

## Calexico East Port of Entry Expansion Benefit-Cost Analysis

This report summarizes the Benefit Cost Analysis (BCA) conducted for the Calexico East Port of Entry Expansion project.

BCA is one of the most widely accepted methods for calculating and comparing the benefits and costs of infrastructure projects. Projects are considered to be cost-effective when total estimated benefits exceed the total cost of the project. Common transportation social benefits include savings from travel time, vehicle operations, reduced accidents and vehicle emissions. Total project costs include design, construction and on-going facility maintenance and operating costs.

The BCA was developed in conformance with the Federal DOT 2016 BCA Resource Guide for TIGER and FASTLANE grants.

The BCA assumes the Design phase would begin in 2017, Construction would begin in 2018, and the project would be completed and open for use in 2021 (1<sup>st</sup> year of project benefits). It is further assumed that benefits would continue for 20 years through the year 2040. All costs and benefits were discounted at 3% and 7% to the year 2016.

The BCA demonstrates the project is cost-effective with a BCA ratio of 1.21 discounted at 3% and 1.71 discounted at 7%. The majority of the benefits are generated through savings in travel time, with the remaining benefits generated from reduced ROG and NOx emissions. Please note that emissions reductions were achieved even with the anticipated increase in Vehicle Miles Traveled (VMT) under the build scenario assumed by the Vehicle Idling Emissions Study. The results of the analysis are summarized below.

	<b>Discounted 3%</b>	<b>Discounted 7%</b>
<b>NPV Benefits</b>	\$13,384,309	\$53,333,781
<b>Life Cycle Cost</b>	\$62,494,627	\$75,586,923
<b>Life Cycle Benefits</b>	\$75,878,936	\$128,920,704
<b>B/C Ratio</b>	<b>1.21</b>	<b>1.71</b>

### Life-Cycle Benefits

In addition to the total benefits listed in the table above, the project is estimated to remove 67.63 Metric Tons of VOC and NOx emissions over 20 years and save 8.7 million Person-Hours over 20 years. Estimated savings from improved travel-time and reduced emissions are provided in the two tables below.

<b>Travel Time Savings (20-Year Total)</b>	<b>Discounted 7%</b>	<b>Discounted 3%</b>
	<b>\$75,629,029</b>	<b>\$128,496,104</b>

## Calexico East Port of Entry Expansion – Benefit Cost Analysis

Emission Savings (20-Year Total)	Discounted 7%	Discounted 3%
		<b>\$249,907</b>

The data for calculating benefits was primarily obtained from the Vehicle Idling Emissions Study at Calexico East and Calexico West Ports-of-Entry produced by the Imperial County Air Pollution Control District, (T.Kear & Cross Border Group), October 2015. Therefore, quantified benefits were limited to travel-time savings and reduction in emissions since these benefits were analyzed in the study. The types of emissions included in the BCA are NO<sub>x</sub>, ROG and PM<sub>2.5</sub>. CO<sub>2</sub> and SO<sub>x</sub> are not included in the BCA because they were not included in the T.Kear Emissions Study report.

The value of Travel Time utilized in the BCA listed below comes from the 2016 BCA Resources Guide:

- \$19.52 All-Purposes Trips (autos)
- \$26.68 Truck Drivers (commercial trucks)

The Average Vehicle Occupancy (AVO) utilized in the BCA is 1.4, which is the AVO for Imperial County (all purpose trips) from the existing Regional Transportation Plan.

The value of Emissions used in the study is listed in the table below:

Value of Emissions	
Emission Type	\$/Metric Ton (2015)
VOCs	\$2,032
NO <sub>x</sub>	\$8,010
PM	\$366,414
SO <sub>x</sub>	\$47,341
Source: US DOT BCA Resource Guide 2016 TIGER and FASTLANE	

Additional data values, assumptions and calculations are presented in this report under the headings “**Supporting Calculations & Documentation**”.

### Life-Cycle Costs

Project Life-cycle Costs include Design estimated at \$1 million and construction costs estimated at \$63.7 million. The Imperial County Transportation Commission and the US General Services Administration provided the project costs. Annual operating and maintenance costs were estimated at 2% of construction costs that amounts to \$1.274 million annually.

### Annual Estimates of Total Project Benefits and Costs

Analysis Year	Calendar Year	Project Year	Total Benefits			Total Costs		Undiscounted Net Benefits (\$2015)	Net Benefits Discounted 7% (\$2015)	Net Benefits Discounted 3% (\$2015)
			Undiscounted Total Benefits	Disc. 7%	Disc 3%	Initial Cost (\$2015)	Op. & Maintenance (\$2015)			
1	2016									
2	2017					\$1,000,000		\$(1,000,000)	\$(873,439)	\$(942,596)
3	2018					\$63,700,000		\$(63,700,000)	\$(51,998,175)	\$(58,294,524)
4	2019									
5	2020									
6	2021	1	\$10,012,600	\$6,671,818	\$8,385,395		1,274,000	\$8,771,685	\$5,844,944	\$7,346,148
7	2022	2	\$10,012,600	\$6,235,344	\$8,141,160		1,274,000	\$8,771,685	\$5,462,565	\$7,132,183
8	2023	3	\$10,012,600	\$5,827,424	\$7,904,039		1,274,000	\$8,771,685	\$5,105,201	\$6,924,449
9	2024	4	\$10,012,600	\$5,446,191	\$7,673,824		1,274,000	\$8,771,685	\$4,771,216	\$6,722,766
10	2025	5	\$10,012,600	\$5,089,898	\$7,450,315		1,274,000	\$8,771,685	\$4,459,080	\$6,526,958
11	2026	6	\$10,012,600	\$4,756,914	\$7,233,315		1,274,000	\$8,771,685	\$4,167,364	\$6,336,852
12	2027	7	\$10,012,600	\$4,445,714	\$7,022,636		1,274,000	\$8,771,685	\$3,894,733	\$6,152,284
13	2028	8	\$10,012,600	\$4,154,873	\$6,818,093		1,274,000	\$8,771,685	\$3,639,938	\$5,973,091
14	2029	9	\$10,012,600	\$3,883,059	\$6,619,508		1,274,000	\$8,771,685	\$3,401,811	\$5,799,117
15	2030	10	\$10,012,600	\$3,629,027	\$6,426,707		1,274,000	\$8,771,685	\$3,179,262	\$5,630,211
16	2031	11	\$10,012,600	\$3,391,614	\$6,239,521		1,274,000	\$8,771,685	\$2,971,273	\$5,466,224
17	2032	12	\$10,012,600	\$3,169,733	\$6,057,788		1,274,000	\$8,771,685	\$2,776,891	\$5,307,014
18	2033	13	\$10,012,600	\$2,962,367	\$5,881,347		1,274,000	\$8,771,685	\$2,595,225	\$5,152,441
19	2034	14	\$10,012,600	\$2,768,567	\$5,710,046		1,274,000	\$8,771,685	\$2,425,444	\$5,002,370
20	2035	15	\$10,012,600	\$2,587,446	\$5,543,734		1,274,000	\$8,771,685	\$2,266,770	\$4,856,669
21	2036	16	\$10,012,600	\$2,418,174	\$5,382,266		1,274,000	\$8,771,685	\$2,118,477	\$4,715,213
22	2037	17	\$10,012,600	\$2,259,976	\$5,225,501		1,274,000	\$8,771,685	\$1,979,885	\$4,577,877
23	2038	18	\$10,012,600	\$2,112,127	\$5,073,302		1,274,000	\$8,771,685	\$1,850,360	\$4,444,541
24	2039	19	\$10,012,600	\$1,973,950	\$4,925,536		1,274,000	\$8,771,685	\$1,729,308	\$4,315,088
25	2040	20	\$10,012,600	\$1,844,813	\$4,782,073		1,274,000	\$8,771,685	\$1,616,176	\$4,189,406
<b>PRESENT VALUE</b>				<b>\$75,629,029</b>	<b>\$128,496,104</b>	<b>\$64,700,000</b>	<b>\$25,480,000</b>	<b>\$110,733,705</b>	<b>\$13,384,309</b>	<b>\$53,333,781</b>

## Economic Competitiveness: Travel Time Benefit Estimates

Analysis Year	Calendar Year	Project Year	Undiscounted Travel Time Savings	Discounted 7% Travel Time Savings	Discounted 3% Travel Time Savings
1	2016				
2	2017				
3	2018				
4	2019				
5	2020				
6	2021	1	\$10,012,600	\$6,671,818	\$8,385,395
7	2022	2	\$10,012,600	\$6,235,344	\$8,141,160
8	2023	3	\$10,012,600	\$5,827,424	\$7,904,039
9	2024	4	\$10,012,600	\$5,446,191	\$7,673,824
10	2025	5	\$10,012,600	\$5,089,898	\$7,450,315
11	2026	6	\$10,012,600	\$4,756,914	\$7,233,315
12	2027	7	\$10,012,600	\$4,445,714	\$7,022,636
13	2028	8	\$10,012,600	\$4,154,873	\$6,818,093
14	2029	9	\$10,012,600	\$3,883,059	\$6,619,508
15	2030	10	\$10,012,600	\$3,629,027	\$6,426,707
16	2031	11	\$10,012,600	\$3,391,614	\$6,239,521
17	2032	12	\$10,012,600	\$3,169,733	\$6,057,788
18	2033	13	\$10,012,600	\$2,962,367	\$5,881,347
19	2034	14	\$10,012,600	\$2,768,567	\$5,710,046
20	2035	15	\$10,012,600	\$2,587,446	\$5,543,734
21	2036	16	\$10,012,600	\$2,418,174	\$5,382,266
22	2037	17	\$10,012,600	\$2,259,976	\$5,225,501
23	2038	18	\$10,012,600	\$2,112,127	\$5,073,302
24	2039	19	\$10,012,600	\$1,973,950	\$4,925,536
25	2040	20	\$10,012,600	\$1,844,813	\$4,782,073
<b>PRESENT VALUE</b>				<b>\$75,629,029</b>	<b>\$128,496,104</b>

**Travel Time Benefit Estimates – Supporting Calculations & Documentation**

POV					
Baseline			Build		
Spring	Est. Speed <sup>2</sup>	Est. Veh-Hrs <sup>3</sup>	Spring	Est. Speed <sup>2</sup>	Est. Veh-Hrs <sup>3</sup>
VMT <sup>1</sup>			VMT <sup>4</sup>		
2998.3	30	100	9279.4	30	309
198.4	5	40			
<u>131.1</u>	0.2	656	<u>88.7</u>	0.2	444
3327.8			9368.1		
12381.8	30	413	8784.9	30	293
2409.7	5	482			
<u>141.4</u>	0.2	707	<u>84</u>	0.2	420
14932.9			8868.9		
3463.8	30	115	7798.4	30	260
57.8	5	12			
<u>33.7</u>	0.2	169	<u>74.6</u>	0.2	373
3555.3			7873		
1.6	5	0	4.4	5	1
6.8	5	1	4.2	5	1
<u>1.7</u>	<u>5</u>	0	<u>3.7</u>	5	1
10.1			12.3		
		42.8			126.2
		75.1			46.8
		14.3			31.7
<b>TOTAL</b>		<b>2,827</b>			<b>2,306</b>

<sup>1</sup> Vehicle idling Emissions Study (T.KEAR), Table 11, p. 39, sum of VMT units.

<sup>2</sup> Ibid., p. 37 where Stop-and-Go queueing = less than 1 mph (assumed .2 mph); Creeping Queues = 5 mph; and uncongested operation ranges from 25-30 mph (assumed 30 mph).

<sup>3</sup> Vehicle-Hours = VMT/Speed

<sup>4</sup> Vehicle idling Emissions Study (T.KEAR), Table 86, p. 149, sum of VMT units.

521	Reduced Vehicle-Hours per day POV (Baseline vehicles-hours minus Build vehicle-hours)
95,042	Reduced Vehicle-Hours Annual POV (Spring figures weighted 6 months to include fall). (Reduced Vehicle-Hours/day)*(365 days)*(.5 years)
133,059	Reduced Person Hours (Vehicle Hours * 1.4 AVO from SCAG RTP for Imperial County, All Purpose Trips)
<b>\$2,597,317</b>	Travel Time Savings (spring and fall) POV. (Reduced Person Hours* \$19.52 value of travel time). Value of travel time from BCA Resources Guide, TIGER and FASTLANE grants, p.5

Calexico East Port of Entry Expansion – Benefit Cost Analysis

POV					
Baseline			Build		
Summer	Est. Speed <sup>2</sup>	Est. Veh-Hrs <sup>3</sup>	Summer	Est. Speed <sup>2</sup>	Est. Veh-Hrs <sup>3</sup>
VMT <sup>1</sup>			VMT <sup>4</sup>		
2900.8	30	97	8586.1	30	286
257	5	51			
<u>126.9</u>	0.2	635	<u>82.1</u>	0.2	411
3284.7			8668.2		
13064	30	435	8618.5	30	287
1444.9	5	289			
<u>138.7</u>	0.2	694	<u>82.4</u>	0.2	412
14647.6			8700.9		
3445.8	30	115	7252.7	30	242
12.7	5	3			
<u>33.1</u>	0.2	166	<u>69.3</u>	0.2	347
3491.6			7322		
1.5	5	0	4.1	5	1
6.7	5	1	4.1	5	1
<u>1.7</u>	<u>5</u>	0	<u>3.5</u>	<u>5</u>	1
9.9			11.7		
		42			116.8
		73.7			45.9
		14.1			29.5
<b>TOTAL</b>		<b>2,615</b>			<b>2,179</b>

<sup>1</sup> Vehicle idling Emissions Study (T.KEAR), Table 14, p. 43, sum of VMT units.

<sup>2</sup> Ibid., p. 37 where Stop-and-Go queueing = less than 1 mph (assumed .2 mph); Creeping Queues = 5 mph; and uncongested operation ranges from 25-30 mph (assumed 30 mph).

<sup>3</sup> Vehicle-Hours = VMT/Speed

<sup>4</sup> Vehicle idling Emissions Study (T.KEAR), Table 89, p. 153, sum of VMT units.

436	Reduced Vehicle-Hours per day POV (Baseline vehicles-hours minus Build vehicle-hours)
39,825	Reduced Vehicle-Hours Annual POV (Summer weighted 3 months). (Reduced Vehicle-Hours/day)*(365 days)*( .25 years)
55,755	Reduced Person Hours (Vehicle Hours * 1.4 AVO)
<b>\$1,088,333</b>	Travel Time Savings (summer) POV. (Reduced Person Hours* \$19.52 value of travel time). Value of travel time from BCA Resources Guide, TIGER and FASTLANE grants, p.5

Calexico East Port of Entry Expansion – Benefit Cost Analysis

POV					
Baseline			Build		
Winter VMT <sup>1</sup>	Est. Speed <sup>2</sup>	Est. Veh-Hrs <sup>3</sup>	Winter VMT <sup>4</sup>	Est. Speed <sup>2</sup>	Est. Veh-Hrs <sup>3</sup>
3246	30	108	9915	30	331
199.1	5	40			
<u>122.6</u>	0.2	613	<u>94.8</u>	0.2	474
3567.7			10009.8		
13732.1	30	458	9402.8	30	313
2183	5	437			
<u>152.2</u>	0.2	761	<u>89.9</u>	0.2	450
16067.3			9492.7		
3701.3	30	123	8340.3	30	278
78.6	5	16			
<u>36.1</u>	0.2	181	<u>79.7</u>	0.2	399
3816			8420		
1.7	5	0	4.7	5	126.2
7.3	5	1	4.5	5	46.8
<u>1.8</u>	5	0	<u>4</u>	5	<u>31.7</u>
10.8			13.2		
		40.4			134.9
		74			50.1
		14.3			33.9
<b>TOTAL</b>		<b>2,867</b>			<b>2,668</b>

<sup>1</sup> Vehicle idling Emissions Study (T.KEAR), Table 17, p. 47, sum of VMT units.

<sup>2</sup> Ibid., p. 37 where Stop-and-Go queueing = less than 1 mph (assumed .2 mph); Creeping Queues = 5 mph; and uncongested operation ranges from 25-30 mph (assumed 30 mph).

<sup>3</sup> Vehicle-Hours = VMT/Speed

<sup>4</sup> Vehicle idling Emissions Study (T.KEAR), Table 92, p. 157, sum of VMT units.

199	Reduced Vehicle-Hours per day POV (Baseline vehicles-hours minus Build vehicle-hours)
18,184	Reduced Vehicle-Hours Annual POV (Winter weighted 3 months). (Reduced Vehicle-Hours/day)*(365 days)*(.25 years)
25,458	Reduced Person Hours (Vehicle Hours * 1.4)
<b>\$496,932</b>	Travel Time Savings (winter) POV. (Reduced Person Hours* \$19.52 value of travel time). (Reduced Person Hours* \$19.52 value of travel time). Value of travel time from BCA
	Note: Value of travel time from BCA Resources Guide, TIGER and FASTLANE grants, p.5

<b>\$4,182,583</b>	<b>Total Estimated POV Annual Travel Time Savings</b> (\$2,597,317 + \$1,088,333 + \$496,932)
--------------------	---

Calexico East Port of Entry Expansion – Benefit Cost Analysis

Commercial Trucks					
Baseline			Build		
Spring	Est. Speed <sup>2</sup>	Est. Veh-Hrs <sup>3</sup>	Spring	Est. Speed <sup>2</sup>	Est. Veh-Hrs <sup>3</sup>
VMT <sup>1</sup>			VMT <sup>4</sup>		
126.4	0.2	632	7.8	0.2	39
4.1	0.2	21	6.6	0.2	33
8.9	0.2	45	8.9	0.2	45
2.1	0.2	11	3.4	0.2	17
<b>TOTAL</b>		<b>708</b>			<b>134</b>

<sup>1</sup> Vehicle idling Emissions Study (T.KEAR), Table 12, p. 40, sum of VMT units, U.S. CBP Primary data

<sup>2</sup> Ibid., p. 37 where Stop-and-Go queueing = less than 1 mph (assumed .2 mph); Creeping Queues = 5 mph; and uncongested operation ranges from 25-30 mph (assumed 30 mph).

<sup>3</sup> Vehicle-Hours = VMT/Speed

<sup>4</sup> Vehicle idling Emissions Study (T.KEAR), Table 87, p. 150, sum of VMT units.

574	Reduced Vehicle-Hours per day POV (Baseline vehicles-hours minus Build vehicle-hours)
104,755	Reduced Vehicle-Hours Annual Commercial Trucks (Spring figures weighted 6 months to include fall). (Reduced Vehicle-Hours/day)*(365 days)*(.5 years)
146,657	Reduced Person Hours (Vehicle Hours * 1.4)
<b>\$3,912,809</b>	Travel Time Savings (spring and fall) Trucks. (Reduced Person Hours* \$26.68 value of travel time)
	Note: Value of travel time from BCA Resources Guide, TIGER and FASTLANE grants, p.5

Commercial Trucks					
Baseline			Build		
Summer	Est. Speed <sup>2</sup>	Est. Veh-Hrs <sup>3</sup>	Summer	Est. Speed <sup>2</sup>	Est. Veh-Hrs <sup>3</sup>
VMT <sup>1</sup>			VMT <sup>4</sup>		
55	0.2	275	7.4	0.2	37
3.9	0.2	20	6.3	0.2	32
8.4	0.2	42	8.4	0.2	42
2	0.2	10	3.3	0.2	17
<b>TOTAL</b>		<b>347</b>			<b>127</b>

<sup>1</sup> Vehicle idling Emissions Study (T.KEAR), Table 15, p. 44, sum of VMT units, U.S. CBP Primary data

<sup>2</sup> Ibid., p. 37 where Stop-and-Go queueing = less than 1 mph (assumed .2 mph); Creeping Queues = 5 mph; and uncongested operation ranges from 25-30 mph (assumed 30 mph).

<sup>3</sup> Vehicle-Hours = VMT/Speed

<sup>4</sup> Vehicle idling Emissions Study (T.KEAR), Table 90, p. 154, sum of VMT units.



## Calexico East Port of Entry Expansion – Benefit Cost Analysis

220	Reduced Vehicle-Hours per day POV (Baseline vehicles-hours minus Build vehicle-hours)
20,029	Reduced Vehicle-Hours Annual Commercial Trucks (Summer weighted 3 months). (Reduced Vehicle-Hours/day)*(365 days)*(.25 years)
28,041	Reduced Person Hours (Vehicle Hours * 1.4)
<b>\$748,137</b>	Travel Time Savings (summer) Trucks. (Reduced Person Hours* \$26.68 value of travel time)
	Note: Value of travel time from BCA Resources Guide, TIGER and FASTLANE grants, p.5

<b>Commercial Trucks</b>					
<b>Baseline</b>			<b>Build</b>		
<b>Winter VMT<sup>1</sup></b>	<b>Est. Speed<sup>2</sup></b>	<b>Est. Veh-Hrs<sup>3</sup></b>	<b>Winter VMT<sup>4</sup></b>	<b>Est. Speed<sup>2</sup></b>	<b>Est. Veh-Hrs<sup>3</sup></b>
80	0.2	400	7.5	0.2	38
3.9	0.2	20	6.4	0.2	32
8.5	0.2	43	8.6	0.2	43
2	0.2	10	3.3	0.2	17
<b>TOTAL</b>		<b>472</b>			<b>129</b>

<sup>1</sup> Vehicle idling Emissions Study (T.KEAR), Table 18, p. 48, sum of VMT units, U.S. CBP Primary data

<sup>2</sup> Ibid., p. 37 where Stop-and-Go queueing = less than 1 mph (assumed .2 mph); Creeping Queues = 5 mph; and uncongested operation ranges from 25-30 mph (assumed 30 mph).

<sup>3</sup> Vehicle-Hours = VMT/Speed

<sup>4</sup> Vehicle idling Emissions Study (T.KEAR), Table 93, p. 158, sum of VMT units.

343	Reduced Vehicle-Hours per day POV (Baseline vehicles-hours minus Build vehicle-hours)
31,299	Reduced Vehicle-Hours Annual Commercial Trucks (Winter weighted 3 months). (Reduced Vehicle-Hours/day)*(365 days)*(.25 years)
43,818	Reduced Person Hours (Vehicle Hours * 1.4)
<b>\$1,169,071</b>	Travel Time Savings (winter) Trucks. (Reduced Person Hours* \$26.68 value of travel time)
	Note: Value of travel time from BCA Resources Guide, TIGER and FASTLANE grants, p.5

<b>\$5,830,017</b>	<b>Total Estimated Commercial Truck Annual Travel Time Savings</b> (\$3,912,809 + \$748,137 + \$1,169,071)
--------------------	---

<b>\$10,012,600</b>	<b>Total Estimated Annual Travel Time Savings from all vehicles (POV + Commercial Trucks)</b> (\$4,182,583 + \$5,830,017)
---------------------	--

Calexico East Port of Entry Expansion – Benefit Cost Analysis

**Environmental Sustainability: Emissions Benefit Estimates**

<b>Analysis Year</b>	<b>Calendar Year</b>	<b>Project Year</b>	<b>Emission Reduction (Metric Tons)</b>	<b>Undiscounted Emission Reduction</b>	<b>Discounted 7% Emission Reduction</b>	<b>Discounted 3% Emission Reduction</b>
1	2016					
2	2017					
3	2018					
4	2019					
5	2020					
6	2021	1	3.38	\$33,085	\$22,046	\$27,708
7	2022	2	3.38	\$33,085	\$20,604	\$26,901
8	2023	3	3.38	\$33,085	\$19,256	\$26,118
9	2024	4	3.38	\$33,085	\$17,996	\$25,357
10	2025	5	3.38	\$33,085	\$16,819	\$24,619
11	2026	6	3.38	\$33,085	\$15,719	\$23,902
12	2027	7	3.38	\$33,085	\$14,690	\$23,205
13	2028	8	3.38	\$33,085	\$13,729	\$22,530
14	2029	9	3.38	\$33,085	\$12,831	\$21,873
15	2030	10	3.38	\$33,085	\$11,992	\$21,236
16	2031	11	3.38	\$33,085	\$11,207	\$20,618
17	2032	12	3.38	\$33,085	\$10,474	\$20,017
18	2033	13	3.38	\$33,085	\$9,789	\$19,434
19	2034	14	3.38	\$33,085	\$9,148	\$18,868
20	2035	15	3.38	\$33,085	\$8,550	\$18,319
21	2036	16	3.38	\$33,085	\$7,991	\$17,785
22	2037	17	3.38	\$33,085	\$7,468	\$17,267
23	2038	18	3.38	\$33,085	\$6,979	\$16,764
24	2039	19	3.38	\$33,085	\$6,523	\$16,276
25	2040	20	3.38	\$33,085	\$6,096	\$15,802
			67.63	\$661,708	<b>\$249,907</b>	<b>\$424,599</b>

**Emission Benefit Estimates – Supporting Calculations & Documentation**

**Baseline POV (lbs/day)**

Season	ROG	Weighted Avg	NOx	Weighted Avg	PM2.5	Weighted Avg
Spring	58.7	29.35	35.8	17.9	1.2	0.6
Summer	56.9	14.225	35.9	8.975	1.2	0.3
Winter	46.8	11.7	44.6	11.15	1.3	0.325
		<b>55.3</b>		<b>38.0</b>		<b>1.2</b>

Source: Imperial County Air Pollution Control District, "Vehicle Idling Emissions Study at Calexico East and Calexico West Ports-of-Entry", (T.KEAR), October 2015, Table 29, "Baseline" data, p. 65. Weighted average based on 50% spring figures and 25% for summer and winter respectively. Since fall figures were not provided, the spring figures were doubled to estimate the average for both spring and fall.

**Build Scenario POV (lbs/day)**

Season	ROG	Weighted Avg	NOx	Weighted Avg	PM2.5	Weighted Avg
Spring	47.1	23.55	39.5	19.75	1.3	0.65
Summer	49.5	12.375	39.3	9.825	1.3	0.325
Winter	39.8	9.95	49.9	12.475	1.3	0.325
		<b>45.9</b>		<b>42.1</b>		<b>1.3</b>

Source: Imperial County Air Pollution Control District, "Vehicle Idling Emissions Study at Calexico East and Calexico West Ports-of-Entry", (T.KEAR), October 2015, Table 29, "Combine Aduanas and CBP Primary Calexico East Section 559 Proposal" data, p. 65. Weighted average based on 50% spring figures and 25% for summer and winter respectively. Since fall figures were not provided, the spring figures were doubled to estimate the average for both spring and fall.

**Reduction in Emissions POV (lbs/day)**

ROG	<b>9.4</b>	NOx	<b>-4.0</b>	PM2.5	<b>-0.1</b>
-----	------------	-----	-------------	-------	-------------

Source: Baseline POV (weighted average) minus Build Scenario POV (weighted average)

**Reduction in Emissions POV (lbs/year)**

ROG	<b>3431.0</b>	NOx	<b>-1469.1</b>	PM2.5	<b>-27.4</b>
-----	---------------	-----	----------------	-------	--------------

Source: Reduction in Emissions POV multiplied by 365 days

**Reduction in Emissions POV (Metric Tons/year)**

ROG	<b>1.6</b>	NOx	<b>-0.67</b>	PM2.5	<b>-0.01</b>
-----	------------	-----	--------------	-------	--------------

Source: (lbs per year) x (0.00045359237 lbs per Metric Tons) = Metric Tons/year

## Calexico East Port of Entry Expansion – Benefit Cost Analysis

### Baseline Commercial Trucks (lbs/day)

Season	ROG	Weighted Avg	NOx	Weighted Avg	PM2.5	Weighted Avg
Spring	38.5	19.25	259.9	129.95	7.7	3.85
Summer	32.7	8.175	230	57.5	6.7	1.675
Winter	34.2	8.55	239.7	59.925	7	1.75
		<b>36.0</b>		<b>247.4</b>		<b>7.3</b>

Source: Imperial County Air Pollution Control District, "Vehicle Idling Emissions Study at Calexico East and Calexico West Ports-of-Entry", (T.KEAR), October 2015, Table 30, "Baseline" data, p. 66. Weighted average based on 50% spring figures and 25% for summer and winter respectively. Since fall figures were not provided, the spring figures were doubled to estimate the average for both spring and fall.

### Build Scenario Commercial Trucks (lbs/day)

Season	ROG	Weighted Avg	NOx	Weighted Avg	PM2.5	Weighted Avg
Spring	35.1	17.55	243.5	121.75	7.2	3.6
Summer	31.4	7.85	223.8	55.95	6.5	1.625
Winter	32.2	8.05	229.8	57.45	6.7	1.675
		<b>33.5</b>		<b>235.2</b>		<b>6.9</b>

Source: Imperial County Air Pollution Control District, "Vehicle Idling Emissions Study at Calexico East and Calexico West Ports-of-Entry", (T.KEAR), October 2015, Table 30, "Combine Aduanas and CBP Primary Calexico East Section 559 Proposal" data, p. 66. Weighted average based on 50% spring figures and 25% for summer and winter respectively. Since fall figures were not provided, the spring figures were doubled to estimate the average for both spring and fall.

### Reduction in Emissions Commercial Trucks (lbs/day)

	ROG	<b>2.5</b>	NOx	<b>12.2</b>	PM2.5	<b>0.4</b>
--	-----	------------	-----	-------------	-------	------------

Source: Baseline Trucks (weighted average) minus Build Scenario Trucks (weighted average)

### Reduction in Emissions Commercial Trucks (lbs/year)

	ROG	<b>921.6</b>	NOx	<b>4462.1</b>	PM2.5	<b>136.9</b>
--	-----	--------------	-----	---------------	-------	--------------

Source: Reduction in Emissions Trucks multiplied by 365 days

### Reduction in Emissions Commercial Trucks (Metric Tons/year)

	ROG	<b>0.4</b>	NOx	<b>2.0</b>	PM2.5	<b>0.1</b>
--	-----	------------	-----	------------	-------	------------

Source: (lbs per year) x (0.00045359237 lbs per Metric Tons) = Metric Tons/year

Calexico East Port of Entry Expansion – Benefit Cost Analysis

<b>Analysis Year</b>	<b>Calendar Year</b>	<b>Project Year</b>	<b>Truck ROG (Metric Tons)</b>	<b>Truck ROG Undiscounted (\$2015)</b>	<b>Truck ROG Discounted 7% (\$2015)</b>	<b>Truck ROG Discounted 3% (\$2015)</b>
1	2016					
2	2017					
3	2018					
4	2019					
5	2020					
6	2021	1	0.42	\$849.46	\$566.03	\$711.41
7	2022	2	0.42	\$849.46	\$529.00	\$690.69
8	2023	3	0.42	\$849.46	\$494.39	\$670.57
9	2024	4	0.42	\$849.46	\$462.05	\$651.04
10	2025	5	0.42	\$849.46	\$431.82	\$632.08
11	2026	6	0.42	\$849.46	\$403.57	\$613.67
12	2027	7	0.42	\$849.46	\$377.17	\$595.80
13	2028	8	0.42	\$849.46	\$352.50	\$578.44
14	2029	9	0.42	\$849.46	\$329.44	\$561.59
15	2030	10	0.42	\$849.46	\$307.88	\$545.24
16	2031	11	0.42	\$849.46	\$287.74	\$529.36
17	2032	12	0.42	\$849.46	\$268.92	\$513.94
18	2033	13	0.42	\$849.46	\$251.33	\$498.97
19	2034	14	0.42	\$849.46	\$234.88	\$484.44
20	2035	15	0.42	\$849.46	\$219.52	\$470.33
21	2036	16	0.42	\$849.46	\$205.16	\$456.63
22	2037	17	0.42	\$849.46	\$191.73	\$443.33
23	2038	18	0.42	\$849.46	\$179.19	\$430.42
24	2039	19	0.42	\$849.46	\$167.47	\$417.88
25	2040	20	0.42	\$849.46	\$156.51	\$405.71

Calexico East Port of Entry Expansion – Benefit Cost Analysis

<b>Analysis Year</b>	<b>Calendar Year</b>	<b>Project Year</b>	<b>Truck NOX (Metric Tons)</b>	<b>Truck NOX Undiscounted (\$2015)</b>	<b>Truck NOX Discounted 7% (\$2015)</b>	<b>Truck NOX Discounted 3% (\$2015)</b>
1	2016					
2	2017					
3	2018					
4	2019					
5	2020					
6	2021	1	2.0	\$16,212.13	\$10,802.82	\$13,577.40
7	2022	2	2.0	\$16,212.13	\$10,096.10	\$13,181.94
8	2023	3	2.0	\$16,212.13	\$9,435.61	\$12,798.00
9	2024	4	2.0	\$16,212.13	\$8,818.32	\$12,425.25
10	2025	5	2.0	\$16,212.13	\$8,241.42	\$12,063.34
11	2026	6	2.0	\$16,212.13	\$7,702.26	\$11,711.99
12	2027	7	2.0	\$16,212.13	\$7,198.38	\$11,370.86
13	2028	8	2.0	\$16,212.13	\$6,727.46	\$11,039.67
14	2029	9	2.0	\$16,212.13	\$6,287.34	\$10,718.13
15	2030	10	2.0	\$16,212.13	\$5,876.02	\$10,405.95
16	2031	11	2.0	\$16,212.13	\$5,491.61	\$10,102.86
17	2032	12	2.0	\$16,212.13	\$5,132.34	\$9,808.60
18	2033	13	2.0	\$16,212.13	\$4,796.58	\$9,522.92
19	2034	14	2.0	\$16,212.13	\$4,482.79	\$9,245.55
20	2035	15	2.0	\$16,212.13	\$4,189.52	\$8,976.26
21	2036	16	2.0	\$16,212.13	\$3,915.44	\$8,714.82
22	2037	17	2.0	\$16,212.13	\$3,659.29	\$8,460.99
23	2038	18	2.0	\$16,212.13	\$3,419.90	\$8,214.55
24	2039	19	2.0	\$16,212.13	\$3,196.17	\$7,975.29
25	2040	20	2.0	\$16,212.13	\$2,987.07	\$7,743.00

Calexico East Port of Entry Expansion – Benefit Cost Analysis

<b>Analysis Year</b>	<b>Calendar Year</b>	<b>Project Year</b>	<b>Truck PM2.5 (Metric Tons)</b>	<b>Truck PM2.5 Undiscounted (\$2015)</b>	<b>Truck PM2.5 Discounted 7% (\$2015)</b>	<b>Truck PM2.5 Discounted 3% (\$2015)</b>
1	2016					
2	2017					
3	2018					
4	2019					
5	2020					
6	2021	1	0.1	\$22,748.98	\$15,158.61	\$19,051.91
7	2022	2	0.1	\$22,748.98	\$14,166.92	\$18,497.00
8	2023	3	0.1	\$22,748.98	\$13,240.11	\$17,958.25
9	2024	4	0.1	\$22,748.98	\$12,373.94	\$17,435.20
10	2025	5	0.1	\$22,748.98	\$11,564.43	\$16,927.38
11	2026	6	0.1	\$22,748.98	\$10,807.88	\$16,434.35
12	2027	7	0.1	\$22,748.98	\$10,100.82	\$15,955.68
13	2028	8	0.1	\$22,748.98	\$9,440.02	\$15,490.95
14	2029	9	0.1	\$22,748.98	\$8,822.45	\$15,039.76
15	2030	10	0.1	\$22,748.98	\$8,245.28	\$14,601.70
16	2031	11	0.1	\$22,748.98	\$7,705.87	\$14,176.41
17	2032	12	0.1	\$22,748.98	\$7,201.74	\$13,763.51
18	2033	13	0.1	\$22,748.98	\$6,730.60	\$13,362.63
19	2034	14	0.1	\$22,748.98	\$6,290.28	\$12,973.43
20	2035	15	0.1	\$22,748.98	\$5,878.77	\$12,595.56
21	2036	16	0.1	\$22,748.98	\$5,494.18	\$12,228.70
22	2037	17	0.1	\$22,748.98	\$5,134.74	\$11,872.52
23	2038	18	0.1	\$22,748.98	\$4,798.83	\$11,526.72
24	2039	19	0.1	\$22,748.98	\$4,484.88	\$11,190.99
25	2040	20	0.1	\$22,748.98	\$4,191.48	\$10,865.04

Calexico East Port of Entry Expansion – Benefit Cost Analysis

<b>Analysis Year</b>	<b>Calendar Year</b>	<b>Project Year</b>	<b>Auto ROG (Metric Tons)</b>	<b>Auto ROG Undiscounted (\$2015)</b>	<b>Auto ROG Discounted 7% (\$2015)</b>	<b>Auto ROG Discounted 3% (\$2015)</b>
1	2016					
2	2017					
3	2018					
4	2019					
5	2020					
6	2021	1	1.6	\$3,162.35	\$2,107.21	\$2,648.42
7	2022	2	1.6	\$3,162.35	\$1,969.35	\$2,571.28
8	2023	3	1.6	\$3,162.35	\$1,840.52	\$2,496.39
9	2024	4	1.6	\$3,162.35	\$1,720.11	\$2,423.68
10	2025	5	1.6	\$3,162.35	\$1,607.58	\$2,353.09
11	2026	6	1.6	\$3,162.35	\$1,502.41	\$2,284.55
12	2027	7	1.6	\$3,162.35	\$1,404.12	\$2,218.01
13	2028	8	1.6	\$3,162.35	\$1,312.26	\$2,153.41
14	2029	9	1.6	\$3,162.35	\$1,226.41	\$2,090.69
15	2030	10	1.6	\$3,162.35	\$1,146.18	\$2,029.79
16	2031	11	1.6	\$3,162.35	\$1,071.20	\$1,970.67
17	2032	12	1.6	\$3,162.35	\$1,001.12	\$1,913.27
18	2033	13	1.6	\$3,162.35	\$935.63	\$1,857.55
19	2034	14	1.6	\$3,162.35	\$874.42	\$1,803.44
20	2035	15	1.6	\$3,162.35	\$817.21	\$1,750.92
21	2036	16	1.6	\$3,162.35	\$763.75	\$1,699.92
22	2037	17	1.6	\$3,162.35	\$713.78	\$1,650.41
23	2038	18	1.6	\$3,162.35	\$667.09	\$1,602.34
24	2039	19	1.6	\$3,162.35	\$623.45	\$1,555.67
25	2040	20	1.6	\$3,162.35	\$582.66	\$1,510.36



Calexico East Port of Entry Expansion – Benefit Cost Analysis

<b>Analysis Year</b>	<b>Calendar Year</b>	<b>Project Year</b>	<b>Auto NOx (Metric Tons)</b>	<b>Auto NOx Undiscounted (\$2015)</b>	<b>Auto NOx Discounted 7% (\$2015)</b>	<b>Auto NOx Discounted 3% (\$2015)</b>
1	2016					
2	2017					
3	2018					
4	2019					
5	2020					
6	2021	1	(0.67)	(\$5,337.73)	(\$3,556.76)	(\$4,470.27)
7	2022	2	(0.67)	(\$5,337.73)	(\$3,324.07)	(\$4,340.07)
8	2023	3	(0.67)	(\$5,337.73)	(\$3,106.61)	(\$4,213.66)
9	2024	4	(0.67)	(\$5,337.73)	(\$2,903.37)	(\$4,090.93)
10	2025	5	(0.67)	(\$5,337.73)	(\$2,713.43)	(\$3,971.78)
11	2026	6	(0.67)	(\$5,337.73)	(\$2,535.92)	(\$3,856.09)
12	2027	7	(0.67)	(\$5,337.73)	(\$2,370.02)	(\$3,743.78)
13	2028	8	(0.67)	(\$5,337.73)	(\$2,214.97)	(\$3,634.74)
14	2029	9	(0.67)	(\$5,337.73)	(\$2,070.07)	(\$3,528.87)
15	2030	10	(0.67)	(\$5,337.73)	(\$1,934.64)	(\$3,426.09)
16	2031	11	(0.67)	(\$5,337.73)	(\$1,808.08)	(\$3,326.30)
17	2032	12	(0.67)	(\$5,337.73)	(\$1,689.79)	(\$3,229.42)
18	2033	13	(0.67)	(\$5,337.73)	(\$1,579.24)	(\$3,135.36)
19	2034	14	(0.67)	(\$5,337.73)	(\$1,475.93)	(\$3,044.04)
20	2035	15	(0.67)	(\$5,337.73)	(\$1,379.37)	(\$2,955.37)
21	2036	16	(0.67)	(\$5,337.73)	(\$1,289.13)	(\$2,869.30)
22	2037	17	(0.67)	(\$5,337.73)	(\$1,204.80)	(\$2,785.72)
23	2038	18	(0.67)	(\$5,337.73)	(\$1,125.98)	(\$2,704.59)
24	2039	19	(0.67)	(\$5,337.73)	(\$1,052.32)	(\$2,625.81)
25	2040	20	(0.67)	(\$5,337.73)	(\$983.47)	(\$2,549.33)

Calexico East Port of Entry Expansion – Benefit Cost Analysis

Analysis Year	Calendar Year	Project Year	Auto PM2.5 (Metric Tons)	Auto PM2.5 Undiscounted (\$2015)	Auto PM2.5 Discounted 7% (\$2015)	Auto PM2.5 Discounted 3% (\$2015)
1	2016					
2	2017					
3	2018					
4	2019					
5	2020					
6	2021	1	(0.01)	(\$4,549.80)	(\$3,031.72)	(\$3,810.38)
7	2022	2	(0.01)	(\$4,549.80)	(\$2,833.38)	(\$3,699.40)
8	2023	3	(0.01)	(\$4,549.80)	(\$2,648.02)	(\$3,591.65)
9	2024	4	(0.01)	(\$4,549.80)	(\$2,474.79)	(\$3,487.04)
10	2025	5	(0.01)	(\$4,549.80)	(\$2,312.89)	(\$3,385.48)
11	2026	6	(0.01)	(\$4,549.80)	(\$2,161.58)	(\$3,286.87)
12	2027	7	(0.01)	(\$4,549.80)	(\$2,020.16)	(\$3,191.14)
13	2028	8	(0.01)	(\$4,549.80)	(\$1,888.00)	(\$3,098.19)
14	2029	9	(0.01)	(\$4,549.80)	(\$1,764.49)	(\$3,007.95)
15	2030	10	(0.01)	(\$4,549.80)	(\$1,649.06)	(\$2,920.34)
16	2031	11	(0.01)	(\$4,549.80)	(\$1,541.17)	(\$2,835.28)
17	2032	12	(0.01)	(\$4,549.80)	(\$1,440.35)	(\$2,752.70)
18	2033	13	(0.01)	(\$4,549.80)	(\$1,346.12)	(\$2,672.53)
19	2034	14	(0.01)	(\$4,549.80)	(\$1,258.06)	(\$2,594.69)
20	2035	15	(0.01)	(\$4,549.80)	(\$1,175.75)	(\$2,519.11)
21	2036	16	(0.01)	(\$4,549.80)	(\$1,098.84)	(\$2,445.74)
22	2037	17	(0.01)	(\$4,549.80)	(\$1,026.95)	(\$2,374.50)
23	2038	18	(0.01)	(\$4,549.80)	(\$959.77)	(\$2,305.34)
24	2039	19	(0.01)	(\$4,549.80)	(\$896.98)	(\$2,238.20)
25	2040	20	(0.01)	(\$4,549.80)	(\$838.30)	(\$2,173.01)

Calexico East Port of Entry Expansion – Benefit Cost Analysis

Analysis Year	Calendar Year	Project Year	Total Emissions Reduced (Metric Tons)	Total Emissions Savings Undiscounted (\$2015)	Total Emissions Savings Discounted 7% (\$2015)	Total Emissions Savings Discounted 3% (\$2015)
1	2016					
2	2017					
3	2018					
4	2019					
5	2020					
6	2021	1	3.38	\$33,085	\$22,046	\$27,708
7	2022	2	3.38	\$33,085	\$20,604	\$26,901
8	2023	3	3.38	\$33,085	\$19,256	\$26,118
9	2024	4	3.38	\$33,085	\$17,996	\$25,357
10	2025	5	3.38	\$33,085	\$16,819	\$24,619
11	2026	6	3.38	\$33,085	\$15,719	\$23,902
12	2027	7	3.38	\$33,085	\$14,690	\$23,205
13	2028	8	3.38	\$33,085	\$13,729	\$22,530
14	2029	9	3.38	\$33,085	\$12,831	\$21,873
15	2030	10	3.38	\$33,085	\$11,992	\$21,236
16	2031	11	3.38	\$33,085	\$11,207	\$20,618
17	2032	12	3.38	\$33,085	\$10,474	\$20,017
18	2033	13	3.38	\$33,085	\$9,789	\$19,434
19	2034	14	3.38	\$33,085	\$9,148	\$18,868
20	2035	15	3.38	\$33,085	\$8,550	\$18,319
21	2036	16	3.38	\$33,085	\$7,991	\$17,785
22	2037	17	3.38	\$33,085	\$7,468	\$17,267
23	2038	18	3.38	\$33,085	\$6,979	\$16,764
24	2039	19	3.38	\$33,085	\$6,523	\$16,276
25	2040	20	3.38	\$33,085	\$6,096	\$15,802
				<b>Present Value</b>	<b>\$249,907</b>	<b>\$424,599</b>