities for Potential Coal Impacts, Georgia Department of Community Affairs. Senior Economist. This study sought to explore and estimate potential Georgia communities that may experience impacts due to the decline of the U.S. coal industry. Alex was responsible for preparing, running, and presenting a series of scenarios which used input-output modelling to estimate the direct, indirect and induced economic effects of coal-fired power plant closures in Appalachian Georgia. This included the planned closures at Plant Bowen, one of the largest coal-fired power plants.

Essex Economic Scenarios, Essex County Council. Economist. Alex was part of a team which helped to prepare a series of forecasts to illustrate a credible range of future scenarios for the economy of Essex, England. Alex was primarily responsible for reviewing the relevant literature and data inputs. Short-run analysis included modelling the impacts of the Covid-19 pandemic restrictions, a no-deal 'Brexit' agreement, and the implementation of a 'Green Recovery' strategy. Long-run analysis focused on the potential impacts of an increase in remote working on local wages, commuting patterns and demand for residential and office space.

Transport East Transport Strategy, Transport East. Economist. This project sought to produce the East of England regions first Transport Strategy. Alex helped to prepare detailed (post-Covid) projections for the region and its constituent local areas, which acted as a baseline (reference) forecast against which alternative scenarios were tested. Alex supported the development of several narrative-driven scenarios, which considered potential economic, housing, and transport needs, with a particular focus on the possible implications of remote working.

Education

Graduate Diploma, Economics, University of Nottingham, 2019

Bachelor of Science in Economics, International Politics, University of Wales, 2014

Employment History

Senior Economist, Cambridge Econometrics, 2021-Present

Economist, Cambridge Econometrics, 2019-21

Economic and Policy Analyst, New Anglia LEP, 2015-18

Researcher (Intern), Dr Dan Poulter MP, 2013

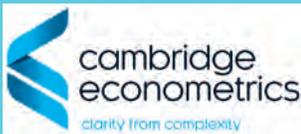
Area of Expertise

Economic development analysis and strategy

Economic impact and benefit-cost analysis

Transportation and infrastructure investment

Housing and urban planning



DANIEL HODGE | EXECUTIVE VICE PRESIDENT

Dan Hodge, Executive Vice President at Cambridge Econometrics, has 25 years of experience in economic development, urban and transportation planning, benefit-cost analysis, and public finance. Previously, Mr. Hodge was Director of Economic Policy Research at the UMass Donahue Institute, and was a Senior Economist at HDR Decision Economics and Cambridge Systematics. He has led numerous economic development, infrastructure, economic impact, and transit-oriented development (TOD) studies.



Project Experience

Rapid Recovery Plans for Pittsfield and Turners Falls, Massachusetts Department of Housing and Community Development. Mr. Hodge was the Plan Facilitator for downtown rapid recovery plans recently completed (October 2021) in Pittsfield and Turners Falls in Western Mass. He was engaged in all aspects of data collection and diagnostics, stakeholder engagement, project recommendations and final plan development to identify priority projects eligible for anticipated funding.

Economic Development Strategic Plan for Town of Auburn (MA). Mr. Hodge led all aspects of an economic development strategic plan for the town of Auburn, MA. This plan included a data-driven profile of economic conditions, interviews with local/regional development stakeholders, SWOT analysis, strategy development and public meetings. Mr. Hodge was retained by the town to help implement the plan, including the development of marketing and promotional materials to highlight the town's assets.

Economic Impacts of Federal Sequestration Spending Cuts on Massachusetts, MA Administration and Finance. Mr. Hodge led a complex, customized study of the economic impacts of reduced federal spending due to the sequestration budget cuts. This project applied a comprehensive approach to understand all the ways that federal funding impacts Massachusetts agencies, local government, the defense sector, research organizations and the private sector. The assessment of "direct" impacts was converted into statewide impacts to jobs, gross state product and personal income.

Strategic Economic Recovery Planning, Pioneer Valley Planning Commission. Mr. Hodge is leading a regional economic recovery planning project for the Pioneer Valley region in western Massachusetts. Guided by stakeholder engagement, that work is focused on three key areas: 1) developing a more equitable and inclusive economy; 2) identifying industry opportunities to sustain future economic vitality; and 3) enhancing the region's capacity to successfully implement new (or scaled-up) economic initiatives.

Neponset Greenway TIGER Application, Massachusetts Department of Conservation and Recreation (DCR). Principal Economist. Working with DCR and a team of planners and engineers, Mr. Hodge led the benefit-cost and economic impact analysis for the proposed enhancements and completion of the Neponset Greenway bike and pedestrian trail in the Boston area. He and his team researched and applied novel approaches to value the health, property value, and recreation benefits of trails.

Massachusetts Rural Policy Plan, Franklin Regional Council of Governments (FRCOG). Mr. Hodge worked closely with FRCOG and the Rural Policy Advisory Commission to complete the state's first ever rural policy plan. Mr. Hodge played a multi-faceted role, leading the writing of the introduction and scene-setting context as well as the concluding recommendations and action plan. He helped act as project manager to coordinate the content development, create the organizing framework for over 12 focus areas, and edit the report for public release to policy and political leaders.

Education

Master of Arts, Applied Economics, University of Michigan, 1999

Master of Public Policy, University of Michigan, 1999

Bachelor of Arts, Economics/Business, Lafayette College, 1994

Employment History

Executive VP, Cambridge Econometrics, 2021-Present

Principal, Hodge Economic Consulting, 2015-2021

Principal Economic Development Officer, City of Oxford, 2019- 2020

Director of Economic Policy Research, UMass 2012-2015

Principal Economist, HDR, 2008-2012

Senior Associate, Cambridge Systematics, 2000-2008

Economic Analyst, REMI, 1994-1997

Areas of Expertise

Economic development analysis and strategy

Economic impact and benefit-cost analysis

Transportation and infrastructure investment

Urban planning, and transit-oriented development

Experience



PROJECT EXAMPLES

The Kittelson team has recent project experience relevant to the necessary technical skills, subject matter, and analysis methods. The projects described within this section exemplify this experience.



Winthrop Greenway Feasibility Study

*Kittelson: Winthrop, MA
MassDOT | 2021-Ongoing*

The Mary Ellen Welch Greenway (MEWG) is a linear recreational open space in East Boston. It originates at the historic Jeffries Point Waterfront and passes through the East Boston neighborhoods of Eagle Hill and Harborview on its way northward to Constitution Beach and the North Shore beyond. The trail holds aspirations of connecting to greenway networks and neighborhood linkages in Winthrop, Revere, and Chelsea.

The MEWG has several owners and maintainers, including the City of Boston's Parks Department, Massport, and the Department of Conservation and Recreation (DCR). The vision to create a "Winthrop Greenway" extension through an off-road, multiuse path has existed for decades with strong interest from East Boston and Winthrop residents, the Greenway Council, Bike Winthrop, the Winthrop Transportation Advisory Committee, and Friends of the Belle Isle Marsh. The Friends of

the Mary Ellen Welch Greenway (FoMEWG), an organization of residents that serves as the management body and stewards of the MEWG, created a Greenway Extensions Committee in the winter of 2019 that included representatives from Bike Winthrop, Friends of Belle Isle Marsh, Greenway Council members, Airport Impact Relief Inc. (AIR INC), and residents to support the envisioned greenway extensions. In 2020, Kittelson assembled a consultant team and was selected to conduct a feasibility study for a greenway extension from Orient Heights MBTA Blue Line Station in East Boston to the Belle Isle Marsh Marine Ecology Park in Winthrop. The team explored a preliminary preferred route as well as other alternatives, aiming to understand the full breadth of options available and build a strong case for future funding requests and partnerships.

The feasibility study assessed three primary route options and recommended a preferred alignment following evaluations of each route based on community-driven goals. This project included engagement with community groups, residents, and relevant

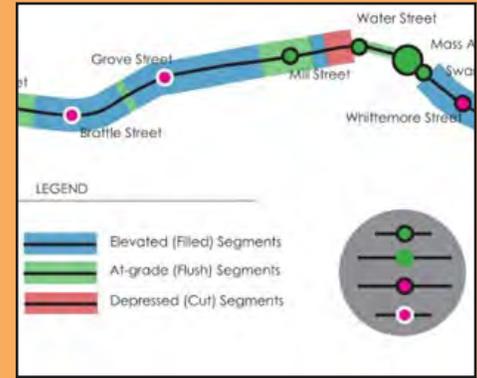
agencies and property owners, and outreach included a site walk, two surveys that received over 1,000 responses, project updates at Greenway Council meetings, an on-site event at multiple locations throughout the study area, interviews with agency stakeholders, community and agency/property owner focus groups, and direct neighborhood outreach. Existing conditions analyses included data such as right of way and private property ownership, environmental review, agency maintenance and operations needs, the presence and condition of pedestrian and bicycle facilities and crossings, utilities and streetscaping, crash history, and vehicle operations.

The study synthesized the issues and opportunities on 21 distinct on-street and off-street segments and then evaluated each segment on a variety of constructibility, operations, and user quality criteria. The project team also provided tangible next steps for the community and partners to maintain the project's momentum, such as permitting guidance and potential funding sources, and provided planning-level cost estimates for each primary route option.



Estimation Step	Bike Trips	D
Existing Trail	1,175	
New Trail based on Population	1,300	
Longer Trail for Longer Trips	70	
New Connections to Destinations	130	
Daily	2,675	
Percent Increase	230%	

Bike trips from connecting to Lynn Transit Center and Beach, providing context for potential connections



Shared Use Path Economics Benefit

Kittelson | Statewide, MA
MassDOT | 2018-2021

MassDOT needed to determine the safety, travel mode, equity, accessibility, health, environmental, and economic impacts of shared-use paths. To assess these impacts, Kittelson developed meaningful and measurable bicycle and pedestrian specific metrics, determined a metric evaluation methodology, created and implemented a bicycle pedestrian specific data collection plan, collected the data, evaluated the metrics, and presented the information.

A bicycle and pedestrian counter provider (Eco-Counter) developed a Power BI based platform to present the data online for public access. Kittelson coordinated with statewide stakeholder groups, reviewed literature, took intercept surveys, and installed the counters across the state. To meet the very tight schedule, the data collection efforts were conducted simultaneously with evaluations not dependent on the count data, and a spreadsheet was prepared for count data input.

Trail Demand Estimation

Kittelson | Statewide, MA
MassDOT | 2021-Ongoing

In 2021, MassDOT received access to a new data source-- drawn from cell phone data--for estimated trail and bike facility demand. Kittelson worked with MassDOT to develop a reproducible methodology that built off the dataset to estimate the potential bicycle demand on proposed trails. Kittelson began the work by reviewing data quality of relative to existing counter data. Then the team used the new data source to understand how demand along several trails varied based on local context and trail quality. Based on these findings, the team developed a methodology for estimating demand for trail extensions, new trails, and trail connections, such as new bridges. The methodology estimates potential demand in parts, considering demand on existing trails, population with access to the trail, the length of the trail, and major destinations, such as trail stations and regional parks.

The methodology was applied to the extension of the Northern Strand Trail as a “proof of concept” and helped inform conversations around a final trail extension connecting to the beach in Lynn, MA. Ongoing work includes reviewing demand in central and western MA to identify differences between trails in urban and rural contexts and potential adjustments to the estimation methodology to account for these differences.

Minuteman Bikeway Planning

Kittelson | Arlington, MA
Town of Arlington | 2021-Ongoing

Kittelson is leading the retrofit of the Minuteman Commuter Bikeway to improve safety and access for the Town of Arlington. For this multimodal-commuter and recreation corridor, the Town is seeking strategies to manage crowding, speeding, immediate and long-range maintenance needs, and policy guidance to address user behavior and new technologies, such as e-bikes. The project sought input with an online and in-person intercept survey that received feedback from nearly 1,700 participants in addition to public participation at three meetings.

The project began with an extensive review of existing conditions that assessed the physical condition of the path, including an assessment of a prefabricated bridge, signs, pavement, drainage, and lighting. Corridor-wide recommendations were developed that identified opportunities to widen the bikeway or leverage alternate means of managing high user demand. Concept level lighting and wayfinding plans were produced. The team facilitated stakeholder working sessions with Town staff and committee members to discuss recommendations related to policy and maintenance. Finally, the project team developed a series of conceptual vignettes for the at-grade street crossings and waysides opportunities. The plan includes an implementation plan with order of magnitude costs and timeline and potential funding sources.



Shared Streets and Spaces Evaluation

Kittelson | Boston, MA

The Barr Foundation | 2020-2021

Kittelson is providing technical assistance to municipalities for applications to MassDOT's Shared Streets & Spaces quick-build COVID-relief grant program. Since June 2020, the \$33M program has provided grants ranging from \$5,000 to \$300,000 to cities and towns across the state. Through funding provided by the Barr Foundation, Kittelson has provided planning and design services to help twelve municipalities win over \$1.6M in competitive grant funding for expanded pedestrian zones, outdoor dining areas ('streateries'), quick-build bike lanes, bus lanes, pedestrian crossings, and traffic calming projects. In 2021, Kittelson was a core member of a team that created the Quick and Creative Street Projects: Measuring the Impact in Mass report, which shared before-and-after findings from 23 municipalities. Kittelson conducted pedestrian intercept surveys, observations of driver yielding rates to pedestrians, and speed studies, and coordinated an assessment of public realm and economic benefits with team partners. Currently Kittelson is assisting municipalities and regional transit authorities with applications to the January 2022 grant round.

Pioneer Valley Economic Recovery Strategy

CE | Springfield, MA

Pioneer Valley Planning Commission

CE is the lead consultant working with the Pioneer Valley Planning Commission (PVPC) on an EDA-funded economic recovery strategic planning project. CE has completed an initial work to understand and outline key regional economic priorities, with emphasis on workforce, small business, and other strategies to help create a more equitable and inclusive economy. CE is currently working with a broad-based task force of economic development stakeholders to envision future economic scenarios, trends and opportunities. This work will lead to a clearer understanding of the scale of potential economic initiatives which will drive the priorities for an action-based strategic plan. In particular, CE is leading a scenario analysis of key strategic initiatives and priorities for the region related to:

- Increasing workforce participation and removing sustained employment obstacles;
- Enhancing homeownership and small business growth opportunities for BIPOC communities;
- Reversing stagnant population trends, improving infrastructure, and prioritizing vibrant town centers and downtowns;
- Expanding business and employment in target industry sectors such as clean energy and cybersecurity.

E-W Rail/Hartford to Boston Economic & Ridership Analysis

CE | MA

CRCOG & PVPC

Working closely with Capitol Region Council of Governments (CRCOG), CE completed tasks for potential rail service improvements among Hartford, Springfield, and Boston. CE drafted the RFP scope of services for the Hartford-Boston Rail Economic Impact Analysis Study and provided guiding comments to improve the final report. CE led an assessment of the ridership projections in the MassDOT East-West Rail Study, highlighting limitations in the methods and results, and works with CRCOG staff on possible funding pathways for this project.

For the Pioneer Valley Planning Commission (PVPC), Dan led the economic analysis for a feasibility study to restore/enhance passenger rail along the Connecticut River, with new/improved stations in Springfield, Holyoke, Northampton, and Greenfield. An economic development market analysis focused on revitalization and TOD opportunities was critical. The PVPC economic and land use development analysis included interviews with local development experts in all four station cities, economic and land use data collection, and development of an economic impact modeling framework that accounts for the level of rail service, distance from the station, and vacant and underutilized sites. Dan also led the benefit-cost analysis which helped define the prioritization for future service levels and authored the executive summary. Dan was a major contributor to the successful funding application through the Federal Railroad Administration High-Speed Intercity Passenger Rail stimulus program.

Project Understanding



PROJECT UNDERSTANDING

The Norwottuck Network is requesting proposals to assess the impact of the existing and future Mass Central Rail Trail (MCRT). A goal of this project is to assess the use and economic impact of the existing and future MCRT network and to quantify the potential economic benefits for completing the full trail.

Once completed, the MCRT will run for 100+ miles between Boston and Northampton. Kittelson recognizes that the MCRT is a unique project, with the potential to provide a continuous path between Northampton and Boston and to adjacent communities that connect to the trail through intersecting paths, such as the Bruce Freeman Trail and the Manhan Rail Trail. As a result, the report will support an understanding of how the MCRT integrates into the Commonwealth's trail network, by showing the connections with other existing and proposed trails.

Recently, New York State opened the Empire State Trail, which provides north to south and east to west routes across the State of New York. The trail has generated excitement, including for potential tourism to smaller towns and cities along the trail. Kittelson understands the potential for the MCRT to fit into a similar place in Massachusetts and will integrate an informative economic analysis into the report to indicate how the completed trail could lead to similar opportunities in Massachusetts for residents and visitors.



Scope & Approach



SCOPE & APPROACH

Task 1-Methodology Development & Research

Kittelson will conduct a literature review of existing methodologies used to assess and present data and project trail use, economic and health impacts, and trail demand. Existing data on trail use at select locations along the MCRT and other Massachusetts trails will be included in the review.

Kittelson and Cambridge Econometrics (CE) will develop a methodology for gathering, analyzing, and extrapolating business and trail user survey data for use in projecting the impacts of bridging the gaps in the MCRT network. The methodology will draw from previous experience estimating trail demand on similar multiuse trails and economic impacts of recreational and tourism activities.

Deliverables:

- Methodology documentation for calculating subsequent estimates

Task 2-Survey Design & Collection

Kittelson will design and distribute a user survey to collect data on user characteristics, spending habits, and trail use cases. The survey will primarily be distributed online and advertised through local cycling clubs, trail friends groups, and local businesses. In addition, the Kittelson team will conduct intercept surveys at two strategic locations along the trail to supplement online responses. To further understand the spending habits of trail users, the Kittelson team will conduct trail user interviews. In parallel, the Kittelson team will develop and distribute a business survey, designed to glean information on the nature and volume of the impact the existing MCRT has had as well as their sense of how the local economy will be affected by

the completion of the MCRT. The business survey will be distributed online to businesses in the vicinity of existing trail segments and shorter connecting trails. Direct outreach to businesses and follow-up interviews at select locations will also be completed.

Deliverables:

- User survey questionnaire, in online (Survey Monkey) and printed form
- Business survey questionnaire, in online (Survey Monkey) form
- Survey results

Task 3-Trail Use Projections

The Kittelson team will evaluate potential trail use in a two-part process that considers access and estimated use. The team will evaluate how completion of the MCRT will increase access of residents to trail infrastructure. The Kittelson team will estimate the number of residents with access to the existing MCRT trails, with access to the MCRT if completed, and with access to the MCRT via a connecting trail. Then, using available count data, Kittelson will estimate existing and potential daily activity along the trail.

Deliverables:

- Access estimates of residents living within 1 mile of existing trail and 1 mile of proposed MCRT
- Access estimates of residents living within 1 mile of an existing or proposed connecting trail to MCRT
- Projections of annual trail use if the MCRT is fully completed, based on current MCRT user data, population density of nearby cities, and connections to existing popular trails

Task 4-Economic Impact Analysis

Kittelson and CE will describe the economic and spending habits of trail users, incorporating findings

from the collected survey data. Then, the team will project the potential direct and indirect economic impacts (including quantifiable health impacts) from completing the MCRT. The projections will include estimated spending and likely impacts on business activity. The Kittelson team will augment the analysis with findings from the literature review of other transformative trail projects.

Deliverables:

- Current direct and indirect economic impact of the MCRT
- Projections of direct and indirect economic impact of completing the MCRT

Task 5-Final Report & Marketing Materials

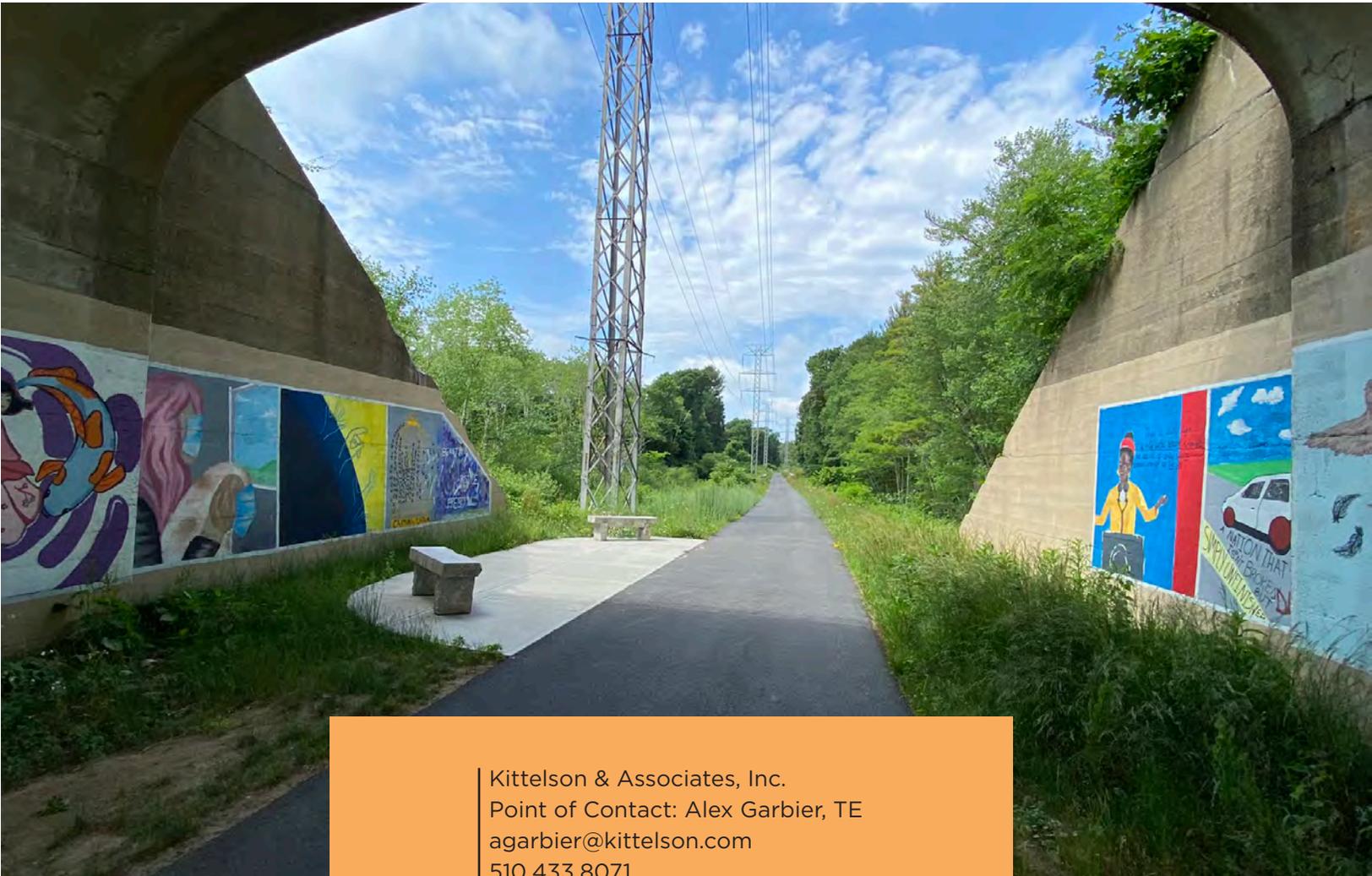
The Kittelson team will prepare a summary report that packages findings from Tasks 1 through 4 in an accessible format that identifies benefits from the existing trail and the potential benefits from a completed Mass Central Rail Trail. The report format will emphasize infographics and map figures that can be incorporated into presentation materials for the Norwottuck Network to use when speaking with stakeholders, including state and federal agencies, regional tourism councils, and local municipalities.

Deliverables:

- Summary Report (10 hard copies and USB flash drive), including Executive Summary
- Summary presentation slides

Project Management and Client Meetings

Kittelson and CE will attend up to two (2) in-person and four (4) virtual meetings with the Norwottuck Network to share project updates and discuss interim deliverables. Throughout the project, Kittelson and CE will coordinate internally.



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