

## **Bradford Bypass Tolling Evaluation - Results for additional scenarios to assist in identifying 3 scenarios for business-case evaluation.**

### **Additional scenarios requested by MTO:**

- 2041 scenario with toll rates increased by 25%
- 2041 scenario with toll rates increased by 50%
- 2031 scenario with all vehicles tolled at the auto/light truck rate
- 2031 scenario with all vehicles tolled at the auto/light truck rate but with toll rates increased by 25%

The following requested information is still being generated:

- System-wide VKT, as well as separate VKT totals for York and Simcoe
- Updated % congested, v/c ratio, section corridor speeds/travel times (for new scenarios)
- Trip length within corridor
- Screenline analysis of Bypass and parallel/connecting routes to assess changes in travel/network utilization patterns

**2031 - VKT summary including new 2031 scenarios**

Toll rate scenarios <sup>1</sup>	AM Peak VKT (veh-km)						Daily VKT <sup>3</sup> (veh-km)			Annual VKT (million veh-km)		
	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck	Auto/ light truck%	Single-unit (medium) truck%	Multi-unit (heavy) truck%	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck
Baseline untolled	90,138	4,066	3,978	92%	4%	4%	868,265	53,647	46,673	300.3	13.9	12.5
Baseline tolled	69,265	2,375	2,359	94%	3%	3%	667,203	31,336	27,678	230.8	8.1	7.4
Baseline +25%	64,387	2,021	1,342	95%	3%	2%	620,215	26,665	15,746	214.5	6.9	4.2
Baseline +40%	59,911	1,285	1,163	96%	2%	2%	577,100	16,954	13,645	199.6	4.4	3.7
Baseline +50%	56,435	1,163	1,092	96%	2%	2%	543,617	15,345	12,812	188.0	4.0	3.4
Baseline +60%	53,623	1,096	848	97%	2%	2%	516,530	14,461	9,949	178.6	3.7	2.7
Baseline +75%	49,634	948	373	97%	2%	1%	478,105	12,508	4,376	165.4	3.2	1.2
Baseline with all veh at auto toll rate	65,718	3,871	4,036	89%	5%	5%	633,036	51,074	47,354	218.9	13.2	12.7
Baseline with all veh at auto toll rate + 25%	58,241	3,906	4,162	88%	6%	6%	561,013	51,536	48,832	194.0	13.4	13.1

**2031 - Revenue summary for tolled scenarios, including new 2031 scenarios**

Toll rate scenarios <sup>1</sup>	Daily Revenue <sup>2,3</sup> - typical weekday (in \$2016)			Annual Revenue <sup>2</sup> (\$million in \$2016)		
	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck
Baseline	172,582	15,885	20,643	56.6	4.0	5.5
Baseline +25%	200,558	16,896	14,680	65.8	4.3	3.9
Baseline +40%	208,993	12,032	14,249	68.6	3.1	3.8
Baseline +50%	210,921	11,668	14,335	69.2	3.0	3.8
Baseline +60%	213,765	11,729	11,873	70.1	3.0	3.1
Baseline +75%	216,439	11,096	5,712	71.0	2.8	1.5
Baseline with all veh at auto toll rate	163,744	12,945	11,773	53.7	3.3	3.1
Baseline with all veh at auto toll rate + 25%	181,414	16,330	15,178	59.5	4.2	4.0

Notes:

1. The baseline toll rates are those used by MTO for Hwy 407 East as of February 2019 and converted to \$2016
2. Revenue is gross revenue - tolling-related costs have not been accounted for
3. Daily VKT is based on a typical weekday (Tuesday-Thursday)

**2031 - Percentage changes in utilization and revenue, relative to the baseline tolled scenario, for toll-rate increase scenarios**

Toll rate scenarios	AM Peak VKT			Daily and Annual VKT			Daily and Annual Revenue		
	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck
Baseline +25%	-7%	-15%	-43%	-7%	-15%	-43%	16%	6%	-29%
Baseline +40%	-14%	-46%	-51%	-14%	-46%	-51%	21%	-24%	-31%
Baseline +50%	-19%	-51%	-54%	-19%	-51%	-54%	22%	-27%	-31%
Baseline +60%	-23%	-54%	-64%	-23%	-54%	-64%	24%	-26%	-42%
Baseline +75%	-28%	-60%	-84%	-28%	-60%	-84%	25%	-30%	-72%
Baseline with all veh at auto toll rate	-5%	63%	71%	-5%	63%	71%	-5%	-19%	-43%
Baseline with all veh at auto toll rate + 25%	-16%	64%	76%	-16%	64%	76%	5%	3%	-26%

**2041 - VKT summary including new 2041 scenarios**

Toll rate scenarios <sup>1</sup>	AM Peak VKT (veh-km)						Daily VKT <sup>3</sup> (veh-km)			Annual VKT (million veh-km)		
	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck	Auto/ light truck%	Single-unit (medium) truck%	Multi-unit (heavy) truck%	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck
Baseline untolled	134,155	4,635	5,400	93%	3%	4%	1,292,264	61,154	63,358	446.9	15.9	17.0
Baseline tolled	104,560	2,955	3,204	94%	3%	3%	1,007,186	38,988	37,592	348.3	10.1	10.1
Baseline +25%	98,324	2,689	2,895	95%	3%	3%	947,117	35,479	33,967	327.6	9.2	9.1
Baseline +50%	91,960	2,287	2,500	95%	2%	3%	885,815	30,175	29,332	306.4	7.8	7.9
Baseline (2 lane cross-section)	89,265	2,447	2,685	95%	3%	3%	859,855	32,286	31,503	297.4	8.4	8.4

**2041 - Revenue summary of tolled scenarios, including new 2041 scenarios**

Toll rate scenarios <sup>1</sup>	Daily Revenue <sup>2,3</sup> - typical weekday (in \$2016)			Annual Revenue <sup>2</sup> (\$million in \$2016)		
	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck
Baseline	260,523	19,764	28,038	85.5	5.0	7.4
Baseline +25%	306,268	22,481	31,667	100.5	5.7	8.4
Baseline +50%	343,693	22,944	32,817	112.8	5.8	8.7
Baseline (2 lane cross-section)	222,414	16,366	23,496	73.0	4.2	6.2

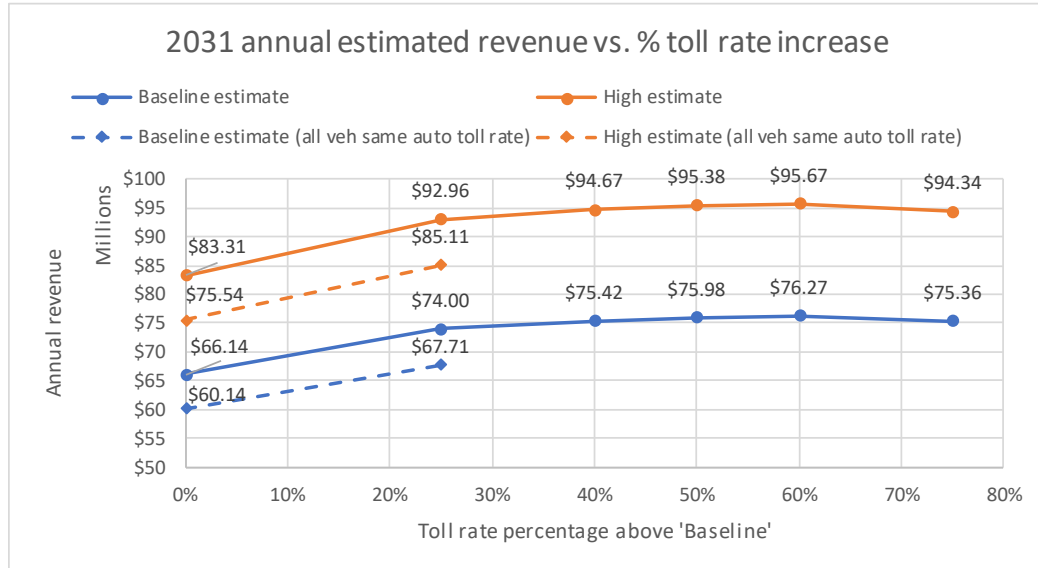
Notes:

1. The baseline toll rates are those used by MTO for Hwy 407 East as of February 2019 and converted to \$2016
2. Revenue is gross revenue - tolling-related costs have not been accounted for
3. Daily VKT is based on a typical weekday (Tuesday-Thursday)

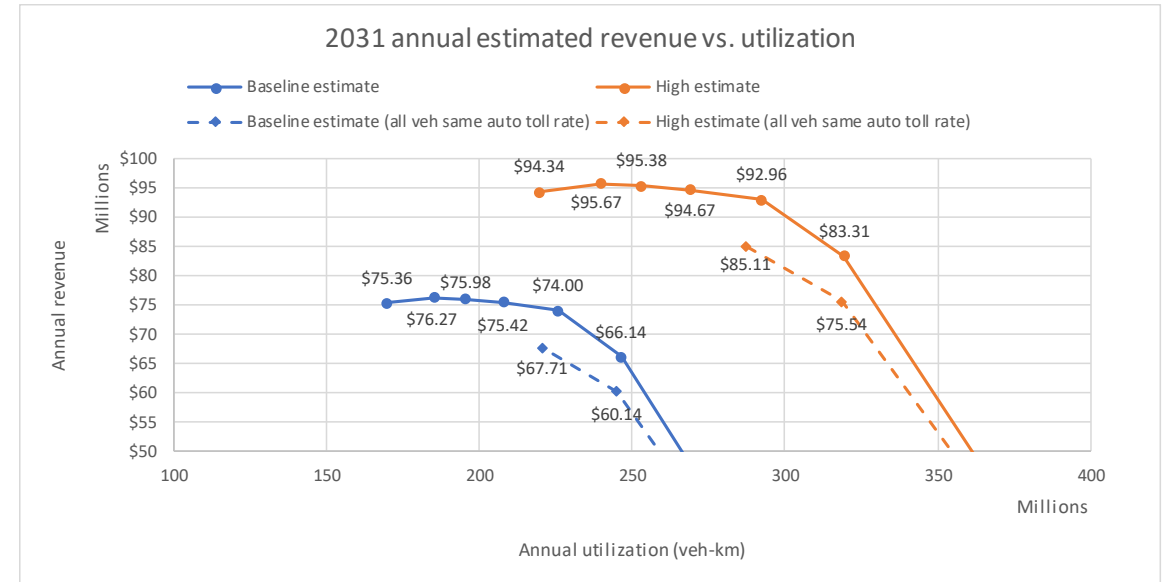
**2041 - Percentage changes in utilization and revenue, relative to the baseline scenario, for toll-rate increase scenarios**

Toll rate scenarios	AM Peak VKT			Daily and Annual VKT			Daily and Annual Revenue		
	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck	Auto/ light truck	Single-unit (medium) truck	Multi-unit (heavy) truck
Baseline +25%	-6%	-9%	-10%	-6%	-9%	-10%	18%	14%	13%
Baseline +50%	-12%	-23%	-22%	-12%	-23%	-22%	32%	16%	17%
Baseline (2 lane cross-section)	-15%	-17%	-16%	-15%	-17%	-16%	-15%	-17%	-16%

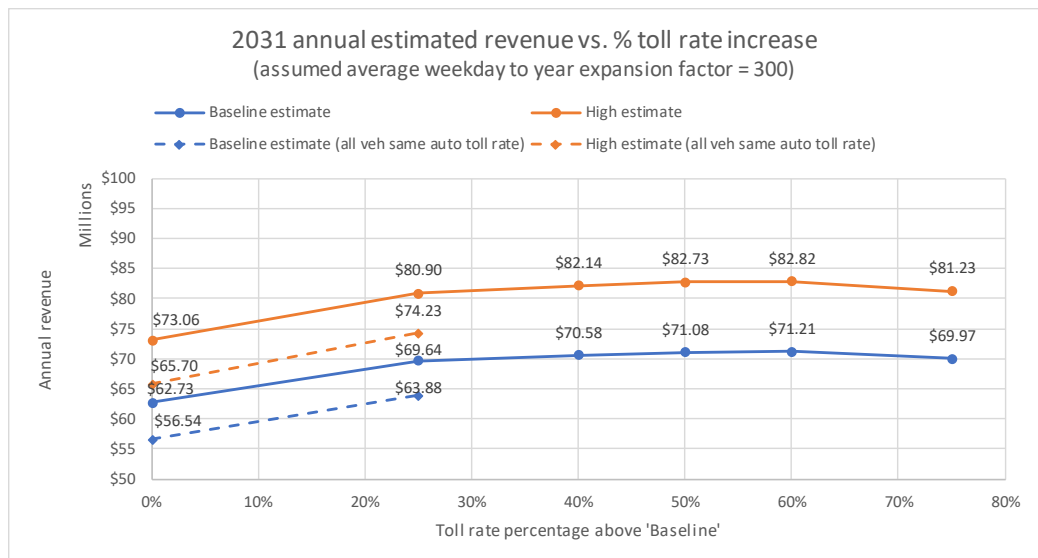
**2031 Revenue vs. toll rate (calculated daily-to-annual expansion factors)**



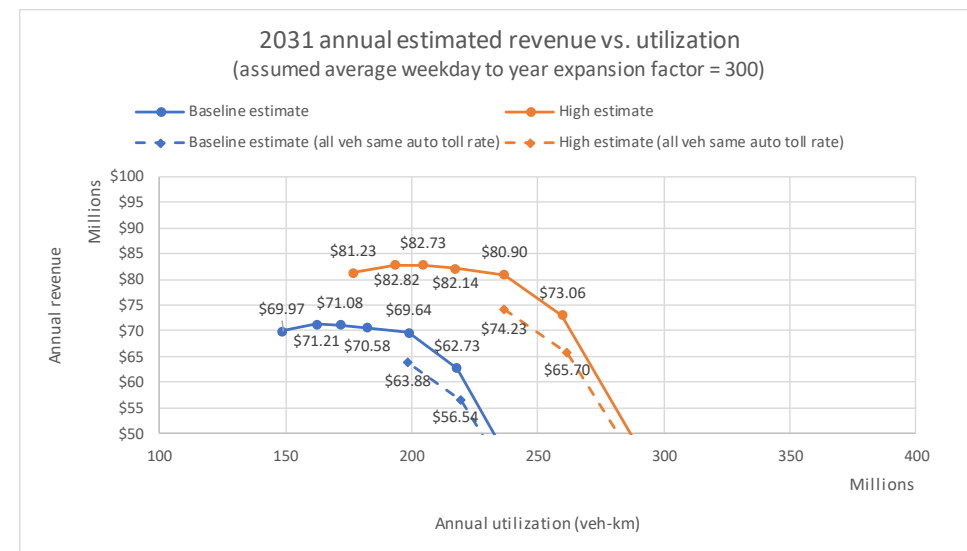
**2031 Revenue vs. utilization (calculated daily-to-annual expansion factors)**



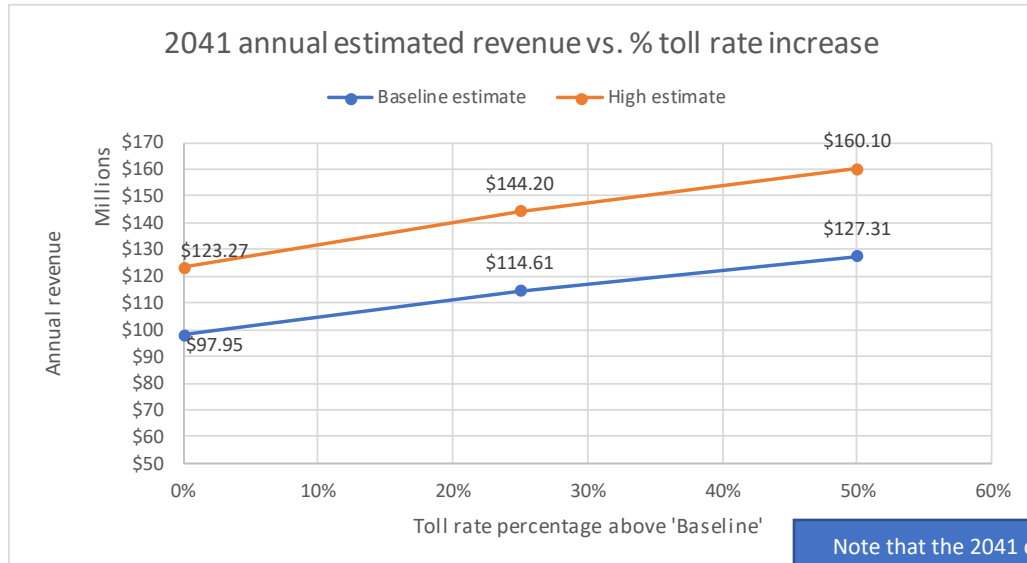
**2031 Revenue vs. toll rate (daily-to-annual expansion factor = 300)**



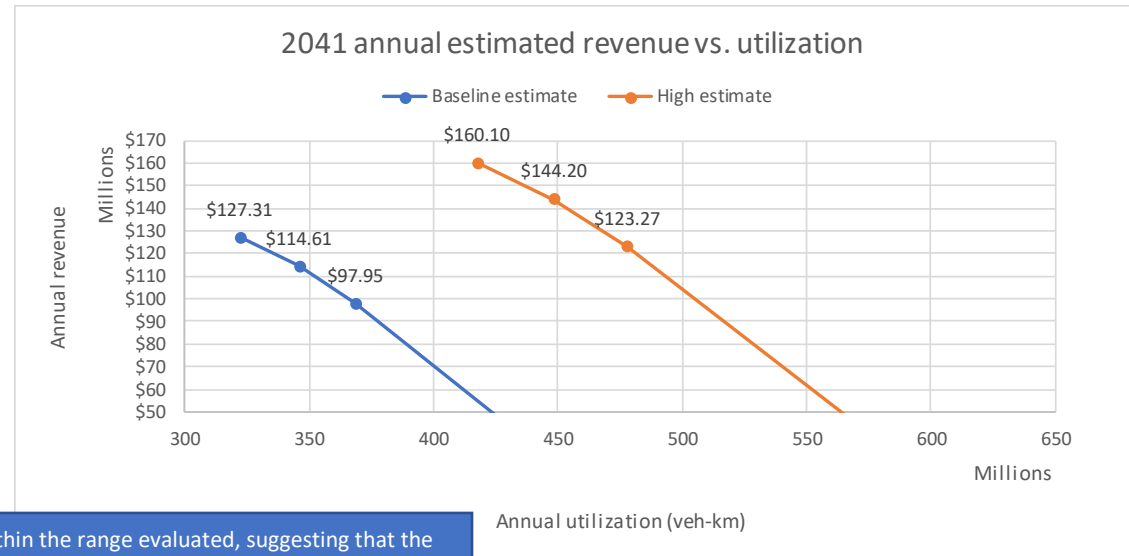
**2031 Revenue vs. utilization (daily-to-annual expansion factor = 300)**



**2041 Revenue vs. toll rate (calculated daily-to-annual expansion factors)**

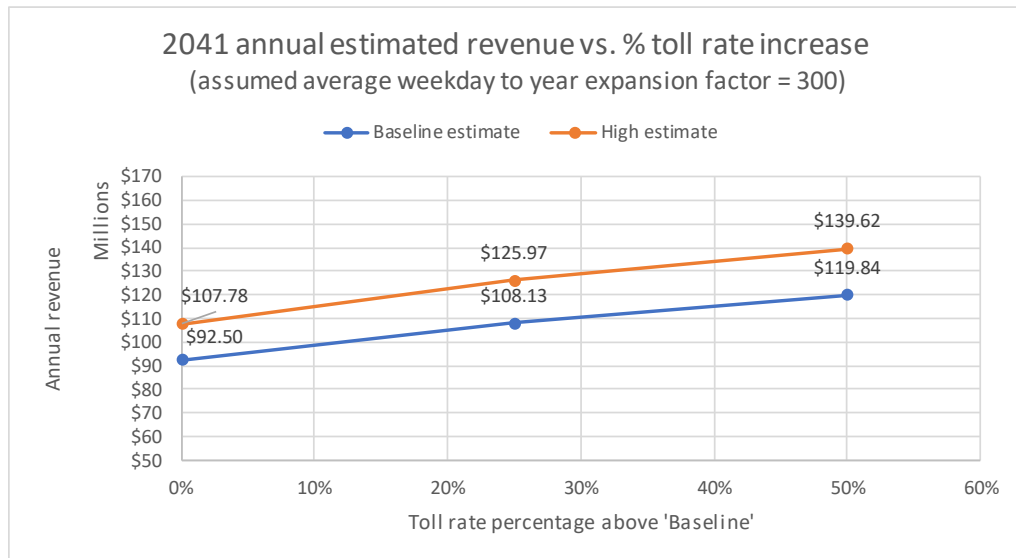


**2041 Revenue vs. utilization (calculated daily-to-annual expansion factors)**

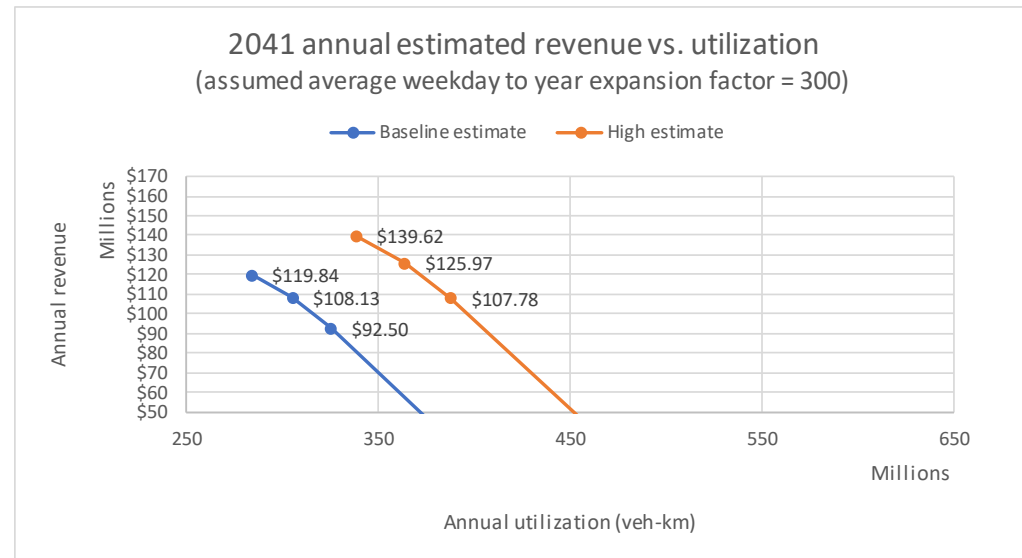


Note that the 2041 curves do not peak within the range evaluated, suggesting that the maximum revenue point lies at a toll rate increase of more than 50% above the Hwy 407 East levels and therefore at a lower utilization level.

**2041 Revenue vs. toll rate (daily-to-annual expansion factor = 300)**



**2041 Revenue vs. utilization (daily-to-annual expansion factor = 300)**



### Expansion factors

While the expansion process for VKT and revenue (from AM peak hour to annual estimates) does not directly use expansion factors (as the expansion is done on an hour-by-hour, day-by-day, vehicle class-by-class basis), we have calculated the equivalent expansion factors for average weekday to annual estimates for comparison with MTO's typical factor of 300.

	MTO factor	calculated factor			
	all vehicle classes	autos/light trucks	medium trucks	heavy trucks	all classes
VKT	300	346	259	268	339
Revenue	300	328	255	265	316