

BENEFIT-COST ANALYSIS NARRATIVE

North Windham Moves: Regional Mobility - Local Access Project

The Benefit-Cost Analysis estimates more than \$161.6 million in total benefits over the 30-year analysis period resulting from the \$38.2 million investment. On a discounted NPV basis (7% for all costs and benefits except CO₂ which is discounted at 3%), the Project yields a benefit-cost ratio of 1.63:1. Benefits accrue due to the many safety improvements, ongoing maintenance net savings, reduced harmful emissions, induced active transportation and value associated with bicycling facility improvements along with a modest residual value that remains at the end of the 30-year period. The Project improves livability and the overall appearance of North Windham as outlined in the ‘Quality of Life’ section of the Merit Criteria. It will enhance overall property values. The improvements will make transit through North Windham safer, encourage more non-vehicular traffic, make roads less costly to maintain, and greatly improve the aesthetics and quality of life for regional residents, customers who rely on the commercial district and tourists. The significant aesthetic and connectivity improvements will increase residential and commercial property values in North Windham. All savings are in 2021 dollars. The Project will begin accruing full benefits in 2031; the end of the 30-year analysis period is 2060.

Net Maintenance Costs – Constructing the connector roads will decrease traffic on U.S. Highway 302 and state roads. This will reduce the amount of wear and tear the roads incur and decrease the annual maintenance costs required to keep roads in a state of good repair. Another aspect of this Project is improving the condition of each existing road which will decrease the frequency of future construction needs to keep them operational – from every 10 years to every 15 years. Both of these factors will result in a net decrease of road maintenance costs in the Project area. The NPV of these cost savings is **\$1,693,954**.

Safety – The calculated *annualized* safety benefit is \$2,035,199 and yields an overall NPV of **\$14,586,605**. These savings are based on a number of factors:

- Reducing traffic on U.S. 302 by diverting local vehicles to Manchester Drive and three new connector roads for more efficient access to shopping and dining
- Building a raised median from Franklin Drive south to River Road to prevent dangerous left turns and other traffic maneuvers
- Implementing traffic calming features on all three new connector roads
- Improving street lighting on U.S. 302 and new connector roads
- Installing a new traffic signal at the intersection of U.S. 302 and Landing Road resulting from an increase in traffic on Manchester Drive/West Connector
- Implementing an All-Way Stop at the intersection of White’s Bridge Road and the West Connector Road to assist with increased traffic volume

Vehicle Time Savings – Constructing the three connector roads will relieve traffic congestion, especially during heavy traffic hours, which will in-turn reduce the amount of time drivers spend idling – thus reducing travel time. The BCA accounts for the fact that medians and lower speed limits on connector roads, while increasing travel safety, will also slightly slow vehicles and increase vehicle travel time. Overall net time improvements generate a savings of **\$5,305,522** in NPV.

Induced Active Transportation – A multi-purpose path, separated from the road by a landscaped esplanade, will encourage pedestrians and bicyclists to utilize these new facilities. In numerous community surveys that highlighted residents’ desires, North Windham has expressed continued interest in accessing the commercial district by bicycle or on foot. In a 2021 survey which received more than 120 responses, more than 50 percent of respondents called for a multi-use path be constructed along all three connector roads. Conservatively, planners expect 1 percent of the population to use the path for bicycling. The analysis recognizes use of the pathways will be greater during warmer months and will lessen during colder months. Weather patterns were analyzed to determine the number of days in a given year that are typically warm, those of modest temperatures and periods of cold temperatures. Local user assumptions are based on prior surveys and observations combined with local history patterns. The analysis concluded that pathways will be utilized by less than one percent of Windham’s population, even during months of frequent use. The NPV of benefit reductions is **\$2,697,408**.

Bicycling Facility Improvement – Using estimated bicycling figures for the *Induced Active Transportation* benefits, the benefits were forecasted for revealed preference values. Using the values provided in USDOT’s 2023 BCA Guidance, it is projected the 2.22 miles of added multi-purpose path will yield and NPV of **\$685,453**.

Property Value Enhancements – Because the Project improves so many aspects of the commercial district, property values will be enhanced, as many studies conclude. The multi-purpose pathways, surrounded by landscaping improvements, will make the entire area more aesthetically pleasing. Maine Revenue Services has previously noted that changes in property values are driven by, and hence reflect, the value associated with local improvements in community impacts (**accessibility, safety...visual amenity, and community cohesion**), as well as economic development impacts (**business productivity**). In general, a transportation project would only lead to changes in property values (and subsequent land use) if it causes a direct change in one or more of these other local factors that affect the desirability of a location. The Project specifically targets the impacts highlighted above. The analysis utilizes the valuation that Maine Revenue Services calculates for North Windham to determine property values. It presumes a very conservative one-time one percent improvement to values upon Project completion.¹ The analysis is conservative in several ways. First, previous studies have concluded that infrastructure improvements yield increases to property values in excess of six percent; this analysis only presumes one percent.² Secondly, while the BCA guidance advises a one-time increase, the BCA assumes that increases are realized over a 3-year period. Furthermore, the analysis uses the nominal value of the 2020 property valuation assessment and does not assume any increase between today and Project completion when benefits are included. The NPV of those enhancements is **\$12,410,048**.

¹ <https://www.maine.gov/revenue/taxes/property-tax/state-valuation>

² <https://publications.iadb.org/publications/english/document/The-Impact-of-Upgrading-Municipal-Infrastructure-on-Property-Prices-Evidence-from-Brazil.pdf> & <https://www.povertyactionlab.org/evaluation/increasing-access-infrastructure-and-property-values-through-urban-investment-mexico>

Residual Value – In terms of savings, the life of Project improvements exceeds the 30-year analysis period, yielding an NPV of **\$189,560**.