Salem McGilchrist Corridor Project
Benefit Cost Analysis

FY 2020 BUILD
Discretionary Program
Benefit-Cost Analysis

May 2020

This Benefit Cost Analysis was originally prepared to support the City of Salem's 2020 Application for the Build Discretionary Progrm. The benefits and costs of the project as submitted for the 2022 RAISE Discretionary Program are substantially equivalent to what is reported in this analysis.

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Section I. BCA Summary

I.A. OVERVIEW

The BCA methodology used in this analysis is consistent with the U.S. Department of Transportation, *Benefit-Cost Analysis Guidance for Discretionary Grant Programs*, January 2020 guidelines. The detailed cost and benefit assumptions are provided in this BCA Appendix, and have been prepared by independent professional engineers and economists. **Exhibit.1.1** describes the types of benefits included in the analysis.

Exhibit 1.1: Benefit-Cost Analysis Overview

Topic	Description
Current Status, Baseline Condition & Problem to be Addressed	McGilchrist Street currently has failing intersections, long vehicle delays and high accident and fatality rates for vehicles and pedestrians. This construction project will improve roadway design and address stormwater drainage, traffic signals, streetlights, and pedestrian and bicycle facilities.
Changes to Baseline Conditions & BCA Alternatives Analysis	Alternatives in the BCA include: **Scenario 1: No build**, where the current design creates delays in vehicle movements and leads to high incident rates. **Scenario 2: Build** includes: roadway widening, addition of turn lanes, bike lanes, sidewalks, signals and stormwater infrastructure; results in increased throughput and enhanced safety for all travel modes.
Types of Impacts/Benefits	Project benefits include: reduced travel times for trucks and passenger vehicles, reduced O&M costs, reduced accident costs, improved air quality and residual value of the capital assets. Improved access and safety conditions will generate economic development and increase private investment and property valuations along the corridor.
Population Affected by Impacts/Benefits	The following parties will benefit from this improvement: regional and national businesses within the corridor, regional residents and employees (Salem city population = 167,400).
BCA Economic Benefit Methodology	BCA findings are monetized in terms of: reduced truck/ passenger vehicle travel time costs; reduced accident costs; reduced pollutants; increased assessed property values, and residual value of capital assets over a 30-year time frame. Benefits are discounted by 7%.

The results of the BCA indicate a benefit-cost ratio of 3.1:1 when analyzed with a 7% discount rate over 30 years. Discounted project benefits are projected at $63,793,594 while project costs are $20,622,745. **Exhibit 1.2** provides a summary of the benefit and cost categories.

Benefits accrue to economic competitiveness (reduced delays, increased land value), residual project value, environmental (air quality benefits), safety benefits, and good repair categories.

Additional discussion of project benefits is provided in Section II, and project costs are discussed in Section III of this report.

Exhibit 1.2 BCA Results (30-year analysis)

Benefit Cost Analysis of Salem McGilchrist Corridor Project BUILD Application

Project Benefit and Cost Analysis Summary (30-year analysis)

Category	Zero Discount Rate*	Discount Rate @7%
Economic Competitiveness		
Value of Reduced Travel Delay, Cars	$ 98,709,534	$ 22,570,249
Value of Reduced Travel Delay, Trucks	$ 31,217,247	$ 7,217,844
Increased Land Value	$ 19,349,783	$ 9,055,909
Residual Value		
ROW Residual Value	$ 5,100,000	$ 669,972
Capital Investment Residual Value	$ 9,395,754	$ 1,234,293
Environmental		
Vehicle Emission-Related Cost Reductions, Cars	$ 140,583	$ 32,145
Vehicle Emission-Related Cost Reductions, Trucks	$ 40,074	$ 9,266
Safety		
Accident-Related Health & Damage Cost Reductions	$ 74,807,401	$ 22,579,773
State of Good Repair		
Reduced Roadway O&M	$ 787,927	$ 424,142
Total Benefits	**$ 239,548,303**	**$ 63,793,594**
Total Cost of Project	**$ 27,880,000**	**$ 20,622,745**
Calculation of Benefit/Cost Ratio	**8.6**	**3.1**
Benefit-Cost Ratio	**8.6:1**	**3.1:1**

** These values are expressed in constant 2018 dollar amounts*

Section II. PROJECT BENEFITS

Each benefit category and its components address needs along the project corridor. The existing conditions of the corridor are detailed below along with the improvements proposed along the corridor should BUILD funds be allocated to the project. In addition to the below descriptions, the methodology used to determine the value of each benefit component is detailed below to provide a narrative summary for assumptions and metrics used in the BCA.

II.A. NO-BUILD SCENARIO

The McGilchrist corridor currently suffers from long travel delays, poor lighting, inadequate stormwater infrastructure, dangerous conditions for all modes of transportation and poor connectivity.

The McGilchrist corridor is located in a major employment area west of Salem's municipal airport, McNary Field and south of downtown Salem, the Oregon State Capitol Building, and Willamette University. Since 2006, the corridor has been the focal point of Salem's McGilchrist Urban Renewal Area (URA), a tax increment financing designation focused on improvements to the corridor with the end goal of stimulating private development. Preliminary design and environmental approvals are now complete and were 100% funded by the city of Salem.

II.B. BUILD SCENARIO

Should this project receive BUILD funding, improvements to the corridor will allow the employment areas served by the McGilchrist corridor to fully develop in line with the City's Comprehensive Plan objectives. Chief among the barriers to development in the area is the substandard condition of McGilchrist corridor including the majority of its major intersections. These issues will be addressed as follows:

- Roadway widening along McGilchrist roadway will add curbs, sidewalks and bike lanes.
- Safety improvements at intersections such as signals, and turning pockets.
- Improvements to stormwater infrastructure in conjunction with the recently adopted Stormwater Master Plan.

The implementation of these improvements will generate numerous quantifiable benefits which are detailed below. This discussion also describes the methods by which these benefits were quantified for this project's BCA.

II.B.1. Reduced Passenger Vehicle and Truck Delay

Significant travel time benefits are expected for this corridor. According to independent traffic engineer modeling, travel time improvements will be most pronounced for westbound travelers. An 18 minute peak-hour westbound travel time is expected in 2044 for the corridor in the No Build scenario while in the Build scenario that figure will be improved to 2 minutes and 15 seconds. The BCA results rely on peak hour vehicle trip (PHVT) counts for 2018 and 2044 and traffic volume

allocations for cars and trucks provided by independent traffic engineers. PHVT travel occurs for 90 minutes in the AM and 90 minutes in the PM time frame on an average weekday.

To determine the benefit of travel time reductions, the BCA factors the aforementioned eastbound and westbound PHVT figures by the percentage share of truck and car traffic to determine trip counts for each direction of travel and each type of vehicle. These figures were then multiplied by corresponding projected travel times to determine total peak-hour travel time in each direction for the build and no-build scenarios. The difference between the two figures was multiplied by occupancy figures provided by USDOT to determine peak-hour person hours saved in the build scenario.

Next, peak hours of travel time reductions were multiplied by 260 (work-weekdays per year) to convert to PHVT to annual hours saved, and then multiplied by hourly value of time savings provided by USDOT (all-purpose hourly value in the case of passenger vehicle figures and truck driver values for truck time savings). The resulting metric is the value of time savings for peak-hour travel for both cars and trucks.

DKS Associates (independent traffic engineer) modeled average daily traffic and peak-hour traffic volumes for existing and future conditions with and without the proposed corridor improvement. To display this benefit, the value of westbound and eastbound time savings are calculated and escalated to the anticipated year of project completion (2024) by their respective growth rates (calculated based on data for 2018 and 2044). Each year thereafter, benefits were inflated by their respective growth rates until the 2044 horizon, after which benefits were held flat.

In order to estimate the impact that the McGilchrist Corridor roadway construction will have on corridor travel times, DKS Associates also analyzed a scenario to simulate lane configuration changes that will be in-place during construction (years 2023 and 2024). Lane configuration during construction includes single travel lanes in each direction (i.e., no turn pockets at intersections). While the project is being constructed, westbound traffic will have an estimated delay of 39 seconds and eastbound traffic will experience an estimated delay of 38 seconds in comparison to Scenario 1: No Build. These results have been included in the BCA analysis which are provided in **Appendix C-E.**

II.B.2. Property Value Increase

It is expected that property values within the McGilchrist Corridor will see significant increases as a result of project completion. The City of Salem identified properties adjacent to the corridor that are expected to redevelop within ten years of project completion (sample group 1). A detailed analysis was performed using Geographic Information Systems (GIS) data and current County Assessor data to determine existing vacant and part-vacant tax lots along with their size, current value and zoning designations. City staff also identified similar properties within 1 mile of the corridor (sample group 2) that have similar zoning and access improvements akin to what is being planned as part of the McGilchrist Corridor project.

The methodology used to estimate property value increases first calculates the property value per acre in both sample groups and the net difference was determined to be the basis for property value increase. The net increase observed was multiplied by the number of acres staff expected would redevelop as a result of the project to determine the total net property value increase. This amount was spread evenly between the first ten years after project completion and discounted appropriately

by the 7% discount rate. A listing of the properties in both sample groups and property value calculations can be found in **Appendix B**.

Exhibit 2.1 Land Value Impact Analysis

Property Value per acre for under-developed tax lots in Sample Group 1	$367,083
Property Value per acre for developed tax lots in Sample Group 2	$773,080
Expected net increase in prop. Value per acre after McGilchrist Corridor Project is complete	$405,996
Vacant and Under-developed acres in Sample Group 1	47.7
Expected net increase in prop. Value after McGilchrist Corridor Project is complete	**$19,349,783**

Source: City of Salem, analysis based on Marion County Assessor records, April 2020.
Please refer to BCA Appendix B.

II.B.3. Residual Value of Right of Way and Capital Investment

In accordance with BCA Guidelines, the BCA quantifies the residual value of the capital expenses associated with this project. This figure accounts for the residual value of the right of way acquired for the project and the residual value of capital investments separately. The value of the right of way acquired will not decrease in value over time since it will not deteriorate, therefore, the cost in 2018 dollars ($5,100,000) is expected to retain its value in future years, but is discounted appropriately by the 7% discount rate.

The residual value of the capital portion of the project was analyzed to determine the general category of the capital investment (culverts, signals, sidewalk etc.). These general categories and their associated costs were summarized and a percentage of the remaining budget (less right of way, design etc.) was identified for each. Life cycles for each category were provided by OTAK civil engineers and an aggregate life cycle was determined based on the aforementioned percentage breakdown (provided in **Appendix A**). For example, using this approach a roadway capital investment with a 60-year life cycle, would have 21 years of remaining useful value in year 30, which equates to 41% of its original cost. The capital portion of the project was then discounted by 7% to determine its net present value.

Residual Value Analysis		
Component	Value ($2018)	Value at Year 30 (End of Analysis)
Right of Way [1]	$5,100,000	**$5,100,000**
Construction [2]	$22,780,000	**$9,395,754**

[1] includes acqusition, soft costs, negotiation and appraisal services.

[2] includes design, permitting and consruction hard and soft costs.

II.B.4. Emission Reduction from Passenger Vehicles and Trucks

With a significant reduction in travel times, the pollutants being emitted from idling vehicles will be measurably reduced as well.

To determine the extent of this benefit, the BCA utilizes assumptions published by the Environmental Protection Agency (EPA) entitled "Idling Vehicle Emissions for Passenger Cars, Light-Duty Trucks, and Heavy Duty Trucks" (cited in **Appendix A**) which details grams of select pollutants emitted on a per-hour basis for cars and trucks. In order to ensure a conservative estimate, the BCA used figures for smaller vehicles (Light-Duty Gasoline Fueled Vehicles (up to 6,000 GVW) for cars and Light-Duty Diesel Trucks (up to 8,500 GVW) for trucks). Multiplying these rates by travel time savings figures generated in the Reduced Passenger Vehicle and Truck Delay section, the BCA quantifies reductions in emissions. The reduction figure was divided by 907,185 to convert grams to short tons and multiplied by the recommended monetized values of emissions provided by USDOT to determine the value of the reductions in emissions. To display this benefit, the value of reduced emissions were escalated to the anticipated year of project completion (2024) by the forecasted ADT growth, which was calculated based on data for 2018 and 2044.

II.B.5. Intersection-Related and Segment-Related Accident Health Cost Reduction

Improvements such as street lighting, center turn lanes, bike lanes, signalization, and the addition of left and right turn lanes at intersections are expected to reduce the instances of injury and property damage crashes along the corridor. According to data provided by an independent traffic engineer, instances and severity of crashes are both expected to drop significantly after completion of the project. The overall McGilchrist project corridor (between 13th Street and 25th Street) is expected to see an overall reduction of 1.8 crashes/year (15% reduction) due to planned improvements.

Detailed crash reduction assumptions are included as a part of **Appendix A** which is attached to this application.

In order to determine benefit derived from these improvements and resulting crash reductions, this BCA determined percentage occurrence of each type of crash (instances of KABCO-classified crash types as well as "property damage only" crashes) for the build and no-build scenarios. The percentage likelihood of each crash type was multiplied by the costs associated with each type of crash as detailed in the BCA guidance packet provided by USDOT. This created an average "crash cost" for each of the build and no-build scenarios. These average costs were multiplied by the projected annual number of crashes in each of the build and no-build scenarios to determine total cost of crashes in a given year. To display this benefit, the quantity of crashes in the build and no-build scenarios were aggregated and inflated to the anticipated year of project completion (2024) by anticipated ADT growth, which was calculated based on data for 2018 and 2044. Each year thereafter, benefits were escalated by this growth rate until the 2044 horizon.

II.C. SECONDARY BENEFITS

Improvements to the corridor will also generate benefits which are more difficult to precisely quantify than those mentioned above, and have been excluded from the BCA benefits calculations. Such secondary benefits include the following:

- Improved stormwater management which will lead to less flooding on roadways, pedestrian or bicycle infrastructure.
- Improved freight throughput for industrial businesses in the project area.
- Increases in employment opportunities near Salem's core.
- Reduced carbon footprint of transportation by increasing multi-modal access and reducing emissions from vehicles idling in traffic.
- Enhanced access to regional airport.
- Increase in private investment that generates tax increment revenue for the City's established Urban Renewal District, which can be used to finance public facility investments such as water, stormwater, and sanitary sewer capital projects without the need for additional federal government assistance.
- Increases in short-term construction employment for 137 workers.

Section III. PROJECT COSTS

This section identifies the basis of the capital cost estimates used in this BCA.

III.A. CONSTRUCTION COST

The final design and construction cost associated with the McGilchrist Corridor is estimated at $27,880,000 in year 2018 dollars. These figures are based on the detailed construction cost estimates provided as part of the BUILD application. The final design and right of way acquisition will occur in years 2020-2022, and project construction is expected to occur in years 2023 and 2024.

III.B. TOTAL PROJECT CAPITAL COST

As shown in **Exhibit 3.1**, the total cost is estimated at $27,880,000 in 2018 dollars, or $20,623,000 in discounted dollar amounts.

Exhibit 3.1 Project Cost Assumptions

Capital Cost Schedule McGilchrist Corridor Project BUILD Application

Year:	Total in 2018$	2017 or before	2018	2019	2020	2021	2022	2023	2024
Project Cost									
Project Design	$3,160,000	$1,200,000	$98,000	$98,000	$588,000	$588,000	$588,000		
ROW Acquisition	$5,100,000				$1,700,000	$1,700,000	$1,700,000		
Project Construction	$19,620,000							$9,810,000	$9,810,000
Total	**$27,880,000**	**$1,200,000**	**$98,000**	**$98,000**	**$2,288,000**	**$2,288,000**	**$2,288,000**	**$9,810,000**	**$9,810,000**
Discount Factors									
7%		0.93	1.0	1.07	1.14	1.23	1.31	1.40	1.50
Discounted Dollars	**$20,622,745**	**$1,290,323**	**$98,000**	**$91,589**	**$1,998,428**	**$1,867,690**	**$1,745,504**	**$6,994,394**	**$6,536,817**

Source: City of Salem, Dept. of Public Works.

APPENDIX A – BCA ASSUMPTIONS

Intersection Collision Data (Existing Conditions: 2015-2020)								
Intersection	Fatal	Injury A	Injury B	Injury C	Property Damage Only	Total	Collisions Per Year	Source
13th & McGilchrist St. SE	0	1	2	6	4	13	2.6	DKS Associates, Memo, May 2020
Pringle & McGilchrist St. SE	0	0	0	7	9	16	3.2	
19th & McGilchrist St. SE	1	0	2	1	2	6	1.2	
22nd & McGilchrist St. SE	0	0	0	3	3	6	1.2	
25th & McGilchrist St. SE	0	0	0	4	7	11	2.2	
Crash Reduction Estimates (Existing vs. Build)								
Intersection			Collisions Per Year (Existing)	Collisions Per Year (BUILD)	Reduction in Crashes Per			Source
13th & McGilchrist St. SE			2.6	2.6	0			DKS Associates, Memo, May 2020
Pringle & McGilchrist St. SE			3.2	2.6	0.6			
19th & McGilchrist St. SE			1.2	1.2	0			
22nd & McGilchrist St. SE			0.6	0.55	0.05			
25th & McGilchrist St. SE			2.2	2	0.2			
Segment								
McGilchrist Street SE (1 mile)			0.7	0.4	0.3			
Intersection Collision Data (After Project Build)								
Intersection	Fatal	Injury A	Injury B	Injury C	Property Damage Only	Total	Collisions Per Year	Source
13th & McGilchrist St. SE	0	1	2	6	4	13	2.6	DKS Associates, Memo, May 2020
Pringle & McGilchrist St. SE	0	0	0	6	7	13	2.6	
19th & McGilchrist St. SE	1	0	1	1	1	4	0.8	
22nd & McGilchrist St. SE	0	0	0	3	3	6	1.2	
25th & McGilchrist St. SE	0	0	0	4	6	10	2	
Intersection Collision Probability (Existing Conditions)								
Intersection	Fatal	Injury A	Injury B	Injury C	Property Damage Only	Total	Collisions Per Year	Source
13th & McGilchrist St. SE	0.00%	7.69%	15.38%	46.15%	30.77%	13	2.6	DKS Associates, Memo, May 2020
Pringle & McGilchrist St. SE	0.00%	0.00%	0.00%	43.75%	56.25%	16	3.2	
19th & McGilchrist St. SE	16.67%	0.00%	33.33%	16.67%	33.33%	6	1.2	
22nd & McGilchrist St. SE	0.00%	0.00%	0.00%	50.00%	50.00%	6	1.2	
25th & McGilchrist St. SE	0.00%	0.00%	0.00%	36.36%	63.64%	11	2.2	
Intersection Collision Probability (After Project Build)								
Intersection	Fatal	Injury A	Injury B	Injury C	Property Damage Only	Total	Collisions Per Year	Source
13th & McGilchrist St. SE	0.00%	7.69%	15.38%	46.15%	30.77%	13	2.6	DKS Associates, Memo, May 2020
Pringle & McGilchrist St. SE	0.00%	0.00%	0.00%	46.15%	53.85%	13	2.6	
19th & McGilchrist St. SE	25.00%	0.00%	25.00%	25.00%	25.00%	4	0.8	
22nd & McGilchrist St. SE	0.00%	0.00%	0.00%	50.00%	50.00%	6	1.2	
25th & McGilchrist St. SE	0.00%	0.00%	0.00%	40.00%	60.00%	10	2	

Segment Collision Data (Existing Conditions)								
Intersection	Fatal	Injury A	Injury B	Injury C	Property Damage Only	Total	Collisions Per Year	Source
McGilchrist Street SE (1 mile)	1	0	1	8	3	13	2.6	DKS Associates
Segment Collision Data (After Project Build)								
Intersection	Fatal	Injury A	Injury B	Injury C	Property Damage Only	Total	Collisions Per Year	Source
McGilchrist Street SE (1 mile)	0	0	1	6	3	10	2	DKS Associates
Segment Collision Probability (Existing Conditions)								
Intersection	Fatal	Injury A	Injury B	Injury C	Property Damage Only	Total	Collisions Per Year	Source
McGilchrist Street SE (1 mile)	8%	0%	8%	62%	23%	13	2.6	DKS Associates
Average	8%	0%	8%	62%	23%	100%	2.6	
Segment Collision Probability (After Project Build)								
Intersection	Fatal	Injury A	Injury B	Injury C	Property Damage Only	Total	Collisions Per Year	Source
McGilchrist Street SE (1 mile)	0%	0%	10%	60%	30%	10	2	DKS Associates
Average	0%	0%	10%	60%	30%	100%	2	

Vehicle Occupancy Assumptions		
Vehicle Type	Occupancy	Source
Passenger Vehicles	1.67	USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs 2018 Table A-4
Trucks	1.00	
Peak Weekday Hours per Year	390	DKS Associates (2020 est.)

Recommended Monetized Crash Values		
KABCO Level	Monetized	Source
Fatal	$9,600,000	USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Injury A	$459,100	
Injury B	$125,000	
Injury C	$63,900	
Property Damage Only	$4,327	

Traffic-Related Assumptions					
Assumption Subject	Figure	Source Year of	CPI	Figure	Source
All Purpose Hourly Value of Time	$15.20	2018	1.00	$15.20	Source: USDOT BCA Resource Guide Table
Business Hourly Value of Time	$27.10	2018	1.00	$27.10	Source: USDOT BCA Resource Guide Table
Truck Vehicle Occupancy per Vehicle	1.00	]			Source: USDOT Resource Guide Table A-4
Passenger Vehicle Occupancy (Avg.)	1.67				Source: USDOT Resource Guide Table A-4
Hourly Cost of Vehicle Travel (Trucks)	$29.50	2018	1.00	$29.50	Source: USDOT Resource Guide Table A-4
Per Mile Cost of Operating a Vehicle	$0.90	2018	1.00	$0.96	Source: USDOT Resource Guide Table A-5
Value of a Statistical Life	$9,600,000	2018	1.00	$9,600,000	Source: USDOT Resource Guide Table A-1

Calculated Traffic Growth Rate (ADT)					
2017	2024	2044	Annual growth rate: 2017-24	Annual growth rate: 2024-44	Source
10,900	12,900	17,250	2.44%	1.71%	DKS Associates (2020 est.)
PM Peak Traffic Figures and Growth Rates					
2017	2024	2044	Annual growth rate: 2017-24	Annual growth rate: 2024-44	Source
1,090	1,290	1,725	2.44%	1.71%	DKS Associates (2020 est.)
AM and PM Peak Traffic Figures and Growth Rates					
2017	2024	2044	Annual growth rate: 2017-24	Annual growth rate: 2024-44	Source
3,270	3,870	5,175	2.44%	1.71%	DKS Associates (2020 est.)
Directional Spit					
	East Bound	West Bound			Source
	60%	40%			DKS Associates (2020 est.)
Car/Truck Split on McGilchrist, Existing Conditions					
	Cars	Trucks	Total		Source
PM Peak Hour Trips	1,115	175	1,290		DKS Associates (2020 est.)
Percentage	86.4%	13.6%			

McGilchrist PM Peak Hour Travel Time (Minutes)				
Segment	No Build	Build	Difference	Source
McGilchrist Eastbound (during construction)	3.55	3.94	0.39	DKS Associates, Tech. Memo, May 2020
McGilchrist Westbound (during construction)	9.38	9.76	0.38	
McGilchrist Eastbound 2024	3.55	3.35	(0.2)	
McGilchrist Westbound 2024	9.38	2.35	(7.0)	
McGilchrist Eastbound 2044	4.15	4.35	0.2	
McGilchrist Westbound 2044	17.55	2.15	(15.4)	
Annual Growth Rate McGilchrist Eastbound (2024-	0.78%	1.02%		Calculated
Annual Growth Rate McGilchrist Westbound (2024-	3.18%	-7.10%		

Project Cost Assumptions		
Eligible Project Cost ($2020)	$26,680,000	Calculated
ROW Cost ($2020)	$5,100,000	
% of Cost Allocated to Culverts	8.37%	60% Design Cost Estimate
% of Cost Allocated to Storm	16.16%	
% of Cost Allocated to Roadway/Sidewalk	46.82%	
% of Cost Allocated to Signals/Lights	28.66%	
Life Cycle of Culverts (years)	100	OTAK
Life Cycle of S.W. sytem (years)	75	
Life Cycle of Roadway/Sidewalks (years)	50	
Life Cycle of Signals/Lights (years)	25	
Aggregate Life Cycle	51	Calculated
Project Opening Year	2025	City of Salem

Environmental Assumptions

Grams Per Ton	907,185

Emission Rates for Light-Duty Gasoline Fueled Vehicles (up to 6,000 GVW)		
Pollutant	Grams per Hour	Source
VOC	2.683	EPA Study "Idling Vehicle Emissions for Passenger Cars, Light-Duty Trucks, and Heavy-Duty Trucks Emission Facts" Table 1
THC	3.163	
CO	71.225	
NOx	3.515	

Emission Rates for Light-Duty Diesel Trucks (up to 8,500 GVW)		
Pollutant	Grams per	Source
VOC	2.72	EPA Study "Idling Vehicle Emissions for Passenger Cars, Light-Duty Trucks, and Heavy-Duty Trucks Emission Facts" Table 1
THC	2.68	
CO	5.853	
NOx	3.705	

Recommended Monetized Values for Select Emissions ($2018)		
Pollutant	Cost per Short Ton	Source
VOC	$1,983	USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs 2018 Table A-6
THC	N/A	
CO	N/A	
NOx	$7,817	

Roadway O&M Assumptions			
O&M Component	Annual Cost ($2018)	Years From Project Completion Activity Will be Necessary	Source
Shoulder Grading	$15,176	20	City of Salem
Pothole Repair	$768	20	
Thin Overlay	$21,025	10	
Total	$36,970		

APPENDIX B – PROPERTY VALUE ANALYSIS METHODOLOGY

Sample Group 1 Corridor Tax lots (vacant and part vacant tax lots)

McGilchrist URA-Project Property Value Analysis

Sample Group 1

Tax ID	Zoning	Acres	RMV Total	RMV Land	RMV Structure	AV	Prop. Value per Acre	AV per Acre
073W35DA00400	IC	1.12	$975,240	$292,820	$682,420	$975,240	$870,750	$870,750
073W35DA00500	IG	1.31	$898,740	$376,620	$522,120	$867,190	$686,061	$661,977
073W35DA00200	IG	2.8	$1,199,000	$341,860	$857,140	$1,199,000	$428,214	$428,214
073W35DA01400	IG	1.03	$1,178,840	$168,250	$1,010,590	$832,500	$1,144,505	$808,252
073W35DA01500	IG	1.13	$247,080	$247,080	not applicable	$157,270	$218,655	$139,177
073W35DA01600	IG	0.41	$290,910	$80,370	$210,540	$258,010	$709,537	$629,293
073W35DA02000	IG	1.12	$380,280	$165,110	$215,170	$310,980	$339,536	$277,661
073W35DA02200	IG	1.27	$904,640	$165,960	$738,680	$615,870	$712,315	$484,937
073W35DA02400	IG	0.35	$75,010	$34,000	$41,010	$47,850	$214,314	$136,714
073W35DA02500	IG	0.21	$20,580	$20,580	not applicable	$19,810	$98,000	$94,333
073W35DA02601	IG	0.09	$8,690	$8,690	not applicable	$7,580	$96,556	$84,222
073W35DA02600	IG	0.54	$367,170	$87,030	$280,140	$255,960	$679,944	$474,000
073W35DB02000	IG	0.52	$556,200	$84,940	$471,260	$425,220	$1,069,615	$817,731
073W35DB02500	IG	0.26	$458,970	$43,090	$415,880	$358,230	$1,765,269	$1,377,808
073W35DB02600	IG	0.55	$501,360	$89,840	$411,520	$133,790	$911,564	$243,255
073W35DB02700	IG	0.3	$546,360	$49,010	$497,350	$365,570	$1,821,200	$1,218,567
073W35DB02800	IG	0.53	$397,610	$69,900	$327,710	$377,770	$750,208	$712,774
073W35DB02900	IG	0.84	$438,220	$131,270	$306,950	$380,200	$521,690	$452,619
073W35DB03000	IG	0.5	$352,090	$65,800	$286,290	$250,530	$704,180	$501,060
073W35DB03100	IG	1.42	$320,800	$80,430	$240,370	$275,210	$225,915	$193,810
073W35DB03200	IG	0.3	$53,000	$39,500	$13,500	$53,000	$176,667	$176,667
073W35DB03300	IG	0.61	$252,830	$99,650	$153,180	$230,680	$414,475	$378,164
073W35DB03400	IG	0.59	$198,240	$84,830	$113,410	$184,720	$336,000	$313,085
073W35DB02400	IG	1.4	$1,114,730	$228,690	$886,040	$880,450	$796,236	$628,893
073W35DB02100	IG	0.45	$73,510	$73,510	not applicable	$64,250	$163,356	$142,778
073W35DB02200	IG	0.42	$270,000	$67,710	$202,290	$116,990	$642,857	$278,548
073W35DB02300	IG	0.47	$342,020	$77,050	$264,970	$342,020	$727,702	$727,702
073W35AC01900	IG	5.1	$933,800	$562,570	$371,230	$738,240	$183,098	$144,753
073W35CA00400	IC	5	$1,048,430	$967,030	$81,400	$232,290	$209,686	$46,458
073W35BD02500	IG	2	$720,630	$233,820	$486,810	$672,160	$360,315	$336,080
073W35BD02700	IG	0.36	$56,030	$37,640	$18,390	$33,340	$155,639	$92,611
073W35BD02400	IG	5.93	$1,354,900	$508,860	$846,040	$899,580	$228,482	$151,700
073W35BC00701	IG	1.98	$1,525,260	$323,030	$1,202,230	$1,525,260	$770,333	$770,333
073W35CB00100	IG	2.66	$1,731,560	$347,700	$1,383,860	$1,731,560	$650,962	$650,962
073W35CB00101	IG	2.59	$1,375,640	$338,780	$1,036,860	$1,287,050	$531,135	$496,931
073W35CB00300	IG	2.06	$986,370	$269,640	$716,730	$942,470	$478,820	$457,510
073W35CB00800	IC	0.79	$433,250	$172,060	$261,190	$288,990	$548,418	$365,810
073W35CB02401	IC	0.71	$704,820	$154,640	$550,180	$704,820	$992,704	$992,704
073W35CB02400	IC	0.83	$4,141,580	$519,480	$3,622,100	$3,013,010	$4,989,855	$3,630,133
073W35CB03300	CG	0.72	$448,610	$413,990	$34,620	$219,750	$623,069	$305,208
073W35CB03301	CG	0.78	$448,500	$448,500	not applicable	$217,170	$575,000	$278,423
073W35CB02500	IC	1.1	$956,130	$620,990	$335,140	$556,140	$869,209	$505,582
073W35CB02600	IC	1.11	$541,500	$241,760	$299,740	EXEMPT	$487,838	$0
073W35CC00100	IP	6.33	$4,112,840	$620,400	$3,492,440	$3,368,830	$649,738	$532,201
073W35CB00600	IP	0.5	$740,140	$92,570	$647,570	$287,700	$1,480,280	$575,400
073W35CB00700	IG	0.64	$637,720	$133,810	$503,910	$320,650	$996,438	$501,016
073W35CB04400	IG	2.36	$1,403,440	$308,300	$1,095,140	$1,372,700	$594,678	$581,653
073W35CA00800	IC	4.93	$8,950,130	$1,073,260	$7,876,870	$5,036,140	$1,815,442	$1,021,529
073W35CD02700	IC	2.29	$497,660	$497,660	not applicable	$345,020	$217,319	$150,664
073W35DB04400	IC	1.29	$709,450	$280,960	$428,490	$570,200	$549,961	$442,016
073W35DB04300	IC	1.17	$702,920	$190,440	$512,480	$664,270	$600,786	$567,752
073W35DB04101	IG	0.83	$557,860	$108,140	$449,720	$489,080	$672,120	$589,253
073W35DB04100	IG	2.18	$972,010	$284,960	$687,050	$883,720	$445,876	$405,376
073W35DC00100	IG	1.17	$318,680	$166,400	$152,280	$183,620	$272,376	$156,940
073W35DB04000	IG	0.18	$23,680	$23,680	not applicable	$18,250	$131,556	$101,389
073W35DB04001	IG	0.45	$58,650	$58,650	not applicable	$54,920	$130,333	$122,044
073W35DB03901	IG	0.45	$58,650	$58,650	not applicable	$45,440	$130,333	$100,978
073W35DB03900	IG	0.54	$70,310	$70,310	not applicable	$55,550	$130,204	$102,870
073W35DB03800	IG	0.69	$128,240	$112,710	$15,530	$118,800	$185,855	$172,174
073W35DB03700	IG	0.49	$79,250	$64,030	$15,220	$79,250	$161,735	$161,735
073W35D 00202	IC	4.37	$8,553,970	$1,369,370	$7,184,600	$6,086,460	$1,957,430	$1,392,783
073W35D 00203	IC	1.74	$2,614,990	$485,080	$2,129,910	$2,010,370	$1,502,868	$1,155,385
073W35D 00101	IC	4.42	$9,866,990	$1,540,280	$8,326,710	$4,843,150	$2,232,351	$1,095,735
073W35D 00100	IC	0.7	$692,480	$114,750	$577,730	$692,480	$989,257	$989,257
073W35DA00900	IG	0.41	$271,320	$143,810	$127,510	$223,230	$661,756	$544,463
073W35DA00800	IC	0.64	$350,320	$180,730	$169,590	$350,320	$547,375	$547,375
073W35DA01200	IG	1.14	$1,092,650	$186,220	$906,430	$899,830	$958,465	$789,325
073W35DA01300	IG	0.99	$272,780	$143,710	$129,070	$235,340	$275,535	$237,717
Total Properties		**95.16**	**$73,566,260**	**$17,742,960**	**$55,823,300**	**$52,283,040**	**$773,080**	$549,422

Sample Group 2 Developed Tax lots within ½ mile of the Corridor)

Sample Group 2 Underutlized Properties

Tax ID	Zoning	Acres	RMV Total	RMV Land	RMV Structure	AV	Prop. Value per Acre	AV per Acre
073W35DB03600	IG	0.78	$127,800	$127,800	not applicable	$119,300	$163,846	$152,949
073W35DB03500	IG	0.52	$84,940	$84,940	not applicable	$79,290	$163,346	$152,481
073W35DB04500	IG	11.27	$960,830	$960,830	not applicable	$493,880	$85,256	$43,823
073W35CA00301	IG	7.4	$625,130	$556,490	$68,640	$285,590	$84,477	$38,593
073W35CB00400	IG	1.39	$227,060	$227,060	not applicable	$157,220	$163,353	$113,108
073W35CB03200	CG	0.54	$1,021,380	$233,510	$787,870	$1,008,090	$1,891,444	$1,866,833
073W35CA00900	IC	5.32	$1,984,690	$1,852,440	$132,250	$909,350	$373,062	$170,930
073W35CA01000	IC	1.95	$384,250	$384,250	not applicable	$294,490	$197,051	$151,021
073W35DB03900	IG	0.54	$70,310	$70,310	not applicable	$55,550	$130,204	$102,870
073W35AD03600	IC	2.16	$473,260	$473,260	not applicable	$370,010	$219,102	$171,301
073W35DA00100	IC	4.32	$1,505,430	$1,505,430	not applicable	$816,610	$348,479	$189,030
073W34DA00801	CR	2.32	$1,219,410	$1,219,410	not applicable	$951,910	$525,608	$410,306
073W35AD03900	IC	3.84	$1,338,160	$1,338,160	not applicable	$657,920	$348,479	$171,333
073W35CB02800	CG	1.15	$456,060	$122,070	$333,990	$292,260	$396,574	$254,139
073W35CB02900	CG	0.21	$27,440	$27,440	not applicable	$27,440	$130,667	$130,667
073W35CB03500	IC	0.58	$506,130	$301,590	$204,540	$359,520	$872,638	$619,862
073W34DA00800	IC	1.24	$350,320	$180,730	$169,590	$350,320	$282,516	$282,516
073W35AD03700	IC	2.13	$492,880	$463,920	$28,960	$384,160	$231,399	$180,357
Total		**47.7**	**$11,855,480**				**$367,083**	**$289,007**

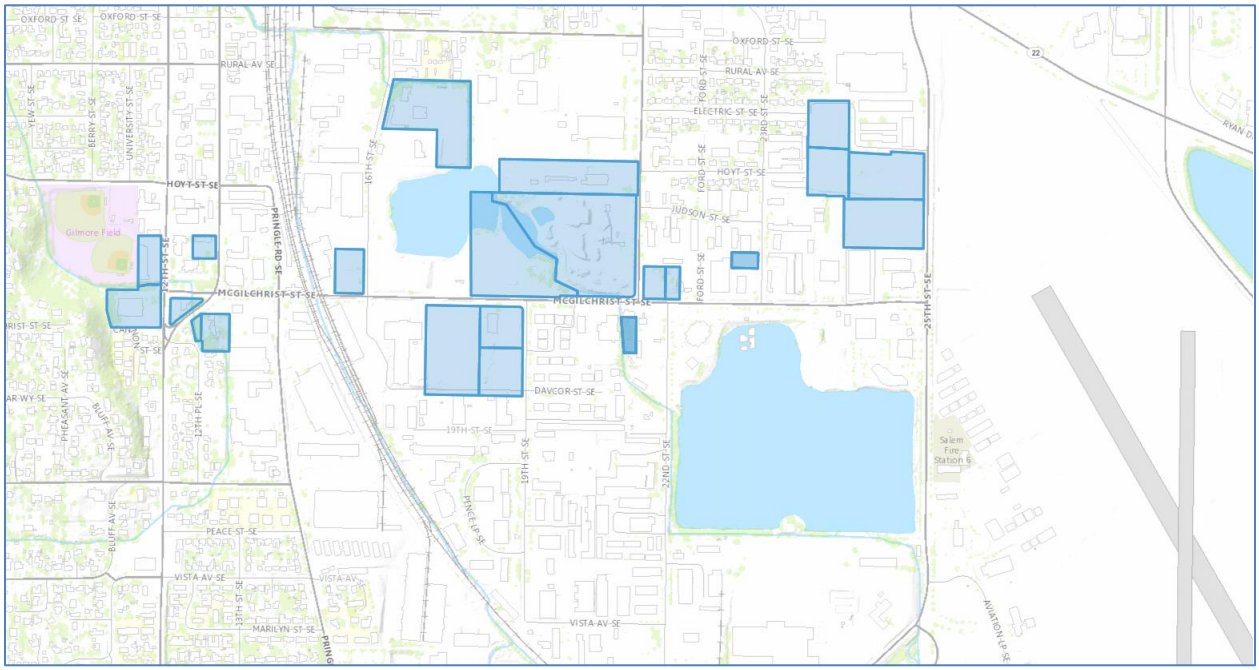
Properties Identified as Underutilized within the City/County Building/Land Inventory

Summary of Property Benefits

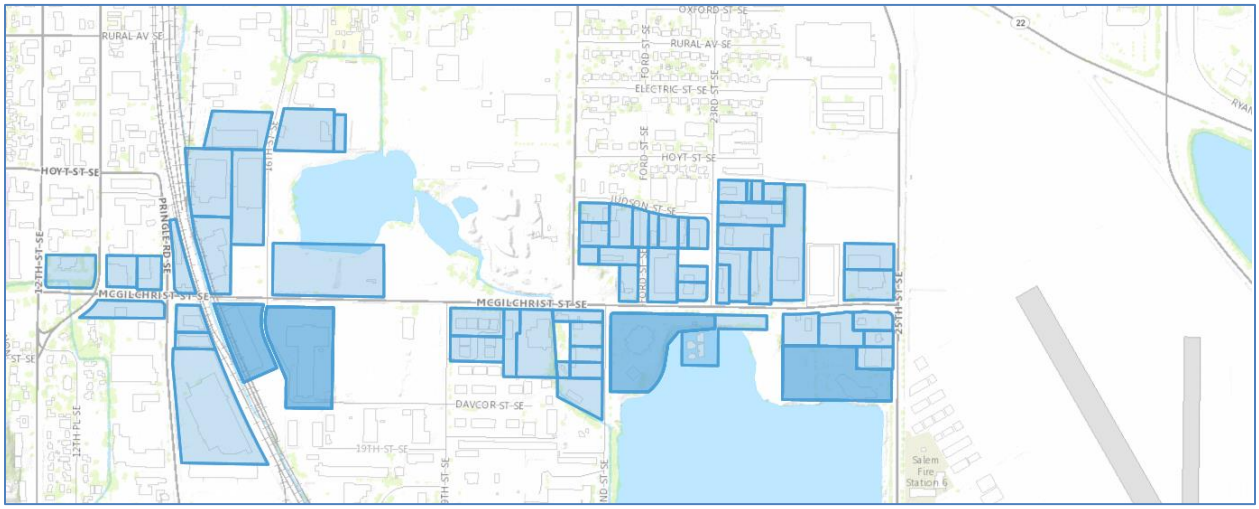
Property Value per acre for under-developed tax lots in Sample Group 1	$367,083
Property Value per acre for developed tax lots in Sample Group 2	$773,080
Expected net increase in prop. Value per acre after McGilchrist Corridor Project is complete	$405,996
Vacant and Under-developed acres in Sample Group 1	47.7
Expected net increase in prop. Value after McGilchrist Corridor Project is complete	**$19,349,783**

Source: City of Salem, April 2020 buildable land analysis. Analysis based on City of Salem vacant and redevelopment land inventory; assumes future value of vacant and redevelopment parcels is consistent with current value of developed parcels for similar zoned parcels in proximity to corridor per Marion County Assessor data.

Map of Group 1 Tax Lots (vacant and part vacant parcels) along Corridor



Map of Group 2 Tax Lots (developed parcels) in proximity to Corridor



APPENDIX C – ANNUAL BENEFIT SUMMARY, SCENARIO 1: NO BUILD (ZERO DISCOUNT RATE)

SCENARIO 1 NO BUILD: YEARS 1-15

Travel Time Analysis, McGilchrist Corridor Project, NO BUILD

Year:		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
NO BUILD	**Units**																
McGilchrist W.B. PHVT	Cars	1,737	1,779	1,823	1,867	1,913	1,959	2,007	2,041	2,076	2,112	2,148	2,185	2,223	2,261	2,299	2,339
	Trucks	273	279	286	293	300	308	315	320	326	331	337	343	349	355	361	367
McGilchrist E.B. PHVT	Cars	1,158	1,186	1,215	1,245	1,275	1,306	1,338	1,361	1,384	1,408	1,432	1,457	1,482	1,507	1,533	1,559
	Trucks	182	186	191	195	200	205	210	214	217	221	225	229	233	237	241	245
McGilchrist Total PHVT	Cars	2,895	2,966	3,038	3,112	3,188	3,265	3,345	3,402	3,461	3,520	3,580	3,642	3,704	3,768	3,832	3,898
	Trucks	454	465	477	488	500	513	525	534	543	552	562	572	581	591	601	612
	Total PHVT	3,350	3,431	3,515	3,600	3,688	3,778	3,870	3,936	4,004	4,073	4,142	4,213	4,286	4,359	4,434	4,510
Travel Time per Trip W.B.	Minutes	9.38	9.38	9.38	9.38	9.38	9.38	9.38	9.68	9.99	10.30	10.63	10.97	11.32	11.68	12.05	12.43
Travel Time per Trip E.B.	Minutes	3.55	3.55	3.55	3.55	3.55	3.55	3.55	3.58	3.61	3.63	3.66	3.69	3.72	3.75	3.78	3.81
Travel Time per Year, Cars	Hours	132,637	135,868	139,177	142,567	146,040	149,597	153,241	160,075	167,229	174,718	182,557	190,764	199,357	208,353	217,773	227,637
Travel Time per Year, Trucks	Hours	27,705	28,380	29,072	29,780	30,505	31,248	32,009	33,594	35,257	37,003	38,835	40,758	42,776	44,894	47,117	49,450
Car Occupant Time per Year	Hours	221,503.5	226,898.9	232,425.8	238,087.3	243,886.7	249,827.3	255,912.7	267,325.9	279,272.5	291,778.3	304,870.1	318,576.0	332,925.6	347,950.0	363,681.6	380,154.5
Truck Occupant Travel Time per Year	Hours	27,705.4	28,380.2	29,071.5	29,779.7	30,505.0	31,248.1	32,009.3	33,594.1	35,257.4	37,003.1	38,835.2	40,758.0	42,776.0	44,894.0	47,116.8	49,449.6
Value of Travel Time per Year	Cars	$ 3,366,853	$ 3,448,863	$ 3,532,872	$ 3,618,927	$ 3,707,077	$ 3,797,376	$ 3,889,873	$ 4,063,353	$ 4,244,942	$ 4,435,030	$ 4,634,025	$ 4,842,355	$ 5,060,470	$ 5,288,840	$ 5,527,961	$ 5,778,349
Value of Travel Time per Year	Trucks	$ 817,369	$ 837,217	$ 857,610	$ 878,500	$ 899,899	$ 921,819	$ 944,273	$ 991,026	$ 1,040,094	$ 1,091,591	$ 1,145,638	$ 1,202,362	$ 1,261,893	$ 1,324,372	$ 1,389,945	$ 1,458,764
Total Vehicle Miles per Year	Peak Hours	5,392	5,524	5,658	5,796	5,937	6,082	6,230	6,337	6,446	6,556	6,669	6,783	6,899	7,018	7,138	7,260
Vehicle Maintenance Cost Per Year		$ 5,177	$ 5,303	$ 5,432	$ 5,564	$ 5,700	$ 5,839	$ 5,981	$ 6,083	$ 6,188	$ 6,294	$ 6,402	$ 6,512	$ 6,623	$ 6,737	$ 6,852	$ 6,970
Crashes Per Year																	
13th & McGilchrist St. SE	Intersection	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.8	2.8	2.9	2.9	2.9	3.0	3.1
Pringle & McGilchrist St. SE	Intersection	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3	3.4	3.4	3.5	3.5	3.6	3.7	3.7
19th & McGilchrist St. SE	Intersection	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.4
22nd & McGilchrist St. SE	Intersection	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.4
25th & McGilchrist St. SE	Intersection	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.6
McGilchrist Segment	segment	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8
Accident Analysis																	
13th & McGilchrist St. SE																	
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.22	0.22	0.22	0.23	0.23	0.23
Injury B	Incidents	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.41	0.42	0.42	0.43	0.44	0.45	0.45	0.46	0.47
Injury C	Incidents	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.23	1.25	1.27	1.29	1.32	1.34	1.36	1.38	1.41
Property Damage Only	Incidents	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.82	0.83	0.85	0.86	0.88	0.89	0.91	0.92	0.94
Pringle & McGilchrist St. SE																	
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	Incidents	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.42	1.45	1.47	1.50	1.52	1.55	1.58	1.60	1.63
Property Damage Only	Incidents	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.83	1.86	1.89	1.93	1.96	1.99	2.03	2.06	2.10
19th & McGilchrist St. SE																	
Fatal	Incidents	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.21	0.22	0.22	0.23	0.23	0.23
Injury A	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	Incidents	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.41	0.41	0.42	0.43	0.44	0.44	0.45	0.46	0.47
Injury C	Incidents	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.21	0.22	0.22	0.23	0.23	0.23
Property Damage Only	Incidents	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.41	0.41	0.42	0.43	0.44	0.44	0.45	0.46	0.47
22nd & McGilchrist St. SE																	
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	Incidents	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.68	0.69	0.70
Property Damage Only	Incidents	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.68	0.69	0.70
25th & McGilchrist St. SE																	
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	Incidents	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.81	0.83	0.84	0.86	0.87	0.89	0.90	0.92	0.93
Property Damage Only	Incidents	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.42	1.45	1.47	1.50	1.52	1.55	1.58	1.60	1.63
McGilchrist Segment																	
Fatal	Incidents	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Injury A	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	Incidents	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Injury C	Incidents	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.44	0.45	0.45	0.46	0.47	0.48	0.49	0.49	0.50
Property Damage Only	Incidents	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.18	0.18	0.18	0.19	0.19
TOTAL CRASHES BY TYPE																	
Fatal	Incidents	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.26	0.26	0.27	0.27	0.28	0.28	0.29	0.29	0.30
Injury A	Incidents	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.22	0.22	0.22	0.23	0.23	0.23
Injury B	Incidents	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.89	0.90	0.92	0.93	0.95	0.96	0.98	1.00
Injury C	Incidents	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.72	4.80	4.88	4.97	5.05	5.14	5.23	5.32	5.41
Property Damage Only	Incidents	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.26	5.35	5.44	5.53	5.63	5.72	5.82	5.92	6.02
ECONOMIC VALUE OF CRASHES																	
Fatal	2018 $	$ 2,436,923	$ 2,436,923	$ 2,436,923	$ 2,436,923	$ 2,436,923	$ 2,436,923	$ 2,436,923	$ 2,478,709	$ 2,521,212	$ 2,564,444	$ 2,608,417	$ 2,653,144	$ 2,698,638	$ 2,744,912	$ 2,791,979	$ 2,839,854
Injury A	2018 $	$ 91,820	$ 91,820	$ 91,820	$ 91,820	$ 91,820	$ 91,820	$ 91,820	$ 94,057	$ 95,669	$ 97,310	$ 98,978	$ 100,676	$ 102,402	$ 104,158	$ 105,944	$ 107,760
Injury B	2018 $	$ 106,731	$ 106,731	$ 106,731	$ 106,731	$ 106,731	$ 106,731	$ 106,731	$ 108,921	$ 110,789	$ 112,689	$ 114,621	$ 116,587	$ 118,586	$ 120,619	$ 122,687	$ 124,791
Injury C	2018 $	$ 295,906	$ 295,906	$ 295,906	$ 295,906	$ 295,906	$ 295,906	$ 295,906	$ 301,533	$ 306,704	$ 311,963	$ 317,312	$ 322,753	$ 328,287	$ 333,916	$ 339,642	$ 345,466
Property Damage Only	2018 $	$ 22,334	$ 22,334	$ 22,334	$ 22,334	$ 22,334	$ 22,334	$ 22,334	$ 22,742	$ 23,132	$ 23,529	$ 23,932	$ 24,342	$ 24,760	$ 25,184	$ 25,616	$ 26,055
Total	2018 $	$ 2,953,714	$ 2,953,714	$ 2,953,714	$ 2,953,714	$ 2,953,714	$ 2,953,714	$ 2,953,714	$ 3,005,962	$ 3,057,506	$ 3,109,934	$ 3,163,260	$ 3,217,501	$ 3,272,673	$ 3,328,790	$ 3,385,869	$ 3,443,927
Environmental Analysis																	
AUTOS	Hours	132,637	135,868	139,177	142,567	146,040	149,597	153,241	160,075	167,229	174,718	182,557	190,764	199,357	208,353	217,773	227,637
Volatile Organic Compounds (VOCs)	Grams	355,865	364,533	373,412	382,508	391,825	401,369	411,146	429,482	448,676	468,767	489,800	511,820	534,874	559,012	584,286	610,751
Nitrogen Oxide (Nox)	Grams	466,218	477,575	489,208	501,124	513,330	525,834	538,643	562,665	587,810	614,132	641,688	670,536	700,739	732,362	765,474	800,146
Total	Grams	822,083	842,107	862,620	883,632	905,155	927,203	949,789	992,147	1,036,486	1,082,899	1,131,488	1,182,356	1,235,613	1,291,374	1,349,760	1,410,897
Trucks	Hours	27,705	28,380	29,072	29,780	30,505	31,248	32,009	33,594	35,257	37,003	38,835	40,758	42,776	44,894	47,117	49,450
Volatile Organic Compounds (VOCs)	Grams	75,359	77,194	79,075	81,001	82,974	84,995	87,065	91,376	95,900	100,648	105,632	110,862	116,351	122,112	128,158	134,503
Nitrogen Oxide (Nox)	Grams	102,648	105,149	107,710	110,334	113,021	115,774	118,594	124,466	130,629	137,096	143,884	151,008	158,485	166,332	174,568	183,211
Total	Grams	178,007	182,343	186,785	191,334	195,995	200,769	205,659	215,842	226,529	237,745	249,516	261,870	274,836	288,444	302,725	317,714
AUTOS																	
Volatile Organic Compounds (VOCs)	2018 $	$ 778	$ 797	$ 816	$ 836	$ 857	$ 877	$ 899	$ 939	$ 981	$ 1,025	$ 1,071	$ 1,119	$ 1,169	$ 1,222	$ 1,277	$ 1,335
Nitrogen Oxide (Nox)	2018 $	$ 4,017	$ 4,115	$ 4,215	$ 4,318	$ 4,423	$ 4,531	$ 4,641	$ 4,848	$ 5,065	$ 5,292	$ 5,529	$ 5,778	$ 6,038	$ 6,310	$ 6,596	$ 6,894
Total	2018 $	$ 4,795	$ 4,912	$ 5,032	$ 5,154	$ 5,280	$ 5,408	$ 5,540	$ 5,787	$ 6,046	$ 6,316	$ 6,600	$ 6,897	$ 7,207	$ 7,532	$ 7,873	$ 8,230
Trucks																	
Volatile Organic Compounds (VOCs)	2018 $	$ 165	$ 169	$ 173	$ 177	$ 181	$ 186	$ 190	$ 200	$ 210	$ 220	$ 231	$ 242	$ 254	$ 267	$ 280	$ 294
Nitrogen Oxide (Nox)	2018 $	$ 884	$ 906	$ 928	$ 951	$ 974	$ 998	$ 1,022	$ 1,072	$ 1,126	$ 1,181	$ 1,240	$ 1,301	$ 1,366	$ 1,433	$ 1,504	$ 1,579
Total	2018 $	$ 1,049	$ 1,075	$ 1,101	$ 1,128	$ 1,155	$ 1,183	$ 1,212	$ 1,272	$ 1,335	$ 1,401	$ 1,471	$ 1,544	$ 1,620	$ 1,700	$ 1,784	$ 1,873

SCENARIO 1 NO BUILD: YEARS 16-30

Travel Time Analysis, McGilchrist Corridor Project, NO BUILD

Year:		2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
NO BUILD	**Units**															
McGilchrist W.B. PHVT	Cars	2,379	2,420	2,461	2,503	2,546	2,590	2,634	2,680	2,726	2,772	2,820	2,868	2,917	2,967	3,018
	Trucks	373	380	386	393	400	407	413	421	428	435	443	450	458	466	474
McGilchrist E.B. PHVT	Cars	1,586	1,613	1,641	1,669	1,698	1,727	1,756	1,786	1,817	1,848	1,880	1,912	1,945	1,978	2,012
	Trucks	249	253	258	262	266	271	276	280	285	290	295	300	305	310	316
McGilchrist Total PHVT	Cars	3,965	4,033	4,102	4,172	4,244	4,317	4,391	4,466	4,543	4,620	4,700	4,780	4,862	4,946	5,030
	Trucks	622	633	644	655	666	678	689	701	713	725	738	750	763	776	790
	Total PHVT	4,587	4,666	4,746	4,827	4,910	4,994	5,080	5,167	5,256	5,346	5,437	5,531	5,625	5,722	5,820
Travel Time per Trip W.B.	Minutes	12.83	13.24	13.66	14.09	14.54	15.01	15.48	15.98	16.48	17.01	17.55	18.11	18.68	19.28	19.89
Travel Time per Trip E.B.	Minutes	3.84	3.87	3.90	3.93	3.96	3.99	4.02	4.05	4.09	4.12	4.15	4.18	4.22	4.25	4.28
Travel Time per Year, Cars	Hours	237,967	248,784	260,112	271,977	284,403	297,419	311,052	325,333	340,293	355,964	372,382	389,583	407,604	426,486	446,269
Travel Time per Year, Trucks	Hours	51,898	54,468	57,164	59,995	62,965	66,083	69,355	72,789	76,393	80,175	84,145	88,311	92,683	97,272	102,088
Car Occupant Time per Year	Hours	397,404.5	415,469.1	434,387.7	454,201.4	474,953.6	496,689.6	519,457.2	543,306.2	568,289.0	594,460.6	621,878.7	650,603.6	680,698.9	712,231.1	745,270.0
Truck Occupant Travel Time per Year	Hours	51,898.0	54,467.6	57,164.4	59,994.7	62,965.2	66,082.8	69,354.7	72,788.6	76,392.5	80,174.9	84,144.5	88,310.7	92,683.2	97,272.1	102,088.3
Value of Travel Time per Year	Cars	$ 6,040,549	$ 6,315,131	$ 6,602,693	$ 6,903,861	$ 7,219,294	$ 7,549,683	$ 7,895,749	$ 8,258,254	$ 8,637,993	$ 9,035,801	$ 9,452,556	$ 9,889,175	$ 10,346,624	$ 10,825,913	$ 11,328,104
Value of Travel Time per Year	Trucks	$ 1,530,991	$ 1,606,794	$ 1,686,350	$ 1,769,845	$ 1,857,474	$ 1,949,442	$ 2,045,963	$ 2,147,263	$ 2,253,579	$ 2,365,159	$ 2,482,263	$ 2,605,165	$ 2,734,153	$ 2,869,527	$ 3,011,604
Total Vehicle Miles per Year	Peak Hours	7,385	7,511	7,640	7,771	7,904	8,040	8,178	8,318	8,461	8,606	8,753	8,903	9,056	9,211	9,369
Vehicle Maintenance Cost Per Year		$ 7,089	$ 7,211	$ 7,335	$ 7,460	$ 7,588	$ 7,718	$ 7,851	$ 7,985	$ 8,122	$ 8,262	$ 8,403	$ 8,547	$ 8,694	$ 8,843	$ 8,995
Crashes Per Year																
13th & McGilchrist St. SE	Intersection	3.1	3.2	3.2	3.3	3.3	3.4	3.4	3.5	3.6	3.6	3.7	3.7	3.8	3.9	3.9
Pringle & McGilchrist St. SE	Intersection	3.8	3.9	3.9	4.0	4.1	4.1	4.2	4.3	4.3	4.4	4.5	4.6	4.7	4.7	4.8
19th & McGilchrist St. SE	Intersection	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.8
22nd & McGilchrist St. SE	Intersection	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.8
25th & McGilchrist St. SE	Intersection	2.6	2.7	2.7	2.7	2.8	2.8	2.9	2.9	3.0	3.0	3.1	3.1	3.2	3.3	3.3
McGilchrist Segment	segment	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.1
Accident Analysis																
13th & McGilchrist St. SE																
Fatal	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	incidents	0.24	0.24	0.25	0.25	0.26	0.26	0.26	0.27	0.27	0.28	0.28	0.29	0.29	0.30	0.30
Injury B	incidents	0.48	0.49	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61
Injury C	incidents	1.43	1.46	1.48	1.51	1.53	1.56	1.59	1.61	1.64	1.67	1.70	1.73	1.76	1.79	1.82
Property Damage Only	incidents	0.95	0.97	0.99	1.00	1.02	1.04	1.06	1.08	1.09	1.11	1.13	1.15	1.17	1.19	1.21
Pringle & McGilchrist St. SE																
Fatal	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	incidents	1.66	1.69	1.72	1.75	1.78	1.81	1.84	1.87	1.90	1.93	1.97	2.00	2.04	2.07	2.11
Property Damage Only	incidents	2.13	2.17	2.21	2.25	2.28	2.32	2.36	2.40	2.44	2.49	2.53	2.57	2.62	2.66	2.71
19th & McGilchrist St. SE																
Fatal	incidents	0.24	0.24	0.25	0.25	0.25	0.26	0.26	0.27	0.27	0.28	0.28	0.29	0.29	0.30	0.30
Injury A	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	incidents	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60
Injury C	incidents	0.24	0.24	0.25	0.25	0.25	0.26	0.26	0.27	0.27	0.28	0.28	0.29	0.29	0.30	0.30
Property Damage Only	incidents	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60
22nd & McGilchrist St. SE																
Fatal	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	incidents	0.71	0.72	0.74	0.75	0.76	0.77	0.79	0.80	0.81	0.83	0.84	0.86	0.87	0.89	0.90
Property Damage Only	incidents	0.71	0.72	0.74	0.75	0.76	0.77	0.79	0.80	0.81	0.83	0.84	0.86	0.87	0.89	0.90
25th & McGilchrist St. SE																
Fatal	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	incidents	0.95	0.96	0.98	1.00	1.01	1.03	1.05	1.07	1.09	1.11	1.12	1.14	1.16	1.18	1.20
Property Damage Only	incidents	1.66	1.69	1.72	1.75	1.78	1.81	1.84	1.87	1.90	1.93	1.97	2.00	2.04	2.07	2.11
McGilchrist Segment																
Fatal	incidents	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08
Injury A	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	incidents	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08
Injury C	incidents	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.58	0.60	0.61	0.62	0.63	0.64	0.65
Property Damage Only	incidents	0.19	0.19	0.20	0.20	0.20	0.21	0.21	0.22	0.22	0.22	0.23	0.23	0.23	0.24	0.24
TOTAL CRASHES BY TYPE																
Fatal	incidents	0.30	0.31	0.31	0.32	0.32	0.33	0.33	0.34	0.34	0.35	0.36	0.36	0.37	0.38	0.38
Injury A	incidents	0.24	0.24	0.25	0.25	0.26	0.26	0.26	0.27	0.27	0.28	0.28	0.29	0.29	0.30	0.30
Injury B	incidents	1.02	1.03	1.05	1.07	1.09	1.11	1.12	1.14	1.16	1.18	1.20	1.22	1.25	1.27	1.29
Injury C	incidents	5.50	5.59	5.69	5.79	5.89	5.99	6.09	6.19	6.30	6.41	6.52	6.63	6.74	6.86	6.98
Property Damage Only	incidents	6.12	6.23	6.34	6.45	6.56	6.67	6.78	6.90	7.02	7.14	7.26	7.38	7.51	7.64	7.77
ECONOMIC VALUE OF CRASHES																
Fatal	2018 $	$ 2,888,550	$ 2,938,080	$ 2,988,460	$ 3,039,703	$ 3,091,826	$ 3,144,842	$ 3,198,767	$ 3,253,617	$ 3,309,407	$ 3,366,154	$ 3,423,874	$ 3,482,584	$ 3,542,301	$ 3,603,041	$ 3,664,823
Injury A	2018 $	$ 109,608	$ 111,488	$ 113,399	$ 115,344	$ 117,322	$ 119,333	$ 121,380	$ 123,461	$ 125,578	$ 127,731	$ 129,922	$ 132,149	$ 134,415	$ 136,720	$ 139,065
Injury B	2018 $	$ 126,591	$ 129,107	$ 131,321	$ 133,573	$ 135,864	$ 138,193	$ 140,563	$ 142,973	$ 145,425	$ 147,918	$ 150,455	$ 153,035	$ 155,659	$ 158,328	$ 161,043
Injury C	2018 $	$ 351,390	$ 357,415	$ 363,544	$ 369,778	$ 376,118	$ 382,568	$ 389,128	$ 395,800	$ 402,587	$ 409,490	$ 416,512	$ 423,654	$ 430,918	$ 438,307	$ 445,823
Property Damage Only	2018 $	$ 26,502	$ 26,957	$ 27,419	$ 27,889	$ 28,367	$ 28,854	$ 29,348	$ 29,852	$ 30,363	$ 30,884	$ 31,414	$ 31,952	$ 32,500	$ 33,058	$ 33,624
Total	2018 $	$ 3,502,981	$ 3,563,047	$ 3,624,143	$ 3,686,287	$ 3,749,496	$ 3,813,790	$ 3,879,186	$ 3,945,703	$ 4,013,360	$ 4,082,178	$ 4,152,176	$ 4,223,374	$ 4,295,793	$ 4,369,454	$ 4,444,378
Environmental Analysis																
AUTOS	Hours	237,967	248,784	260,112	271,977	284,403	297,419	311,052	325,333	340,293	355,964	372,382	389,583	407,604	426,486	446,269
Volatile Organic Compounds (VOCs)	Grams	638,465	667,487	697,882	729,714	763,054	797,975	834,553	872,869	913,006	955,053	999,102	1,045,251	1,093,602	1,144,261	1,197,341
Nitrogen Oxide (Nox)	Grams	836,453	874,475	914,295	955,999	999,678	1,045,428	1,093,349	1,143,546	1,196,129	1,251,215	1,308,924	1,369,384	1,432,729	1,499,097	1,568,637
Total	Grams	1,474,918	1,541,963	1,612,177	1,685,713	1,762,732	1,843,403	1,927,902	2,016,414	2,109,135	2,206,268	2,308,026	2,414,635	2,526,330	2,643,358	2,765,978
Trucks	Hours	51,898	54,468	57,164	59,995	62,965	66,083	69,355	72,789	76,393	80,175	84,145	88,311	92,683	97,272	102,088
Volatile Organic Compounds (VOCs)	Grams	141,163	148,152	155,487	163,186	171,265	179,745	188,645	197,985	207,788	218,076	228,873	240,205	252,098	264,580	277,680
Nitrogen Oxide (Nox)	Grams	192,282	201,802	211,794	222,281	233,286	244,837	256,959	269,682	283,034	297,048	311,755	327,191	343,391	360,393	378,237
Total	Grams	333,445	349,954	367,281	385,466	404,552	424,582	445,604	467,667	490,822	515,124	540,628	567,396	595,489	624,973	655,917
AUTOS																
Volatile Organic Compounds (VOCs)	2018 $	$ 1,396	$ 1,459	$ 1,526	$ 1,595	$ 1,668	$ 1,745	$ 1,825	$ 1,908	$ 1,996	$ 2,088	$ 2,184	$ 2,285	$ 2,391	$ 2,502	$ 2,618
Nitrogen Oxide (Nox)	2018 $	$ 7,207	$ 7,535	$ 7,878	$ 8,237	$ 8,614	$ 9,008	$ 9,421	$ 9,853	$ 10,306	$ 10,781	$ 11,278	$ 11,799	$ 12,345	$ 12,917	$ 13,516
Total	2018 $	$ 8,603	$ 8,994	$ 9,404	$ 9,833	$ 10,282	$ 10,752	$ 11,245	$ 11,761	$ 12,302	$ 12,869	$ 13,462	$ 14,084	$ 14,736	$ 15,418	$ 16,134
Trucks																
Volatile Organic Compounds (VOCs)	2018 $	$ 309	$ 324	$ 340	$ 357	$ 374	$ 393	$ 412	$ 433	$ 454	$ 477	$ 500	$ 525	$ 551	$ 578	$ 607
Nitrogen Oxide (Nox)	2018 $	$ 1,657	$ 1,739	$ 1,825	$ 1,915	$ 2,010	$ 2,110	$ 2,214	$ 2,324	$ 2,439	$ 2,559	$ 2,686	$ 2,819	$ 2,959	$ 3,105	$ 3,259
Total	2018 $	$ 1,965	$ 2,063	$ 2,165	$ 2,272	$ 2,384	$ 2,503	$ 2,626	$ 2,757	$ 2,893	$ 3,036	$ 3,187	$ 3,344	$ 3,510	$ 3,684	$ 3,866

APPENDIX D – ANNUAL BENEFIT SUMMARY, SCENARIO 2: BUILD (ZERO DISCOUNT RATE)

SCENARIO 2 BUILD: YEARS 1-15 Traffic and Accident Assumptions

Travel Analysis, McGilchrist Corridor Project, BUILD

Year:		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
	Units	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
BUILD																	
McGilchrist W.B. PHVT	Cars	1,737	1,779	1,823	1,867	1,913	1,959	2,007	2,041	2,076	2,112	2,148	2,185	2,223	2,261	2,299	2,339
	Trucks	273	279	286	293	300	308	315	320	326	331	337	343	349	355	361	367
McGilchrist E.B. PHVT	Cars	1,158	1,186	1,215	1,245	1,275	1,306	1,338	1,361	1,384	1,408	1,432	1,457	1,482	1,507	1,533	1,559
	Trucks	182	186	191	195	200	205	210	214	217	221	225	229	233	237	241	245
McGilchrist Total PHVT	Cars	2,895	2,966	3,038	3,112	3,188	3,265	3,345	3,402	3,461	3,520	3,580	3,642	3,704	3,768	3,832	3,898
	Trucks	454	465	477	488	500	513	525	534	543	552	562	572	581	591	601	612
	Total PHVT	3,350	3,431	3,515	3,600	3,688	3,778	3,870	3,936	4,004	4,073	4,142	4,213	4,286	4,359	4,434	4,510
Travel Time per Trip W.B.	Minutes	9.38	9.38	9.38	9.38	9.38	9.76	9.76	9.07	8.42	7.83	7.27	6.75	6.27	5.83	5.41	5.03
Travel Time per Trip E.B.	Minutes	3.55	3.55	3.55	3.55	3.55	3.94	3.94	3.98	4.02	4.06	4.10	4.15	4.19	4.23	4.27	4.32
Travel Time per Year, Cars	Hours	132,637	135,868	139,177	142,567	146,040	157,748	161,590	155,521	149,864	144,598	139,705	135,166	130,964	127,083	123,507	120,222
Travel Time per Year, Trucks	Hours	27,705	28,380	29,072	29,780	30,505	32,514	33,306	31,472	29,738	28,100	26,552	25,090	23,708	22,402	21,168	20,002
Car Occupant Time per Year	Hours	221,503.5	226,898.9	232,425.8	238,087.3	243,886.7	263,438.8	269,855.7	259,720.0	250,272.6	241,479.4	233,308.0	225,727.8	218,710.3	212,228.4	206,256.7	200,771.4
Truck Occupant Travel Time per Year	Hours	27,705.4	28,380.2	29,071.5	29,779.7	30,505.0	32,514.0	33,306.0	31,471.5	29,738.1	28,100.2	26,552.5	25,090.0	23,708.1	22,402.2	21,168.4	20,002.4
Value of Travel Time per Year	Cars	$ 3,366,853	$ 3,448,863	$ 3,532,872	$ 3,618,927	$ 3,707,077	$ 4,004,270	$ 4,101,807	$ 3,947,743	$ 3,804,144	$ 3,670,487	$ 3,546,281	$ 3,431,063	$ 3,324,396	$ 3,225,871	$ 3,135,102	$ 3,051,725
Value of Travel Time per Year	Trucks	$ 817,309	$ 837,217	$ 857,610	$ 878,500	$ 899,899	$ 959,163	$ 982,527	$ 928,411	$ 877,275	$ 828,956	$ 783,298	$ 740,155	$ 699,388	$ 660,866	$ 624,466	$ 590,072
Total Vehicle Miles per Year	Peak Hours	5,392	5,524	5,658	5,796	5,937	6,082	6,230	6,337	6,446	6,556	6,669	6,783	6,899	7,018	7,138	7,260
Vehicle Maintenance Cost Per Year		$ 5,177	$ 5,303	$ 5,432	$ 5,564	$ 5,700	$ 5,839	$ 5,981	$ 6,083	$ 6,188	$ 6,294	$ 6,402	$ 6,512	$ 6,623	$ 6,737	$ 6,852	$ 6,970
Crashes Per Year																	
13th & McGilchrist St. SE	Intersection	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.6	2.6	2.7	2.7	2.8	2.8	2.9	2.9	3.0
Pringle & McGilchrist St. SE	Intersection	3.20	3.20	3.20	3.20	3.20	3.20	3.20	2.6	2.6	2.7	2.7	2.8	2.8	2.9	2.9	3.0
19th & McGilchrist St. SE	Intersection	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4
22nd & McGilchrist St. SE	Intersection	1.20	1.20	1.20	1.20	1.20	1.20	1.20	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
25th & McGilchrist St. SE	Intersection	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.3	2.3
McGilchrist Segment	segment	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
Accident Analysis																	
13th & McGilchrist St. SE																	
Fatal	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	incidents	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.21	0.22	0.22	0.23	0.23
Injury B	incidents	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.41	0.41	0.42	0.43	0.44	0.44	0.45	0.46
Injury C	incidents	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.22	1.24	1.26	1.28	1.31	1.33	1.35	1.37
Property Damage Only	incidents	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.81	0.83	0.84	0.86	0.87	0.89	0.90	0.92
Pringle & McGilchrist St. SE																	
Fatal	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	incidents	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.20	1.22	1.24	1.26	1.28	1.31	1.33	1.35	1.37
Property Damage Only	incidents	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.40	1.42	1.45	1.47	1.50	1.52	1.55	1.58	1.60
19th & McGilchrist St. SE																	
Fatal	incidents	0.20	0.20	0.20	0.20	0.20	0.20	0.20	-	-	-	-	-	-	-	-	-
Injury A	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	incidents	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.31	0.31	0.32	0.32	0.33	0.33	0.34	0.34
Injury C	incidents	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.31	0.31	0.32	0.32	0.33	0.33	0.34	0.34
Property Damage Only	incidents	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.68	0.69
22nd & McGilchrist St. SE																	
Fatal	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	incidents	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.28	0.28	0.28	0.29	0.29	0.30	0.30	0.31	0.32
Property Damage Only	incidents	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.28	0.28	0.28	0.29	0.29	0.30	0.30	0.31	0.32
25th & McGilchrist St. SE																	
Fatal	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	incidents	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.81	0.83	0.84	0.86	0.87	0.89	0.90	0.92
Property Damage Only	incidents	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.27	1.29	1.32	1.34	1.36	1.39	1.41	1.43	1.46
McGilchrist Segment																	
Fatal	incidents	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-	-	-	-	-	-	-	-	-
Injury A	incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	incidents	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05
Injury C	incidents	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.24	0.24	0.25	0.25	0.26	0.26	0.27	0.27	0.27
Property Damage Only	incidents	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.14	0.14
TOTAL CRASHES BY TYPE																	
Fatal	incidents	0.25	0.25	0.25	0.25	0.25	0.25	0.25	-	-	-	-	-	-	-	-	-
Injury A	incidents	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.21	0.22	0.22	0.23	0.23
Injury B	incidents	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.74	0.75	0.77	0.78	0.79	0.81	0.82	0.83	0.85
Injury C	incidents	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.02	4.08	4.15	4.23	4.30	4.37	4.45	4.52	4.60
Property Damage Only	incidents	5.16	5.16	5.16	5.16	5.16	5.16	5.16	4.47	4.54	4.62	4.70	4.78	4.86	4.95	5.03	5.12
ECONOMIC VALUE OF CRASHES																	
Fatal	2018 $	$ 2,436,923	$ 2,436,923	$ 2,436,923	$ 2,436,923	$ 2,436,923	$ 2,436,923	$ 2,436,923	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Injury A	2018 $	$ 91,820	$ 91,820	$ 91,820	$ 91,820	$ 91,820	$ 91,820	$ 91,820	$ 91,820	$ 93,394	$ 94,996	$ 96,625	$ 98,282	$ 99,967	$ 101,681	$ 103,425	$ 105,198
Injury B	2018 $	$ 106,731	$ 106,731	$ 106,731	$ 106,731	$ 106,731	$ 106,731	$ 106,731	$ 92,500	$ 94,086	$ 95,699	$ 97,340	$ 99,010	$ 100,707	$ 102,434	$ 104,191	$ 105,977
Injury C	2018 $	$ 295,906	$ 295,906	$ 295,906	$ 295,906	$ 295,906	$ 295,906	$ 295,906	$ 256,559	$ 260,958	$ 265,432	$ 269,984	$ 274,613	$ 279,322	$ 284,112	$ 288,983	$ 293,939
Property Damage Only	2018 $	$ 22,334	$ 22,334	$ 22,334	$ 22,334	$ 22,334	$ 22,334	$ 22,334	$ 19,332	$ 19,663	$ 20,001	$ 20,343	$ 20,692	$ 21,047	$ 21,408	$ 21,775	$ 22,148
Total	2018 $	$ 2,953,714	$ 2,953,714	$ 2,953,714	$ 2,953,714	$ 2,953,714	$ 2,953,714	$ 2,953,714	$ 460,210	$ 468,102	$ 476,128	$ 484,293	$ 492,597	$ 501,043	$ 509,635	$ 518,374	$ 527,262
Environmental Analysis																	
AUTOS	Hours	132,637	135,868	139,177	142,567	146,040	157,748	161,590	155,521	149,864	144,598	139,705	135,166	130,964	127,083	123,507	120,222
Volatile Organic Compounds (VOCs)	Grams	355,865	364,533	373,412	382,508	391,825	423,237	433,547	417,263	402,085	387,958	374,829	362,651	351,377	340,963	331,369	322,557
Nitrogen Oxide (Nox)	Grams	466,218	477,575	489,208	501,124	513,330	554,483	567,990	546,656	526,771	508,264	491,064	475,110	460,339	446,696	434,127	422,582
Total	Grams	822,083	842,107	862,620	883,632	905,155	977,721	1,001,536	963,919	928,856	896,221	865,894	837,761	811,716	787,660	765,496	745,138
Trucks	Hours	27,705	28,380	29,072	29,780	30,505	32,514	33,306	31,472	29,738	28,100	26,552	25,090	23,708	22,402	21,168	20,002
Volatile Organic Compounds (VOCs)	Grams	75,359	77,194	79,075	81,001	82,974	88,438	90,592	85,603	80,888	76,433	72,223	68,245	64,486	60,934	57,578	54,407
Nitrogen Oxide (Nox)	Grams	102,648	105,149	107,710	110,334	113,021	120,464	123,399	116,602	110,180	104,111	98,377	92,958	87,838	83,000	78,429	74,109
Total	Grams	178,007	182,343	186,785	191,334	195,995	208,903	213,991	202,205	191,067	180,544	170,600	161,203	152,324	143,934	136,007	128,516
AUTOS																	
Volatile Organic Compounds (VOCs)	2018 $	$ 778	$ 797	$ 816	$ 836	$ 857	$ 925	$ 948	$ 912	$ 879	$ 848	$ 819	$ 793	$ 768	$ 745	$ 724	$ 705
Nitrogen Oxide (Nox)	2018 $	$ 4,017	$ 4,115	$ 4,215	$ 4,318	$ 4,423	$ 4,778	$ 4,894	$ 4,710	$ 4,539	$ 4,379	$ 4,231	$ 4,094	$ 3,966	$ 3,849	$ 3,741	$ 3,641
Total	2018 $	$ 4,795	$ 4,912	$ 5,032	$ 5,154	$ 5,280	$ 5,703	$ 5,842	$ 5,622	$ 5,418	$ 5,228	$ 5,051	$ 4,887	$ 4,735	$ 4,594	$ 4,465	$ 4,346
Trucks																	
Volatile Organic Compounds (VOCs)	2018 $	$ 165	$ 169	$ 173	$ 177	$ 181	$ 193	$ 198	$ 187	$ 177	$ 167	$ 158	$ 149	$ 141	$ 133	$ 126	$ 119
Nitrogen Oxide (Nox)	2018 $	$ 884	$ 906	$ 928	$ 951	$ 974	$ 1,038	$ 1,063	$ 1,005	$ 949	$ 897	$ 848	$ 801	$ 757	$ 715	$ 676	$ 639
Total	2018 $	$ 1,049	$ 1,075	$ 1,101	$ 1,128	$ 1,155	$ 1,231	$ 1,261	$ 1,192	$ 1,126	$ 1,064	$ 1,006	$ 950	$ 898	$ 848	$ 802	$ 757

SCENARIO 2 BUILD: YEARS 16-30 Traffic and Accident Assumptions

Travel Analysis, McGilchrist Corridor Project, BUILD

Year:		2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
	Units	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
BUILD																
McGilchrist W.B. PHVT	Cars	2,379	2,420	2,461	2,503	2,546	2,590	2,634	2,680	2,726	2,772	2,820	2,868	2,917	2,967	3,018
	Trucks	373	380	386	393	400	407	413	421	428	435	443	450	458	466	474
McGilchrist E.B. PHVT	Cars	1,586	1,613	1,641	1,669	1,698	1,727	1,756	1,786	1,817	1,848	1,880	1,912	1,945	1,978	2,012
	Trucks	249	253	258	262	266	271	276	280	285	290	295	300	305	310	316
McGilchrist Total PHVT	Cars	3,965	4,033	4,102	4,172	4,244	4,317	4,391	4,466	4,543	4,620	4,700	4,780	4,862	4,946	5,030
	Trucks	622	633	644	655	666	678	689	701	713	725	738	750	763	776	790
	Total PHVT	4,587	4,666	4,746	4,827	4,910	4,994	5,080	5,167	5,256	5,346	5,437	5,531	5,625	5,722	5,820
Travel Time per Trip W.B.	Minutes	4.67	4.34	4.03	3.75	3.48	3.23	3.00	2.79	2.59	2.41	2.24	2.08	1.93	1.79	1.67
Travel Time per Trip E.B.	Minutes	4.36	4.41	4.45	4.50	4.54	4.59	4.64	4.68	4.73	4.78	4.83	4.88	4.93	4.98	5.03
Travel Time per Year, Cars	Hours	117,216	114,474	111,985	109,739	107,725	105,932	104,352	102,977	101,797	100,806	99,997	99,363	98,898	98,597	98,453
Travel Time per Year, Trucks	Hours	18,901	17,860	16,876	15,946	15,068	14,238	13,454	12,713	12,013	11,351	10,726	10,135	9,577	9,049	8,551
Car Occupant Time per Year	Hours	195,750.0	191,171.4	187,015.7	183,264.5	179,900.2	176,906.5	174,268.2	171,970.8	170,000.9	168,346.2	166,994.8	165,936.0	165,159.6	164,656.3	164,417.3
Truck Occupant Travel Time per Year	Hours	18,900.7	17,859.7	16,876.0	15,946.5	15,068.2	14,238.2	13,454.0	12,713.0	12,012.8	11,351.1	10,725.9	10,135.1	9,576.9	9,049.4	8,551.0
Value of Travel Time per Year	Cars	$ 2,975,400	$ 2,905,805	$ 2,842,639	$ 2,785,620	$ 2,734,483	$ 2,688,980	$ 2,648,876	$ 2,613,956	$ 2,584,014	$ 2,558,862	$ 2,538,321	$ 2,522,227	$ 2,510,426	$ 2,502,776	$ 2,499,143
Value of Travel Time per Year	Trucks	$ 557,571	$ 526,861	$ 497,842	$ 470,421	$ 444,511	$ 420,028	$ 396,893	$ 375,033	$ 354,377	$ 334,858	$ 316,414	$ 298,987	$ 282,519	$ 266,958	$ 252,254
Total Vehicle Miles per Year	Peak Hours	7,385	7,511	7,640	7,771	7,904	8,040	8,178	8,318	8,461	8,606	8,753	8,903	9,056	9,211	9,369
Vehicle Maintenance Cost Per Year		$ 7,089	$ 7,211	$ 7,335	$ 7,460	$ 7,588	$ 7,718	$ 7,851	$ 7,985	$ 8,122	$ 8,262	$ 8,403	$ 8,547	$ 8,694	$ 8,843	$ 8,995
Crashes Per Year																
13th & McGilchrist St. SE	Intersection	3.0	3.1	3.1	3.2	3.2	3.3	3.4	3.4	3.5	3.5	3.6	3.7	3.7	3.8	3.8
Pringle & McGilchrist St. SE	Intersection	3.0	3.1	3.1	3.2	3.2	3.3	3.4	3.4	3.5	3.5	3.6	3.7	3.7	3.8	3.8
19th & McGilchrist St. SE	Intersection	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8
22nd & McGilchrist St. SE	Intersection	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8
25th & McGilchrist St. SE	Intersection	2.3	2.4	2.4	2.5	2.5	2.5	2.6	2.6	2.7	2.7	2.8	2.8	2.9	2.9	3.0
McGilchrist Segment	segment	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
Accident Analysis																
13th & McGilchrist St. SE																
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	0.23	0.24	0.24	0.25	0.25	0.25	0.26	0.26	0.27	0.27	0.28	0.28	0.29	0.29	0.30
Injury B	Incidents	0.47	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.53	0.54	0.55	0.56	0.57	0.58	0.59
Injury C	Incidents	1.40	1.42	1.45	1.47	1.50	1.52	1.55	1.58	1.60	1.63	1.66	1.69	1.71	1.74	1.77
Property Damage Only	Incidents	0.93	0.95	0.96	0.98	1.00	1.01	1.03	1.05	1.07	1.09	1.11	1.12	1.14	1.16	1.18
Pringle & McGilchrist St. SE																
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	Incidents	1.40	1.42	1.45	1.47	1.50	1.52	1.55	1.58	1.60	1.63	1.66	1.69	1.71	1.74	1.77
Property Damage Only	Incidents	1.63	1.66	1.69	1.72	1.75	1.78	1.81	1.84	1.87	1.90	1.93	1.97	2.00	2.04	2.07
19th & McGilchrist St. SE																
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	Incidents	0.35	0.36	0.36	0.37	0.37	0.38	0.39	0.39	0.40	0.41	0.41	0.42	0.43	0.44	0.44
Injury C	Incidents	0.35	0.36	0.36	0.37	0.37	0.38	0.39	0.39	0.40	0.41	0.41	0.42	0.43	0.44	0.44
Property Damage Only	Incidents	0.70	0.71	0.72	0.74	0.75	0.76	0.77	0.79	0.80	0.81	0.83	0.84	0.86	0.87	0.89
22nd & McGilchrist St. SE																
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	Incidents	0.32	0.33	0.33	0.34	0.34	0.35	0.35	0.36	0.37	0.37	0.38	0.39	0.39	0.40	0.41
Property Damage Only	Incidents	0.32	0.33	0.33	0.34	0.34	0.35	0.35	0.36	0.37	0.37	0.38	0.39	0.39	0.40	0.41
25th & McGilchrist St. SE																
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury C	Incidents	0.93	0.95	0.96	0.98	1.00	1.01	1.03	1.05	1.07	1.09	1.11	1.12	1.14	1.16	1.18
Property Damage Only	Incidents	1.48	1.51	1.53	1.56	1.59	1.61	1.64	1.67	1.70	1.73	1.76	1.79	1.82	1.85	1.88
McGilchrist Segment																
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury B	Incidents	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06
Injury C	Incidents	0.28	0.28	0.29	0.29	0.30	0.30	0.31	0.32	0.32	0.33	0.33	0.34	0.34	0.35	0.35
Property Damage Only	Incidents	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18
TOTAL CRASHES BY TYPE																
Fatal	Incidents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury A	Incidents	0.23	0.24	0.24	0.25	0.25	0.25	0.26	0.26	0.27	0.27	0.28	0.28	0.29	0.29	0.30
Injury B	Incidents	0.86	0.88	0.89	0.91	0.92	0.94	0.95	0.97	0.99	1.00	1.02	1.04	1.06	1.08	1.09
Injury C	Incidents	4.68	4.76	4.84	4.92	5.01	5.09	5.18	5.27	5.36	5.45	5.55	5.64	5.74	5.84	5.94
Property Damage Only	Incidents	5.21	5.30	5.39	5.48	5.57	5.67	5.77	5.86	5.97	6.07	6.17	6.28	6.38	6.49	6.61
ECONOMIC VALUE OF CRASHES																
Fatal	2018 $	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Injury A	2018 $	$ 107,002	$ 108,837	$ 110,703	$ 112,601	$ 114,532	$ 116,496	$ 118,493	$ 120,525	$ 122,592	$ 124,694	$ 126,832	$ 129,007	$ 131,219	$ 133,469	$ 135,758
Injury B	2018 $	$ 107,794	$ 109,643	$ 111,523	$ 113,435	$ 115,380	$ 117,359	$ 119,371	$ 121,418	$ 123,500	$ 125,617	$ 127,771	$ 129,962	$ 132,191	$ 134,458	$ 136,763
Injury C	2018 $	$ 298,979	$ 304,106	$ 309,320	$ 314,624	$ 320,019	$ 325,506	$ 331,088	$ 336,765	$ 342,540	$ 348,413	$ 354,388	$ 360,464	$ 366,645	$ 372,932	$ 379,327
Property Damage Only	2018 $	$ 22,528	$ 22,915	$ 23,307	$ 23,707	$ 24,114	$ 24,527	$ 24,948	$ 25,375	$ 25,811	$ 26,253	$ 26,703	$ 27,161	$ 27,627	$ 28,101	$ 28,583
Total	2018 $	$ 536,303	$ 545,500	$ 554,853	$ 564,367	$ 574,045	$ 583,888	$ 593,900	$ 604,084	$ 614,442	$ 624,978	$ 635,695	$ 646,595	$ 657,682	$ 668,960	$ 680,431
Environmental Analysis																
AUTOS	Hours	117,216	114,474	111,985	109,739	107,725	105,932	104,352	102,977	101,797	100,806	99,997	99,363	98,898	98,597	98,453
Volatile Organic Compounds (VOCs)	Grams	314,489	307,133	300,457	294,430	289,025	284,216	279,977	276,286	273,121	270,463	268,292	266,591	265,343	264,535	264,151
Nitrogen Oxide (Nox)	Grams	412,013	402,376	393,629	385,733	378,652	372,351	366,798	361,962	357,816	354,333	351,489	349,261	347,626	346,567	346,064
Total	Grams	726,502	709,509	694,086	680,164	667,678	656,567	646,775	638,248	630,938	624,796	619,781	615,851	612,970	611,102	610,215
Trucks	Hours	18,901	17,860	16,876	15,946	15,068	14,238	13,454	12,713	12,013	11,351	10,726	10,135	9,577	9,049	8,551
Volatile Organic Compounds (VOCs)	Grams	51,410	48,578	45,903	43,374	40,985	38,728	36,595	34,579	32,675	30,875	29,174	27,568	26,049	24,614	23,259
Nitrogen Oxide (Nox)	Grams	70,027	66,170	62,526	59,082	55,828	52,753	49,847	47,102	44,507	42,056	39,739	37,551	35,482	33,528	31,681
Total	Grams	121,437	114,748	108,428	102,456	96,813	91,481	86,442	81,681	77,182	72,931	68,914	65,118	61,532	58,143	54,940
AUTOS																
Volatile Organic Compounds (VOCs)	2018 $	$ 688	$ 671	$ 657	$ 644	$ 632	$ 621	$ 612	$ 604	$ 597	$ 591	$ 587	$ 583	$ 580	$ 578	$ 577
Nitrogen Oxide (Nox)	2018 $	$ 3,550	$ 3,467	$ 3,392	$ 3,324	$ 3,263	$ 3,208	$ 3,160	$ 3,119	$ 3,083	$ 3,053	$ 3,029	$ 3,009	$ 2,995	$ 2,986	$ 2,982
Total	2018 $	$ 4,238	$ 4,138	$ 4,048	$ 3,967	$ 3,894	$ 3,830	$ 3,773	$ 3,723	$ 3,680	$ 3,644	$ 3,615	$ 3,592	$ 3,575	$ 3,564	$ 3,559
Trucks																
Volatile Organic Compounds (VOCs)	2018 $	$ 112	$ 106	$ 100	$ 95	$ 90	$ 85	$ 80	$ 76	$ 71	$ 67	$ 64	$ 60	$ 57	$ 54	$ 51
Nitrogen Oxide (Nox)	2018 $	$ 603	$ 570	$ 539	$ 509	$ 481	$ 455	$ 429	$ 406	$ 383	$ 362	$ 342	$ 324	$ 306	$ 289	$ 273
Total	2018 $	$ 716	$ 676	$ 639	$ 604	$ 571	$ 539	$ 510	$ 481	$ 455	$ 430	$ 406	$ 384	$ 363	$ 343	$ 324

APPENDIX E –NET BENEFIT SUMMARY, SCENARIO 2: BUILD

SCENARIO 2 BUILD: YEARS 1-15 Net Benefits Analysis Assumptions

Net Benefits Analysis of McGilchrist Corridor BUILD Application

						construction	construction									
Year:	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
No Discount Rate	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Economic Competitiveness																
Value of Reduced Travel Delay, Cars	$0	$0	$0	$0	$0	($206,894)	($211,934)	$115,610	$440,798	$764,543	$1,087,744	$1,411,292	$1,736,074	$2,062,969	$2,392,859	$2,726,624
Value of Reduced Travel Delay, Trucks	$0	$0	$0	$0	$0	($37,344)	($38,254)	$62,615	$162,819	$262,636	$362,341	$462,207	$562,506	$663,506	$765,479	$868,693
Increased Land Value	$0	$0	$0	$0	$0	$0	$0	$1,934,978	$1,934,978	$1,934,978	$1,934,978	$1,934,978	$1,934,978	$1,934,978	$1,934,978	$1,934,978
Residual Value																
ROW Residual Value	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Investment Residual Value	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Environmental																
Vehicle Emission-Related Cost Reductions, Cars	$0	$0	$0	$0	$0	($295)	($302)	$165	$628	$1,089	$1,549	$2,010	$2,473	$2,938	$3,408	$3,883
Vehicle Emission-Related Cost Reductions, Trucks*	$0	$0	$0	$0	$0	($48)	($49)	$80	$209	$337	$465	$593	$722	$852	$983	$1,115
Safety																
Accident-Related Health & Damage Cost Reductio*	$0	$0	$0	$0	$0	$0	$0	$2,545,752	$2,589,405	$2,633,806	$2,678,968	$2,724,905	$2,771,629	$2,819,155	$2,867,495	$2,916,665
State of Good Repair																
Reduced Roadway O&M	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970	$36,970
Total																
Total Benefits	$ 36,970	$ 36,970	$ 36,970	$ 36,970	$ 36,970	$ (207,612)	$ (213,570)	$ 4,696,170	$ 5,165,806	$ 5,634,358	$ 6,103,015	$ 6,572,955	$ 7,045,351	$ 7,521,367	$ 8,002,171	$ 8,488,928

** derived from assumptions stated in Appendix.*

Discount Rate: 7%																
Year:	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
Economic Competitiveness																
Value of Reduced Travel Delay, Cars	$0	$0	$0	$0	$0	($147,513)	($141,221)	$71,996	$256,549	$415,861	$552,954	$670,495	$770,837	$856,059	$927,992	$988,254
Value of Reduced Travel Delay, Trucks	$0	$0	$0	$0	$0	($26,626)	($25,490)	$38,994	$94,762	$142,856	$184,196	$219,591	$249,759	$275,331	$296,866	$314,854
Increased Land Value	$0	$0	$0	$0	$0	$0	$0	$1,205,007	$1,126,175	$1,052,500	$983,645	$919,294	$859,154	$802,947	$750,418	$701,325
Residual Value																
ROW Residual Value	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Investment Residual Value	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Environmental																
Value of Reduced Travel Delay, Cars	$0	$0	$0	$0	$0	($210)	($201)	$103	$365	$592	$788	$955	$1,098	$1,219	$1,322	$1,407
Value of Reduced Travel Delay, Trucks	$0	$0	$0	$0	$0	($34)	($33)	$50	$122	$183	$236	$282	$321	$353	$381	$404
Safety																
Annual Accident-Related Health Cost Reductions	$0	$0	$0	$0	$0	$0	$0	$1,585,366	$1,507,057	$1,432,616	$1,361,851	$1,294,583	$1,230,636	$1,169,849	$1,112,064	$1,057,134
State of Good Repair																
Reduced Roadway O&M	$36,970	$34,551	$32,291	$30,178	$28,204	$26,359	$24,634	$23,023	$21,517	$20,109	$18,793	$17,564	$16,415	$15,341	$14,337	$13,399
Total																
Total Benefits	$ 36,970	$ 34,551	$ 32,291	$ 30,178	$ 28,204	$ (148,024)	$ (142,310)	$ 2,924,539	$ 3,006,546	$ 3,064,717	$ 3,102,463	$ 3,122,764	$ 3,128,220	$ 3,121,100	$ 3,103,380	$ 3,076,778

SCENARIO 2 BUILD: YEARS 16-30 Net Benefits Analysis Assumptions

Net Benefits Analysis of McGilchrist Corridor BUILD Application

Year:	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
No Discount Rate	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Economic Competitiveness															
Value of Reduced Travel Delay, Cars	$3,065,149	$3,409,326	$3,760,053	$4,118,241	$4,484,811	$4,860,703	$5,246,873	$5,644,298	$6,053,979	$6,476,939	$6,914,234	$7,366,948	$7,836,197	$8,323,137	$8,828,961
Value of Reduced Travel Delay, Trucks	$973,420	$1,079,933	$1,188,508	$1,299,423	$1,412,963	$1,529,414	$1,649,070	$1,772,230	$1,899,202	$2,030,301	$2,165,849	$2,306,179	$2,451,634	$2,602,569	$2,759,350
Increased Land Value	$1,934,978	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Residual Value															
ROW Residual Value	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,100,000
Capital Investment Residual Value	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$9,395,754
Environmental															
Vehicle Emission-Related Cost Reductions, Cars	$4,365	$4,856	$5,355	$5,865	$6,387	$6,923	$7,473	$8,039	$8,622	$9,224	$9,847	$10,492	$11,160	$11,854	$12,574
Vehicle Emission-Related Cost Reductions, Trucks	$1,250	$1,386	$1,526	$1,668	$1,814	$1,963	$2,117	$2,275	$2,438	$2,606	$2,780	$2,961	$3,147	$3,341	$3,542
Safety															
Accident-Related Health & Damage Cost Reduction	$2,966,677	$3,017,547	$3,069,290	$3,121,920	$3,175,452	$3,229,902	$3,285,285	$3,341,619	$3,398,918	$3,457,200	$3,516,481	$3,576,779	$3,638,111	$3,700,494	$3,763,947
State of Good Repair															
Reduced Roadway O&M	$36,970	$15,944	$15,944	$15,944	$15,944	$15,944	$15,944	$15,944	$15,944	$15,944	$15,944	$0	$0	$0	$0
Total															
Total Benefits	$ 8,982,810	$ 7,528,993	$ 8,040,677	$ 8,563,062	$ 9,097,371	$ 9,644,849	$ 10,206,762	$ 10,784,406	$ 11,379,104	$ 11,992,216	$ 12,625,136	$ 13,263,358	$ 13,940,250	$ 14,641,395	$ 29,864,128

** derived from assumptions stated in Appendix.*

Discount Rate: 7%															
Year:	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
Economic Competitiveness															
Value of Reduced Travel Delay, Cars	$1,038,272	$1,079,305	$1,112,464	$1,138,728	$1,158,960	$1,173,923	$1,184,288	$1,190,647	$1,193,521	$1,193,371	$1,190,600	$1,185,566	$1,178,581	$1,169,924	$1,159,835
Value of Reduced Travel Delay, Trucks	$329,731	$341,879	$351,637	$359,301	$365,136	$369,373	$372,217	$373,846	$374,421	$374,081	$372,949	$371,134	$368,731	$365,824	$362,488
Increased Land Value	$655,444	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Residual Value															
ROW Residual Value	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$669,972
Capital Investment Residual Value	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,234,293
Environmental															
Value of Reduced Travel Delay, Cars	$1,479	$1,537	$1,584	$1,622	$1,651	$1,672	$1,687	$1,696	$1,700	$1,700	$1,696	$1,688	$1,679	$1,666	$1,652
Value of Reduced Travel Delay, Trucks	$423	$439	$451	$461	$469	$474	$478	$480	$481	$480	$479	$476	$473	$470	$465
Safety															
Annual Accident-Related Health Cost Reductions	$1,004,916	$955,278	$908,092	$863,237	$820,597	$780,064	$741,532	$704,904	$670,085	$636,986	$605,522	$575,612	$547,180	$520,152	$494,459
State of Good Repair															
Reduced Roadway O&M	$12,523	$5,048	$4,717	$4,409	$4,120	$3,851	$3,599	$3,363	$3,143	$2,938	$2,746	$0	$0	$0	$0
Total															
Total Benefits	$ 3,042,788	$ 2,383,486	$ 2,378,946	$ 2,367,758	$ 2,350,934	$ 2,329,357	$ 2,303,801	$ 2,274,937	$ 2,243,352	$ 2,209,556	$ 2,173,992	$ 2,134,477	$ 2,096,644	$ 2,058,036	$ 3,923,164

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