
Columbia River Crossing Project

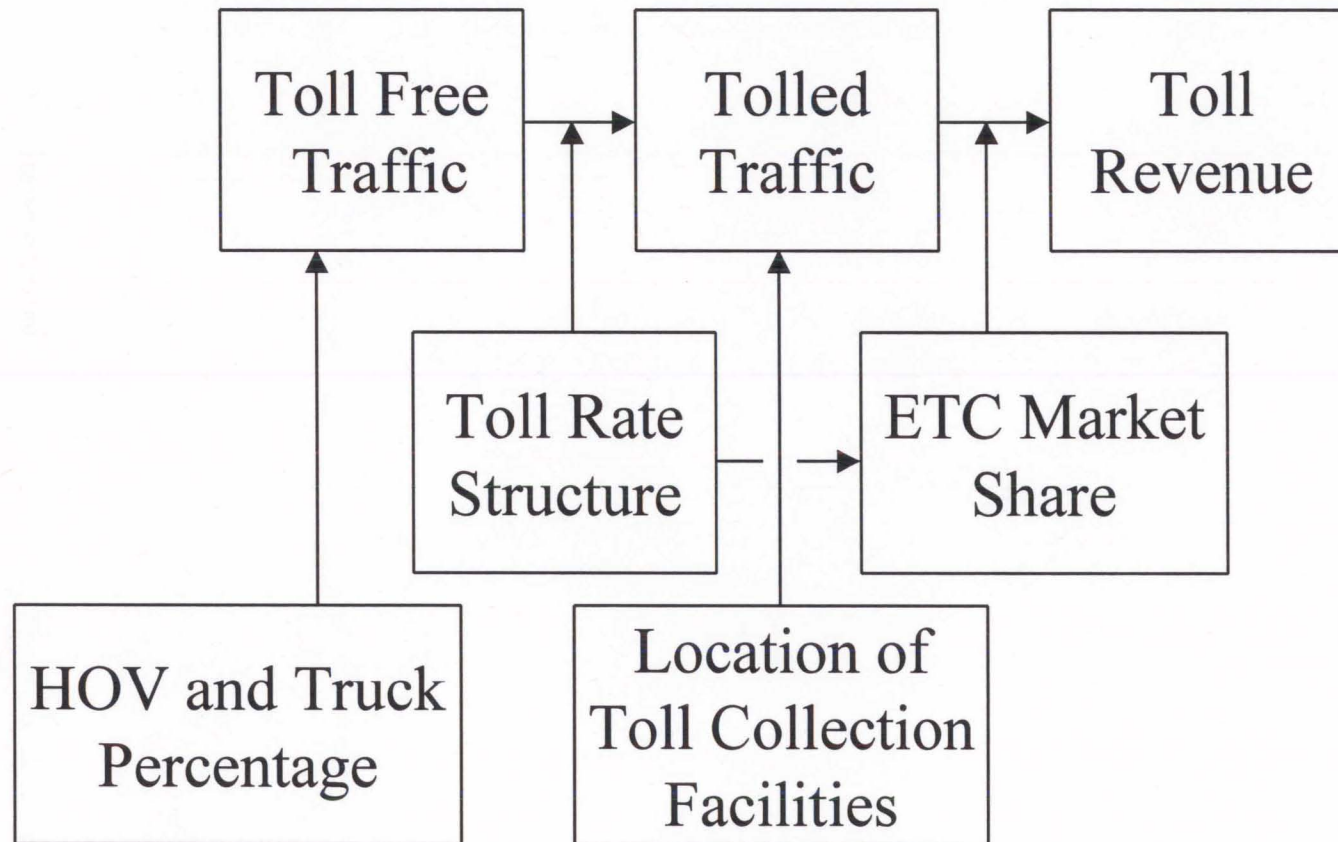
Traffic and Tolling Analysis
Summary

April 2005

I-5 Tolling Study Scope of Work

- Review Traffic Analysis
- Identify and prepare tolling model
- Identify toll rate structure and collection options, including Electronic Toll Collection (ETC)
- Evaluate toll alternatives and provide traffic and revenue

Basic Elements of a Tolling Study



What are the I-5 Tolling Options?

- Analyzed the possibility of several toll options:
 - Uniform toll rates for SOV, HOV, trucks with and without time of day differentials
 - Vehicle class tolling differentials with and without time of day differentials
 - Loyalty, HOV and ETC discounts
 - Toll escalation rates

No Standard Toll Rate Policy

Passenger Cars

- Vehicle occupancy
- Frequent user discount
- Resident discount
- ETC discount
- Time of day variations
- Toll escalation

Commercial Vehicles

- Vehicle classification
- Frequent user discount
- ETC discount
- Time of day variations
- Toll escalation

Vehicle Class Rate Differentials

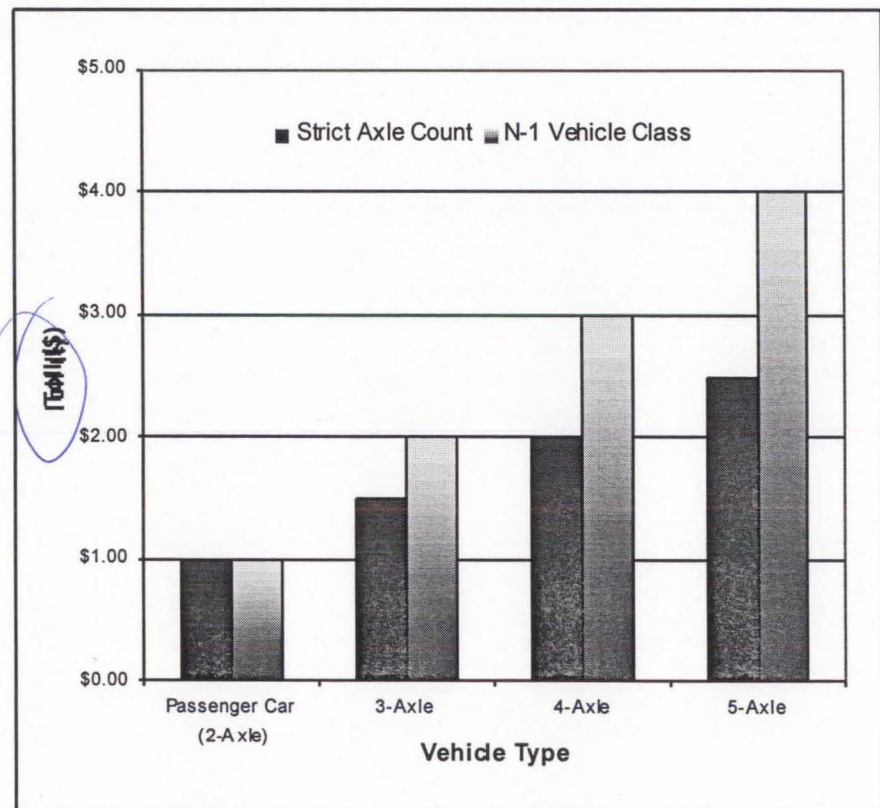
- Commercial vehicles: larger vehicles pay higher tolls
- Differentials based on
 - Visual
 - Weight
 - Axle

NYSTA Visual Classifications

<p>Class 1 (calculate toll)</p> <ul style="list-style-type: none"> Passenger car, taxi, ambulance, motorcycle, hearse Light truck or van, 2 axles, 4 tires Tractor, 2 axles Motor home or recreational vehicle, 2 axles, 4 tires 	<p>Class 2 (calculate toll)</p> <ul style="list-style-type: none"> Car, motor home or truck, 4 tires, with 1 axle trailer Tractor, 3 or more axles
<p>Class 4 (calculate toll)</p> <ul style="list-style-type: none"> Pickup truck, 2 axles, 6 tires Truck or motor home, 2 axles, 6 tires Bus, 2 axles, 4 tires Car, motor home or truck, 4 tires, with 2 axle trailer 	<p>Class 3 (calculate toll) Tandems see below'</p> <ul style="list-style-type: none"> Tractor Trailer with 5 or more axles, with 53 ft. trailer (Pay 2 Class 3 tolls)
<p>Class 6 (calculate toll)</p> <ul style="list-style-type: none"> Tractor trailer, 3 axles Auto transporter, 3 axles Car, motor home or truck, 4 tires, with 3 axle trailer Tractor-mobile home comb. with 4 axles Truck or motor home 2 axles, 6 tires with 2 axle trailer Bus with 3 axles Tractor, 3 axles, with single saddle mount 	<p>Class 5 (calculate toll)</p> <ul style="list-style-type: none"> Tractor trailer with 5 or more axles Stinger steered auto transporter 5 or more axles, greater than 65 but not exceeding 75 feet Truck or tractor, 2 or more axles, with triple saddle mount
<p>Class 8 (calculate toll)</p> <ul style="list-style-type: none"> Truck, 3 axles Tractor, 2 axles, with 1 axle mobile home Motor home, 3 axles Motor home or truck, 2 axles, 6 tires with 1 axle trailer 	<p>Class 7 (calculate toll) Tandems see below'</p> <ul style="list-style-type: none"> Tractor trailer, 4 axles Auto transporter, 4 axles Stinger steered auto transporter 4 or more axles, not to exceed 65 feet Tractor-mobile home comb. with 5 or more axles Motor home or truck, 2 axles, 6 tires with 3 or more axle trailer Motor home or truck, 3 axles with 1 or more axle trailer Truck or tractor, 3 axles, with double saddle mount Truck, 3 axles, with single saddle mount
<p>Class 9 (calculate toll)</p> <ul style="list-style-type: none"> Truck, 2 axles Tractor, 2 axles, with 1 axle mobile home Motor home, 2 axles Motor home or truck, 2 axles, 6 tires with 1 axle trailer 	<p>Class 8 (calculate toll)</p> <ul style="list-style-type: none"> Bus, 2 axles, 6 tires Truck or tractor, 2 axles, with single saddle mount
<p>Racing Stalls: Enter appropriate classification here.</p>	<p>*TANDERS SPECIALS: Tractors over 20.5 feet are Class 7. Tractors 20.5 feet and under are Class 3. All Tandem Tractors will pay double the toll.</p>

Vehicle Classification Rate

- Assume commercial vehicles tolled using $(N-1) * \text{car toll}$
 $N = \# \text{ of axles}$
- Alternative: Strict Axle Count



Electronic Toll Collection (ETC)

- Several ETC Options Available
 - High speed collection (55mph)
 - Toll plaza collection (5-10mph)
 - License plate look-up with no transponder
- Project Assumptions:
 - ETC would be available with a mix of high speed and toll plaza collection
 - Transponders required for ETC
 - Manual toll collection would also be available for cash-paying customers

Discounts available for ETC customers

- Discounts encourage early ETC use
- Higher ETC market share increases the toll plaza throughput
 - High speed ETC = 2,000 vplph
 - Toll plaza ETC = 1,200 vplph
 - Manual collection = 200-400 vplph depending on toll
- ETC Discount Tolling Assumptions
 - 15% car ETC discount
 - 15% truck ETC discount
 - 100% transit bus ETC discount
 - 50% HOV-3+ discount for ETC customers

Alternative: No ETC Discounts

Toll Escalation Rates

- Recommend using a 3% annual inflation rate with \$0.25 increments.

<u>Year</u>	<u>Cash Tolls</u>	
	<u>Car</u>	<u>Truck</u>
2013	\$2.75	\$11.00
2014	\$2.75	\$11.00
2015	\$2.75	\$11.00
2016	\$2.75	\$11.00
2017	\$3.00	\$12.00
2018	\$3.00	\$12.00
2019	\$3.00	\$12.00
2020	\$3.25	\$13.00
2021	\$3.25	\$13.00
2022	\$3.50	\$14.00
2023	\$3.50	\$14.00
2024	\$3.50	\$14.00
2025	\$3.75	\$15.00

~~Based on~~ Base Toll \$2.00 in year 2004.

Tolling Recommendations

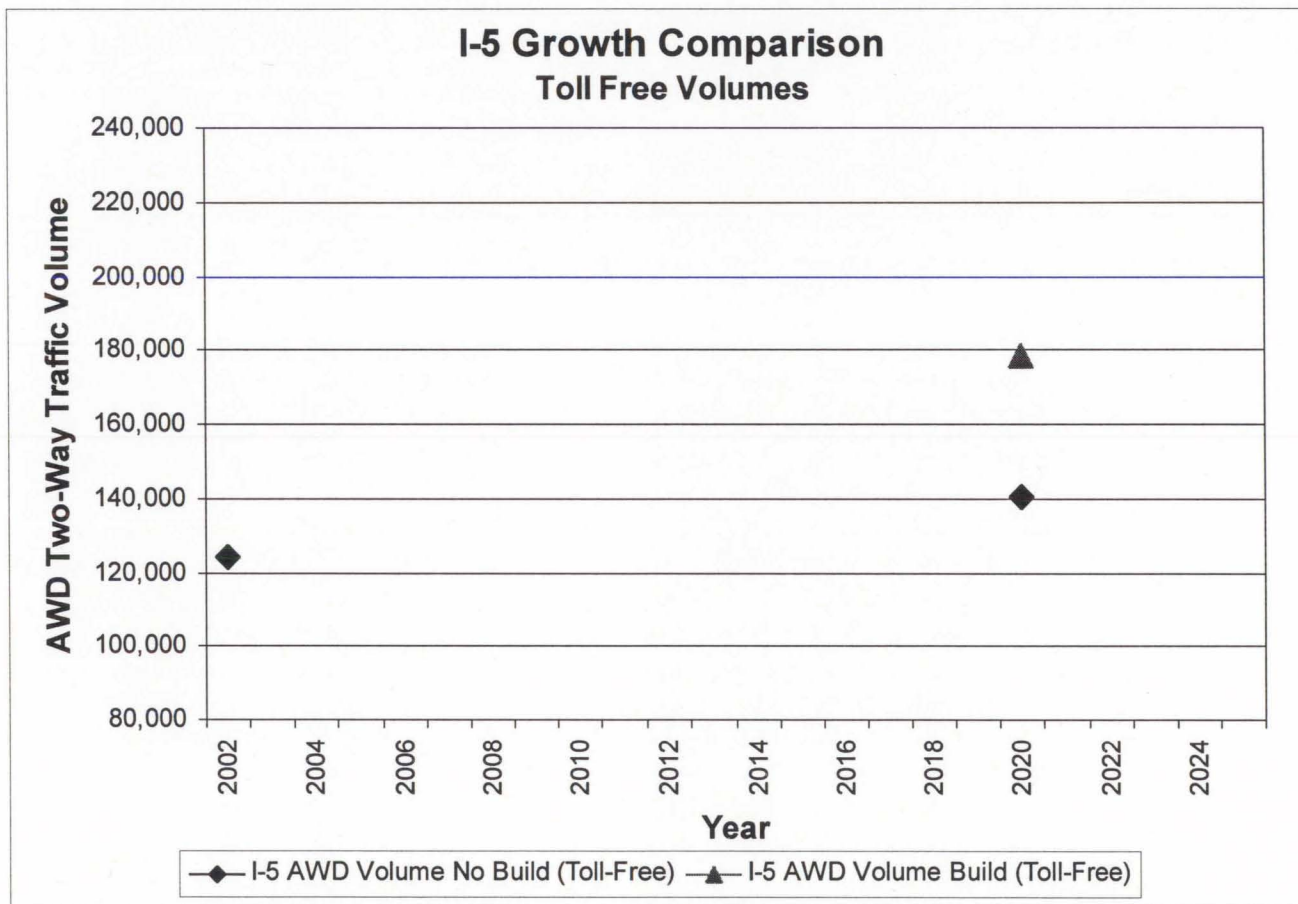
Summary

- Vehicle Classification – truck rates are (N-1)* passenger car toll
- Manual toll collection, as well as high speed and toll-booth ETC will be available
- ETC Discounts to encourage use
 - 15% car ETC discount
 - 15% truck ETC discount
 - 100% transit bus ETC discount
- 50% HOV-3+ discount applied to ETC customers
- 3% Annual inflation applied in \$0.25 increments

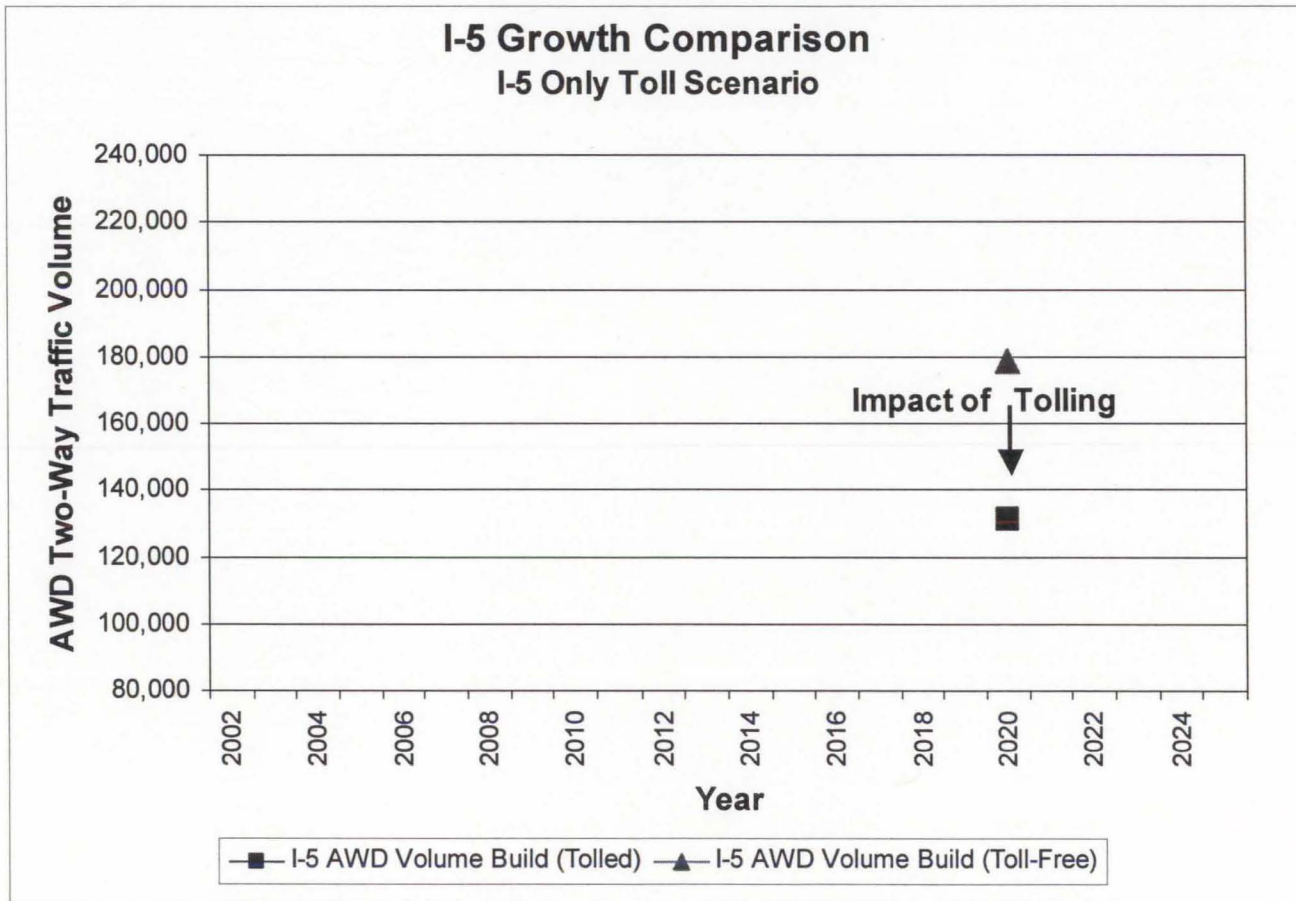
Alternative Tolling Analyses

- Toll Rates – Strict Axle Count Rate
- No ETC Discounts
- No HOV Discounts

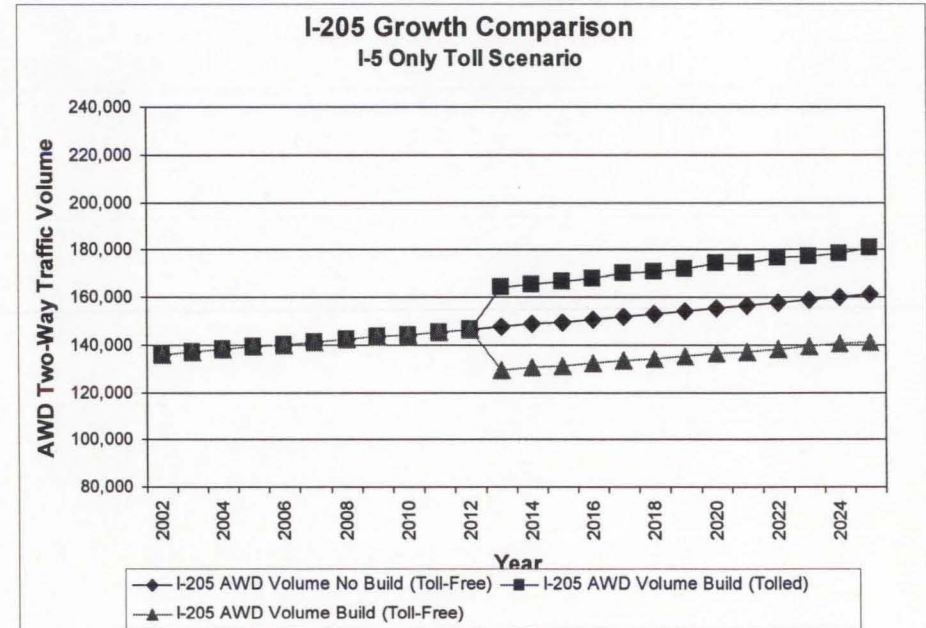
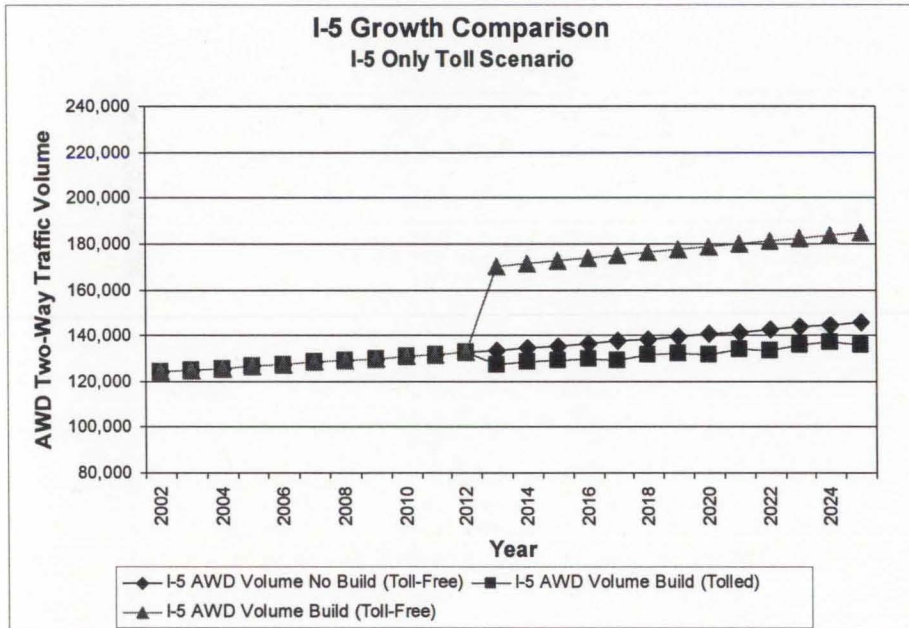
Model Output Data Points



Toll Model Application

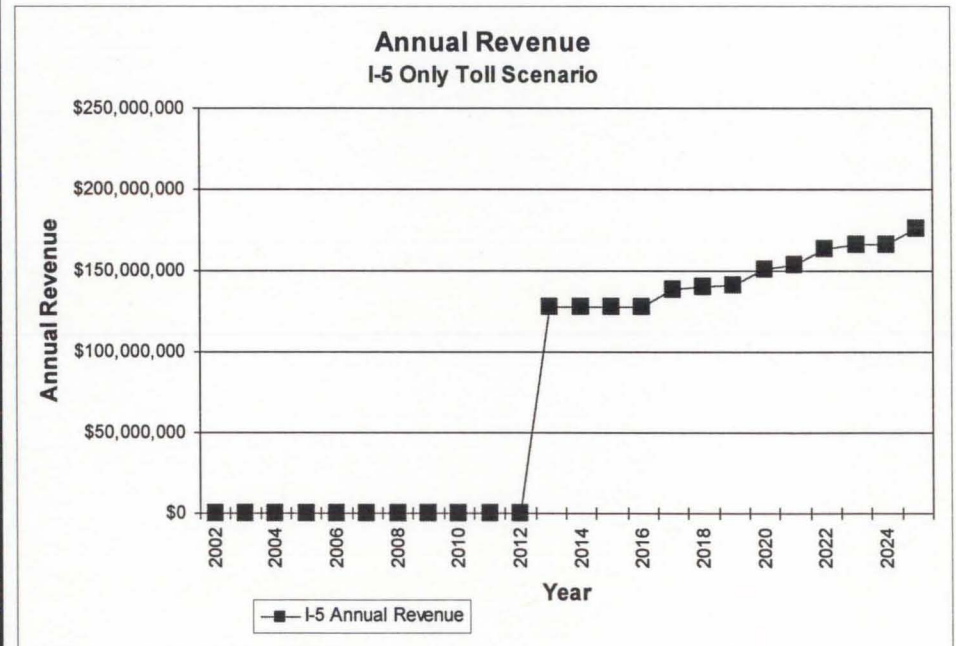


I-5 Only Toll Scenario Traffic



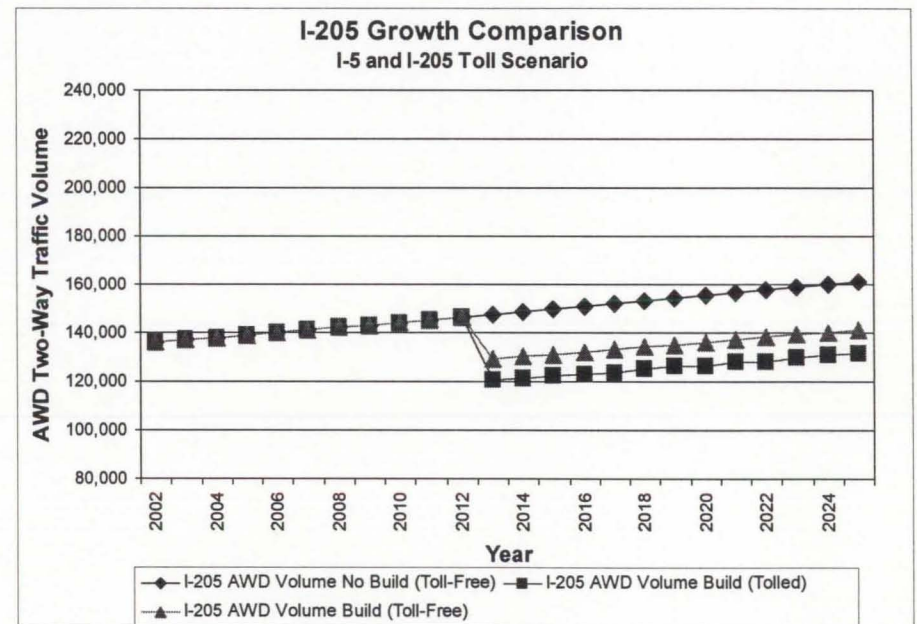
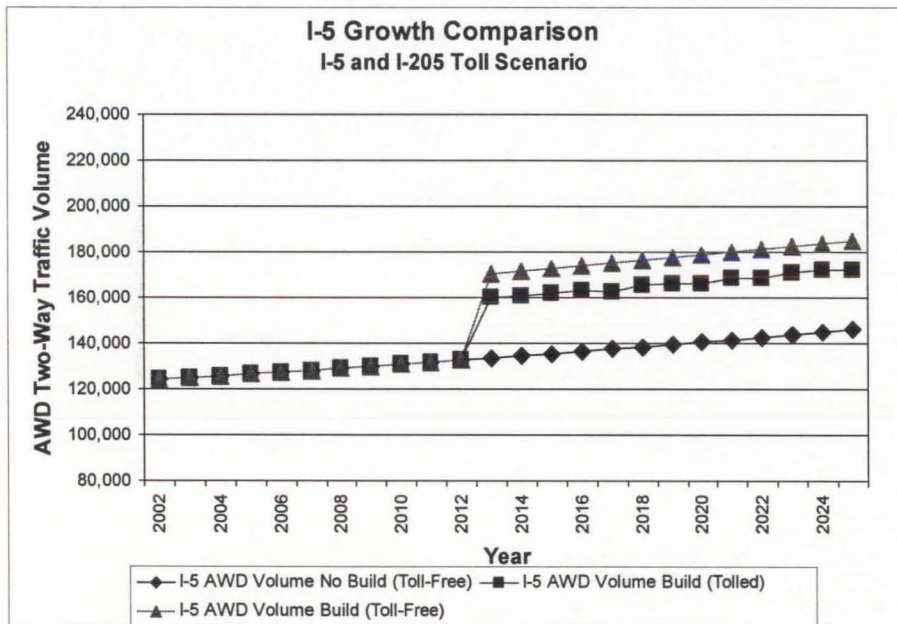
I-5 Only Toll Scenario Revenue

Year	Cash Toll Car	I-5 Annual Revenue		
		Car	Truck	Both
2002	\$2.00	\$ -	\$ -	\$ -
2003	\$2.00	\$ -	\$ -	\$ -
2004	\$2.00	\$ -	\$ -	\$ -
2005	\$2.00	\$ -	\$ -	\$ -
2006	\$2.00	\$ -	\$ -	\$ -
2007	\$2.25	\$ -	\$ -	\$ -
2008	\$2.25	\$ -	\$ -	\$ -
2009	\$2.25	\$ -	\$ -	\$ -
2010	\$2.50	\$ -	\$ -	\$ -
2011	\$2.50	\$ -	\$ -	\$ -
2012	\$2.75	\$ -	\$ -	\$ -
2013	\$2.75	\$ 97,700,000	\$ 29,800,000	\$ 127,400,000
2014	\$2.75	\$ 97,200,000	\$ 30,400,000	\$ 127,600,000
2015	\$2.75	\$ 96,800,000	\$ 31,100,000	\$ 127,800,000
2016	\$2.75	\$ 96,400,000	\$ 31,700,000	\$ 128,100,000
2017	\$3.00	\$ 103,100,000	\$ 35,000,000	\$ 138,100,000
2018	\$3.00	\$ 104,200,000	\$ 36,100,000	\$ 140,300,000
2019	\$3.00	\$ 103,700,000	\$ 36,900,000	\$ 140,600,000
2020	\$3.25	\$ 110,200,000	\$ 40,500,000	\$ 150,700,000
2021	\$3.25	\$ 111,400,000	\$ 41,800,000	\$ 153,100,000
2022	\$3.50	\$ 117,600,000	\$ 45,500,000	\$ 163,100,000
2023	\$3.50	\$ 118,900,000	\$ 46,900,000	\$ 165,800,000
2024	\$3.50	\$ 118,300,000	\$ 48,000,000	\$ 166,300,000
2025	\$3.75	\$ 124,300,000	\$ 52,000,000	\$ 176,300,000



Alternate Toll 2020 Revenue = \$146.9 million

I-5 and I-205 Toll Scenario Traffic

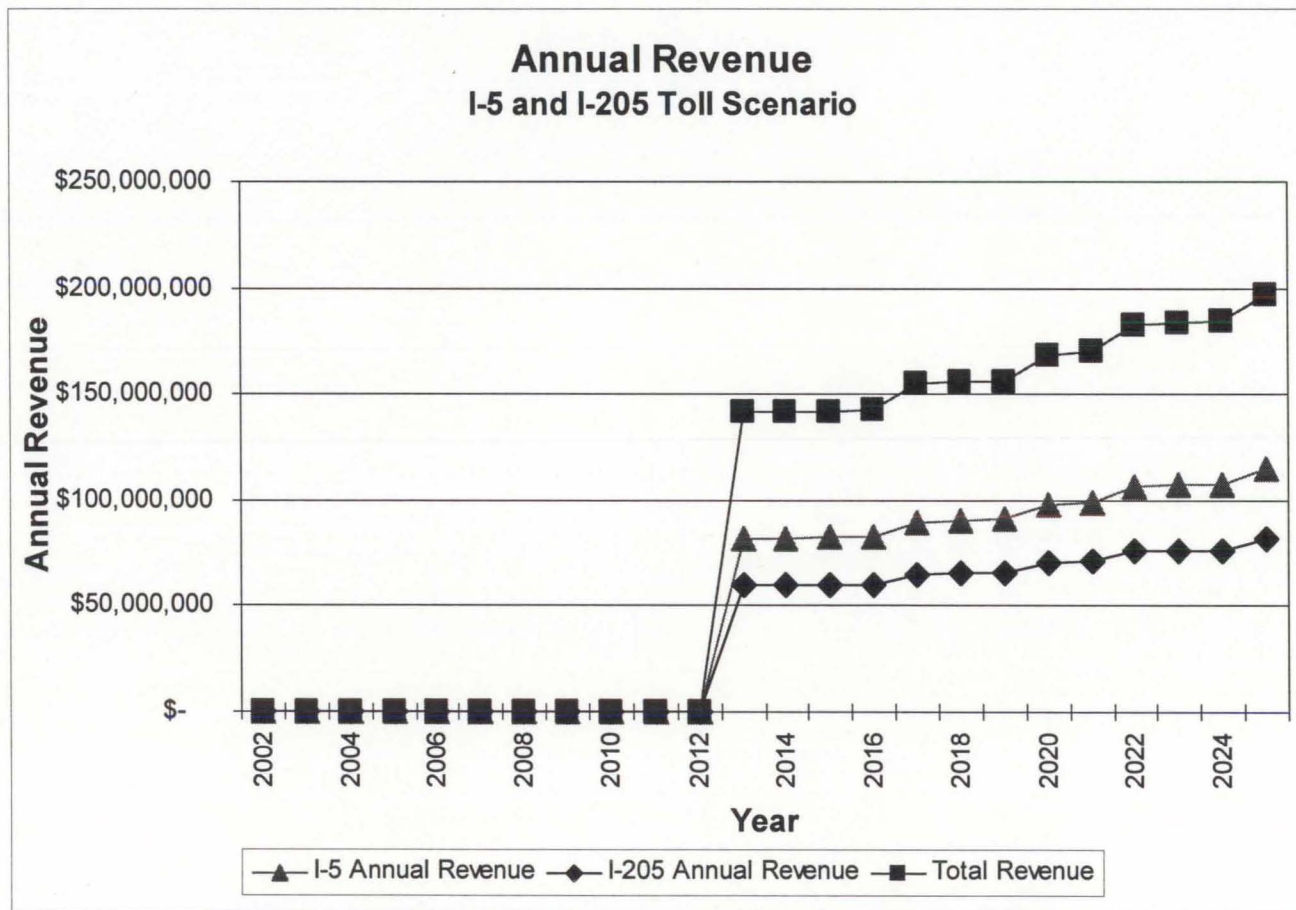


I-5 and I-205 Toll Revenue

Year	Cash Toll Car	I-5 Annual Revenue			I-205 Annual Revenue			TOTAL REVENUE
		Car	Truck	Both	Car	Truck	Both	
2002	\$2.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2003	\$2.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2004	\$2.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2005	\$2.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2006	\$2.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2007	\$2.25	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2008	\$2.25	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2009	\$2.25	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2010	\$2.50	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2011	\$2.50	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2012	\$2.50	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
2013	\$2.75	\$ 60,800,000	\$ 21,100,000	\$ 82,000,000	\$ 46,600,000	\$ 13,200,000	\$ 59,800,000	\$ 141,800,000
2014	\$2.75	\$ 60,600,000	\$ 21,600,000	\$ 82,100,000	\$ 46,400,000	\$ 13,300,000	\$ 59,700,000	\$ 141,900,000
2015	\$2.75	\$ 60,300,000	\$ 22,000,000	\$ 82,300,000	\$ 46,300,000	\$ 13,400,000	\$ 59,700,000	\$ 142,100,000
2016	\$2.75	\$ 60,000,000	\$ 22,500,000	\$ 82,500,000	\$ 46,200,000	\$ 13,500,000	\$ 59,700,000	\$ 142,300,000
2017	\$3.00	\$ 64,600,000	\$ 24,900,000	\$ 89,500,000	\$ 50,100,000	\$ 15,100,000	\$ 65,100,000	\$ 154,600,000
2018	\$3.00	\$ 64,900,000	\$ 25,600,000	\$ 90,500,000	\$ 50,200,000	\$ 15,200,000	\$ 65,400,000	\$ 156,000,000
2019	\$3.00	\$ 64,600,000	\$ 26,100,000	\$ 90,800,000	\$ 50,100,000	\$ 15,400,000	\$ 65,400,000	\$ 156,200,000
2020	\$3.25	\$ 69,000,000	\$ 28,800,000	\$ 97,800,000	\$ 53,900,000	\$ 16,800,000	\$ 70,600,000	\$ 168,400,000
2021	\$3.25	\$ 69,400,000	\$ 29,500,000	\$ 99,000,000	\$ 54,000,000	\$ 17,000,000	\$ 71,000,000	\$ 169,900,000
2022	\$3.50	\$ 73,700,000	\$ 32,300,000	\$ 106,000,000	\$ 57,700,000	\$ 18,400,000	\$ 76,100,000	\$ 182,100,000
2023	\$3.50	\$ 74,100,000	\$ 33,200,000	\$ 107,300,000	\$ 57,900,000	\$ 18,600,000	\$ 76,500,000	\$ 183,800,000
2024	\$3.50	\$ 73,800,000	\$ 33,900,000	\$ 107,700,000	\$ 57,700,000	\$ 18,800,000	\$ 76,500,000	\$ 184,200,000
2025	\$3.75	\$ 77,900,000	\$ 36,900,000	\$ 114,800,000	\$ 61,400,000	\$ 20,200,000	\$ 81,700,000	\$ 196,500,000

Alternate Toll 2020 Revenue = \$166.1 million

I-5 and I-205 Toll Revenue



ETC Market Share – is 100%

ETC a good choice?

- With 100% ETC, tolls will be collected in one of two ways:
 - Transponders with pre-paid account
 - License plate video identification and bill sent to car owner
- There are no existing 100% ETC roadways in the US
- SR91 has 100% ETC on the toll lanes which are adjacent to free lanes
- Privately owned 100% ETC facilities in Australia and Toronto, Can.