

Mistry, Natasha (MTO)

From: Deletsu, Jeanne-Marie (MTO)
Sent: June 10, 2021 4:56 PM
To: Tai, Arthur (MTO); Damodaran, Sundar (MTO); Alamillo, Mauricio (MTO); Georgiev, Cvetomir (MTO); Dhanjal, Sundip (MTO)
Cc: Lau, Johnson (MTO)
Subject: RE: Bradford Bypass Tolling Evaluation
Attachments: Bradford Bypass Tolling Evaluation - additional scenario results revised 100621.pdf

Attached please find a revised submission based on Arthur Tai's request below.

Thank you,
Jeanne-Marie

*Jeanne-Marie Deletsu | Acting Head, Traffic Modelling & Analysis | Ministry of Transportation | Operations Division
Highway Operations Management Branch | Traffic Office
159 Sir William Hearst Avenue | 6th Floor | Toronto, ON M3M-0B7 | (Mobile: (437) 288-4452 | (Office: (416) 235-3562*

From: Tai, Arthur (MTO) <Arthur.Tai@ontario.ca>
Sent: June 10, 2021 9:44 AM
To: Deletsu, Jeanne-Marie (MTO) <Jeanne-Marie.Deletsu@ontario.ca>; Damodaran, Sundar (MTO) <Sundar.Damodaran@ontario.ca>; Alamillo, Mauricio (MTO) <Mauricio.Alamillo@ontario.ca>; Georgiev, Cvetomir (MTO) <Cvetomir.Georgiev@ontario.ca>; Dhanjal, Sundip (MTO) <Sundip.Dhanjal@ontario.ca>
Cc: Lau, Johnson (MTO) <Johnson.Lau@ontario.ca>
Subject: RE: Bradford Bypass Tolling Evaluation
Importance: Low

Jeanne-Marie,

Can you ask Rob to add a line for "Non-Toll" scenario for the below table?

2031 - VKT summary including new 2031 scenarios
2041 - VKT summary including new 2041 scenarios

Thanks

Arthur

From: Deletsu, Jeanne-Marie (MTO) <Jeanne-Marie.Deletsu@ontario.ca>
Sent: Wednesday, June 9, 2021 1:44 PM
To: Tai, Arthur (MTO) <Arthur.Tai@ontario.ca>; Damodaran, Sundar (MTO) <Sundar.Damodaran@ontario.ca>; Alamillo, Mauricio (MTO) <Mauricio.Alamillo@ontario.ca>; Georgiev, Cvetomir (MTO) <Cvetomir.Georgiev@ontario.ca>; Dhanjal, Sundip (MTO) <Sundip.Dhanjal@ontario.ca>
Cc: Lau, Johnson (MTO) <Johnson.Lau@ontario.ca>
Subject: RE: Bradford Bypass Tolling Evaluation

Good afternoon everyone,

I just received the attached summary of the scenario runs we requested from WSP. The summaries were sent with apologies for the delays. We need to wrap this project up since it is past the delivery timeline that was set.

I will therefore appreciate your feedback with regards to the three scenarios you require us to ask WSP to use in developing the business case. A response by end of day this Friday June 11th will be very much appreciated. Sorry for the short turn around request.

Please let me know if you have any questions.

Thank you,
Jeanne-Marie

From: Deletsu, Jeanne-Marie (MTO) <Jeanne-Marie.Deletsu@ontario.ca>
Sent: May 6, 2021 2:34 PM
To: Pringle, Rob <Rob.Pringle@wsp.com>; Tai, Arthur (MTO) <Arthur.Tai@ontario.ca>; Damodaran, Sundar (MTO) <Sundar.Damodaran@ontario.ca>; Alamillo, Mauricio (MTO) <Mauricio.Alamillo@ontario.ca>
Cc: Georgiev, Cvetomir (MTO) <Cvetomir.Georgiev@ontario.ca>; Lau, Johnson (MTO) <Johnson.Lau@ontario.ca>; Dhanjal, Sundip (MTO) <Sundip.Dhanjal@ontario.ca>; Mendonca, Natalie <Natalie.Mendonca@wsp.com>; Costain, Cindy <Cindy.Costain@wsp.com>; Knowles, Alec <alec.knowles@wsp.com>; Koleilat, Salah <salah.koleilat@wsp.com>; Knapp, Geoff <Geoff.Knapp@wsp.com>
Subject: Re: Bradford Bypass Tolling Evaluation

Good afternoon Rob,

After an internal discussion, these additional scenarios are required for evaluation:

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

Please note that toll rate variations for trucks and HOVs are not required at this time.

The analysis results summaries should be like the results presented in this email. In addition, we would also like to have a system wide VKT results as well as results for York and Simcoe region separately.

The 3 scenarios to carry forward to develop a business case will be determined after reviewing the results from these additional scenario runs.

Please let us know if you have any questions.

Thank you,
Jeanne-Marie

From: Pringle, Rob <Rob.Pringle@wsp.com>
Sent: May 4, 2021 5:19 PM
To: Deletsu, Jeanne-Marie (MTO) <Jeanne-Marie.Deletsu@ontario.ca>; Tai, Arthur (MTO) <Arthur.Tai@ontario.ca>; Damodaran, Sundar (MTO) <Sundar.Damodaran@ontario.ca>; Alamillo, Mauricio (MTO) <Mauricio.Alamillo@ontario.ca>

Cc: Georgiev, Cvetomir (MTO) <Cvetomir.Georgiev@ontario.ca>; Lau, Johnson (MTO) <Johnson.Lau@ontario.ca>; Kuzmanovic, Sanja (MTO) <Sanja.Kuzmanovic@ontario.ca>; Dhanjal, Sundip (MTO) <Sundip.Dhanjal@ontario.ca>; Yuen, Vivian (MTO) <Vivian.Yuen@ontario.ca>; Persaud, Sachin (MTO) <Sachin.Persaud3@ontario.ca>; Mikel-Jaeger, Tina (MTO) <Tina.Mikel-Jaeger@ontario.ca>; Kuzmanovic, Sanja (MTO) <Sanja.Kuzmanovic@ontario.ca>; Mendonca, Natalie <Natalie.Mendonca@wsp.com>; Costain, Cindy <Cindy.Costain@wsp.com>; Knowles, Alec <alec.knowles@wsp.com>; Koleilat, Salah <salah.koleilat@wsp.com>; Knapp, Geoff <Geoff.Knapp@wsp.com>

Subject: Bradford Bypass Tolling Evaluation

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Hello all

As a follow up to this morning's meeting, I am sending you the following:

1. An updated "additional results" summary to which the percentage changes in utilization and revenue, relative to the baseline tolled scenario, have been included (see last table) as requested.
2. An updated and more focused discussion on possible options for additional sensitivity scenarios and scenarios for business case development. This is intended to assist MTO in their internal discussion concerning the choice of further scenarios for evaluation.

Let me know if you have any questions or comments.

Regards

Rob

Rob Pringle M.Pl., M.A.Sc., P.Eng.

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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 ¹	AM Peak VKT (veh-km)						Daily VKT ³ (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 ¹	Daily Revenue ^{2,3} - typical weekday (in \$2016)			Annual Revenue ² (\$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 ¹	AM Peak VKT (veh-km)						Daily VKT ³ (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 ¹	Daily Revenue ^{2,3} - typical weekday (in \$2016)			Annual Revenue ² (\$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

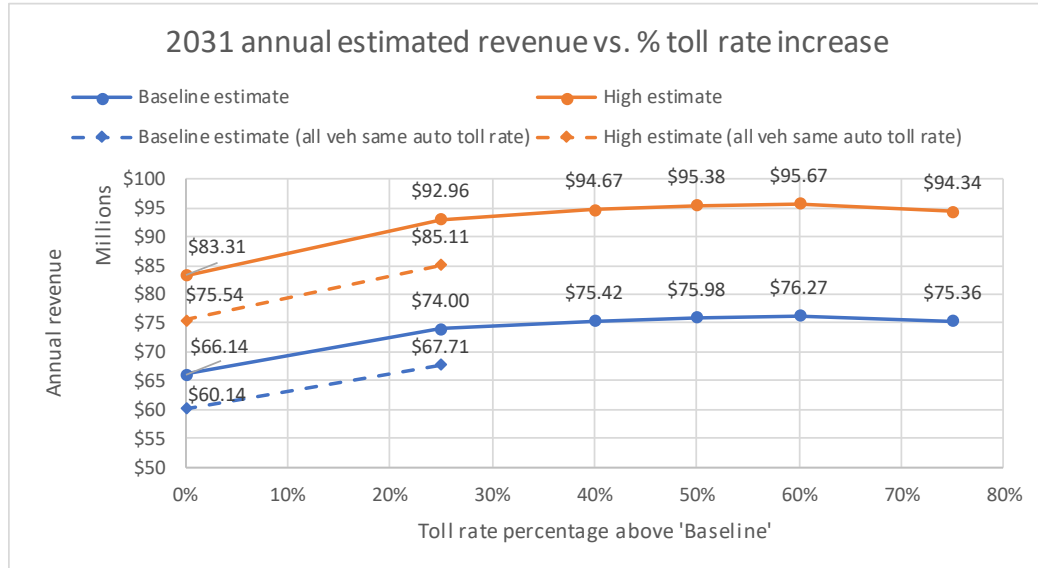
Notes:

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)

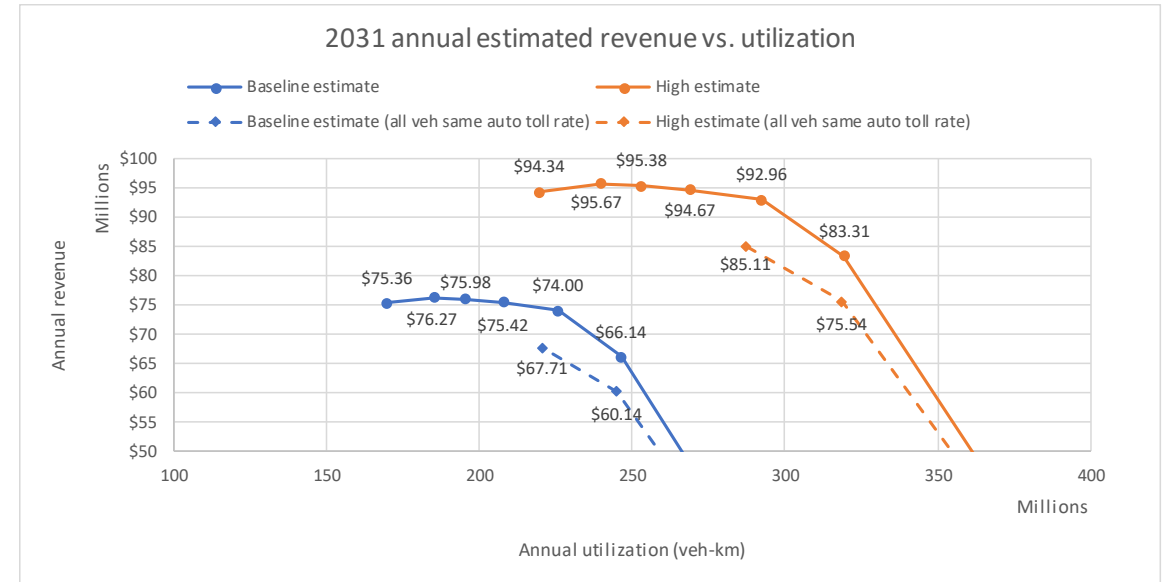
2041 - Percentage changes in utilization and revenue, relative to the baseline scenario, for toll-rate increase scenarios

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%

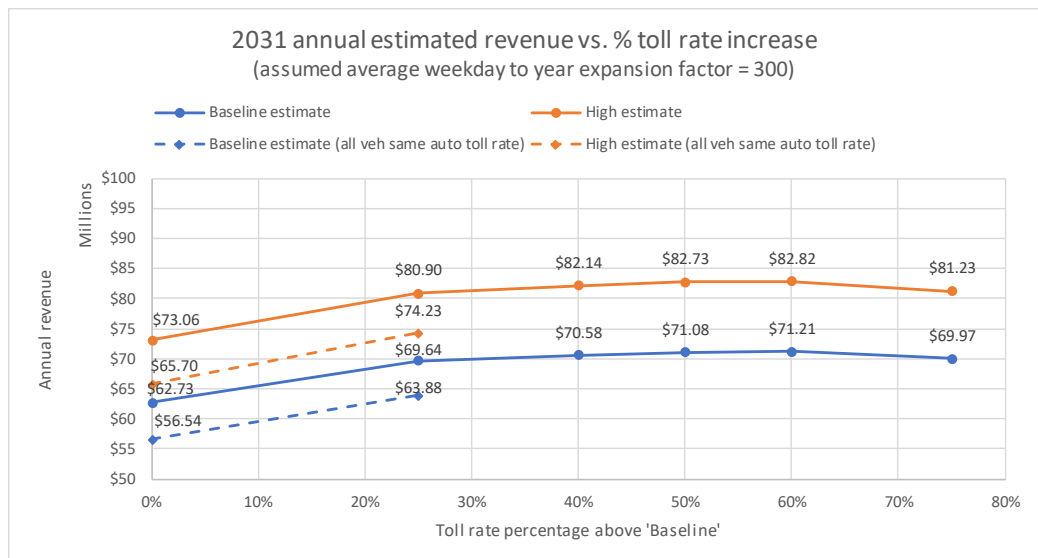
2031 Revenue vs. toll rate (calculated daily-to-annual expansion factors)



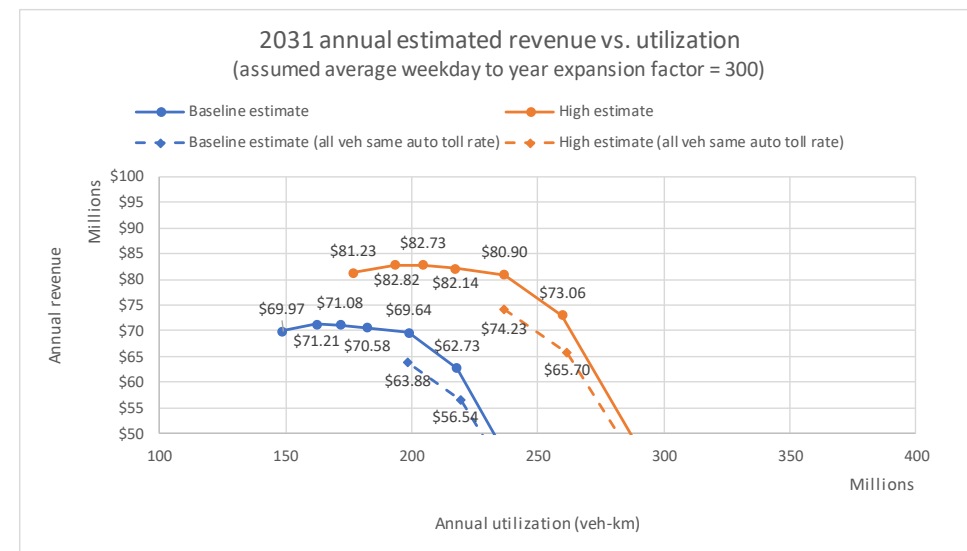
2031 Revenue vs. utilization (calculated daily-to-annual expansion factors)



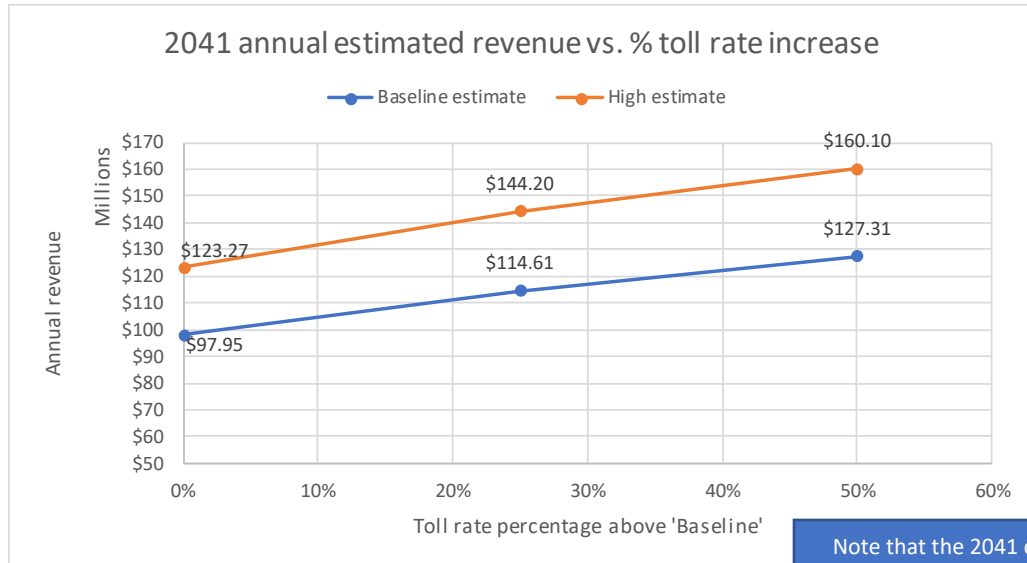
2031 Revenue vs. toll rate (daily-to-annual expansion factor = 300)



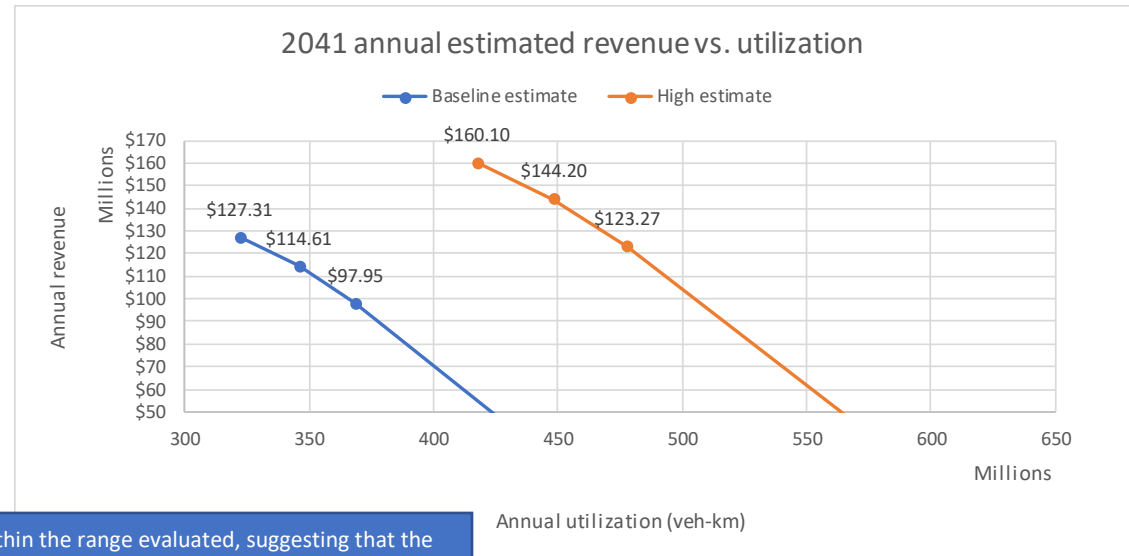
2031 Revenue vs. utilization (daily-to-annual expansion factor = 300)



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

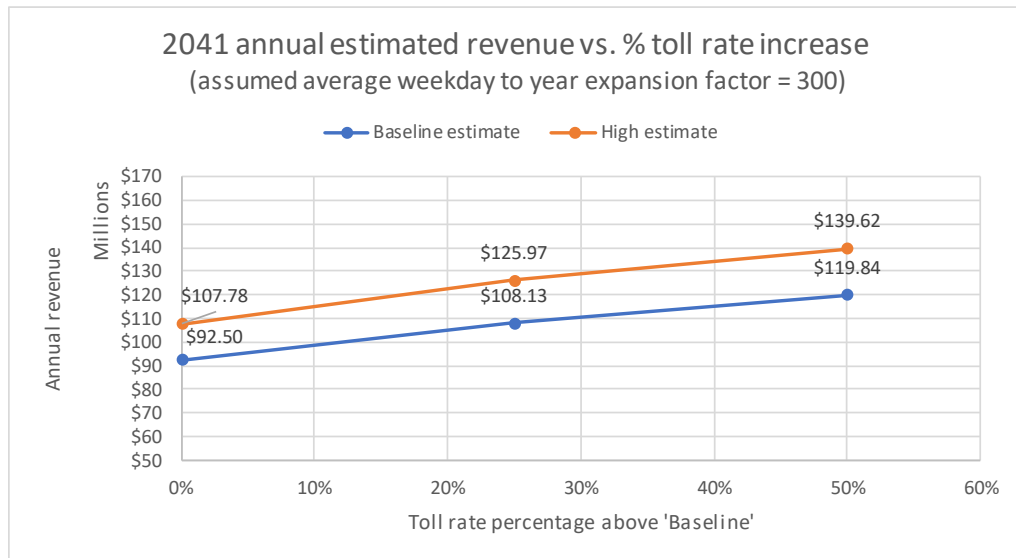


2041 Revenue vs. utilization (calculated daily-to-annual expansion factors)

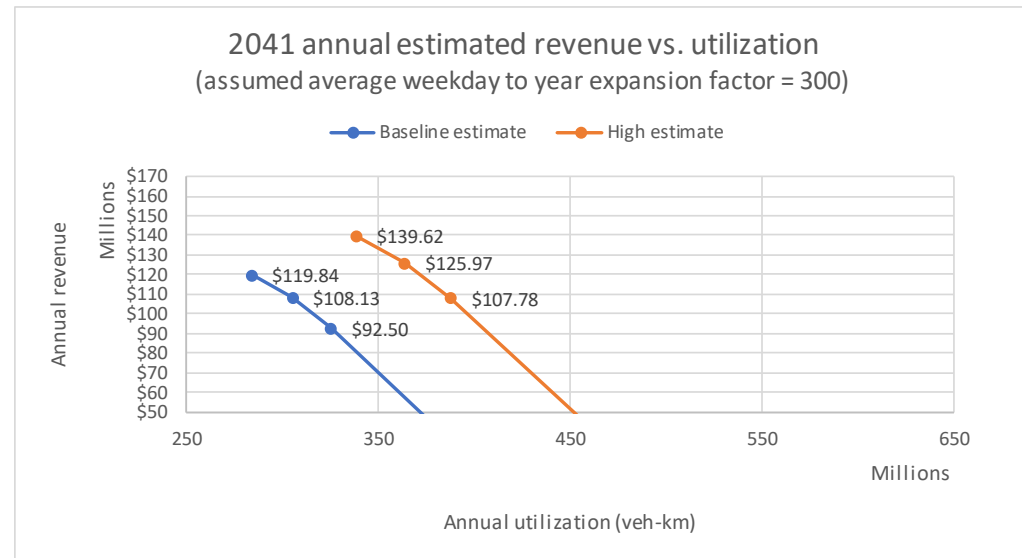


Note that the 2041 curves do not peak within the range evaluated, suggesting that the maximum revenue point lies at a toll rate increase of more than 50% above the Hwy 407 East levels and therefore at a lower utilization level.

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