

Blue Source's Assertion of GHG Emission Reductions from JB Hunt's Intermodal Transport Project

(August 2010 – August 2011)



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1.0 Introduction

In 2008, a project protocol¹ was developed in accordance with International Organization for Standardization (ISO) 14064 guidelines (ISO 2006b) documenting the methodology used to determine the greenhouse gas (GHG) emission reductions (ERs) associated with the J.B. Hunt's Intermodal (JBI) project. It included the calculated ERs from the project during the Oct. 2006 – Sep. 2008 time-period. Emission reductions during that period totaled 3.2 million metric tonnes of carbon dioxide equivalent (MMT_{CO₂e}). The ERs were verified by an independent 3rd party verification company consistent with the verification requirements of ISO 14064. The project is registered on the Canadian Standards Association's (CSA's) GHG CleanProjects™ Registry. Project documents are available at the registry website at <http://www.ghgregistries.ca/cleanprojects>.

In November 2010, ERs totaling 3.3 MMT_{CO₂e} for the October 2008 through July 2010 time-period were verified. To meet buyer requirements, the January – July 2010 ERs included a breakdown of the calculated ERs by State. The procedures used to determine this breakdown were described in a previous GHG assertion² and were validated during the verification of the project's ERs.³

This GHG assertion includes the ERs associated with the project for the August 2010 to August 2011 time-period. The ERs and breakdown by State are calculated in accordance with previously validated procedures.

2.0 Data Monitoring and Reporting

There have been no changes to the data monitoring, collection, and reporting procedures of data obtained from JB Hunt. The equations used to calculate ERs from the project also remain the same. No changes were made to the procedures used to calculate the ER breakdown by State.

Recent data⁴ presented in April 2011 was used as the basis for the calculation of the baseline intermodal percentage for the industry. Intermodal transportation's share of U.S. long-haul truck traffic (550 miles or more) hit a high of 16 percent during the 3rd quarter of 2010 and declined slightly to about 15.5 percent

¹ Blue Source's Greenhouse Gas Emission Reduction Protocol for JB Hunt's Intermodal Transport Project, December 2008

² Blue Source's Assertion of GHG Emission Reductions from JB Hunt's Intermodal Transport Project (January – July 2010), October 2010

³ Verification Report for Emission Reductions Relating to J. B. Hunt Trucking Intermodal Project Including Emission Breakdown by State Reporting Period: January 1, 2010 – July, 31 2010, November 9, 2010

⁴ Webinar: State of Freight, Commercial Carrier Journal, April 19, 2011

during the 4th quarter 2010. To be conservative, the baseline value for the entire time-period was set at 16 percent.

3.0 Summary of Emission Reductions

Baseline emissions (BE), project emissions (PE) and emission reductions (ERs) were calculated using validated procedures described in the project protocol. A monthly breakdown is shown in Table 1. Emission reductions totaled 2.3 MMTCO₂e during the August 2010 – August 2011 time-period. Table 2 shows a breakdown of the monthly ERs by State and Table 3 shows State totals by vintage year. A breakdown of monthly emissions and ERs by State are included in Appendix A. Calculation procedures and an example calculation are included in Appendix B.

The data and calculation spreadsheets and relevant supporting information are being provided for verification to an independent third party verification body accredited under the American National Standard Institute's Greenhouse Gas Accreditation Program.

Table 1 Summary of Baseline Emissions, Project Emissions, and Emission Reductions for August 2010 – August 2011 time period (tonnes CO₂e)

Month-Year	BE	PE	ERs
Aug-10	323,144	147,655	175,489
Sep-10	317,496	145,172	172,324
Oct-10	320,848	149,352	171,496
Nov-10	322,577	146,212	176,365
Dec-10	308,200	138,884	169,316
Jan-11	293,929	131,601	162,328
Feb-11	299,090	133,234	165,856
Mar-11	350,034	159,681	190,353
Apr-11	324,835	151,168	173,667
May-11	325,618	152,006	173,612
Jun-11	354,694	162,380	192,314
Jul-11	329,675	147,196	182,479
Aug-11	366,072	164,190	201,882
TOTAL (Aug -Dec 2010)	1,592,265	727,275	864,990
TOTAL (Jan-Aug 2011)	2,643,946	1,201,457	1,442,490
TOTAL (Aug 2010 -Aug 2011)	4,236,211	1,928,731	2,307,480

Table 2. Monthly Emission Reductions Breakdown by State (tonnes CO₂e)

STATE	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11
AL	1,576	1,479	1,606	1,480	1,573	1,482	1,620	1,895	1,731	1,815	2,019	1,780	2,020
AZ	16,792	16,260	16,431	17,033	15,940	15,743	16,220	18,127	16,579	16,567	17,969	17,005	18,824
AR	6,284	6,122	6,150	6,333	5,942	5,722	5,744	6,738	6,158	6,105	6,975	6,394	6,868
CA	11,990	11,598	11,458	12,134	11,276	11,114	11,051	12,004	10,948	10,950	12,066	11,603	12,907
CO	6,214	6,288	6,130	6,854	6,163	5,832	5,520	6,669	5,986	5,838	6,617	6,274	7,031
CT	199	183	167	204	208	180	189	206	194	237	294	247	224
DE	-	-	-	-	-	-	-	-	-	-	-	-	-
DC	0.05	0.06	0.04	0.07	0.05	0.07	0.06	0.03	0.06	0.02	0.03	0.00	0
FL	742	771	804	785	773	713	876	1,106	1,037	1,092	1,082	1,047	1,095
GA	-	-	-	-	-	-	-	-	-	-	-	-	-
ID	2,256	2,309	2,265	2,285	2,451	2,202	2,242	2,805	2,479	2,306	2,647	2,550	2,804
IL	3,998	3,833	3,591	3,616	3,609	3,512	3,803	4,093	3,797	3,661	4,261	4,371	4,859
IN	2,296	2,264	2,233	2,528	2,598	2,283	2,408	2,875	2,410	2,591	2,968	2,791	3,104
IA	6,178	6,210	6,101	6,413	5,963	5,726	5,690	6,849	5,887	5,754	6,373	6,050	7,040
KS	1,523	1,469	1,390	1,389	1,475	1,346	1,352	1,597	1,404	1,454	1,753	1,666	1,665
KY	1,227	1,309	1,451	1,398	1,459	1,360	1,511	1,716	1,549	1,615	1,859	1,755	1,804
LA	875	862	922	964	981	861	1,081	1,397	1,358	1,342	1,471	1,425	1,494
ME	-	-	-	-	-	-	-	-	-	-	-	-	-
MD	645	663	633	692	646	597	597	749	706	800	880	760	803
MA	-	-	-	-	-	-	-	-	-	-	-	-	-
MI	-	-	-	-	-	-	-	-	-	-	-	-	-
MN	1,279	1,361	1,306	1,301	1,235	1,098	1,165	1,285	1,301	1,289	1,378	1,263	1,437
MS	966	872	819	736	863	738	745	969	1,063	1,085	1,227	1,191	1,229
MO	6,176	5,775	5,720	5,673	5,571	5,587	5,841	6,199	5,916	5,784	6,382	6,604	7,016
MT	5,190	5,540	5,375	5,299	5,094	4,614	4,853	5,236	5,262	5,168	5,536	5,069	5,623
NE	10,323	10,225	10,107	10,557	10,038	9,574	9,324	11,144	9,664	9,472	10,620	10,193	11,739
NV	5,217	5,032	5,024	5,172	4,708	4,529	4,422	5,101	4,399	4,665	5,216	4,846	5,750
NH	-	-	-	-	-	-	-	-	-	-	-	-	-
NJ	70	101	32	11	63	28	71	80	14	39	48	73	75
NM	15,325	14,545	14,689	15,128	14,291	14,166	14,483	16,013	14,679	14,699	15,917	15,056	16,671
NY	500	468	538	541	482	395	437	447	442	371	500	563	543
NC	618	494	525	601	612	625	606	695	752	726	919	935	954
ND	1,769	1,876	1,794	1,779	1,706	1,515	1,648	1,799	1,811	1,808	1,944	1,758	2,025
OH	5,940	5,667	5,754	5,773	5,770	5,273	5,408	6,456	5,888	6,052	6,634	6,050	6,940
OK	11,644	11,020	11,241	11,453	10,592	10,672	11,034	11,834	10,713	10,781	11,886	11,202	12,542
OR	1,930	2,030	1,978	2,049	2,309	2,139	2,151	2,722	2,345	2,106	2,427	2,471	2,679
PA	4,961	4,689	4,519	4,527	4,763	4,428	4,449	5,380	4,745	4,790	5,368	5,041	5,698
RI	10	9	8	7	6	4	4	7	6	11	15	8	12
SC	356	323	306	343	424	410	399	487	509	521	621	574	598
SD	1,434	1,544	1,550	1,509	1,461	1,376	1,356	1,422	1,416	1,349	1,432	1,347	1,368
TN	6,918	6,899	6,907	6,881	6,695	6,474	6,555	7,902	7,360	7,478	8,208	7,793	8,144
TX	12,097	12,144	12,234	12,836	12,140	11,727	12,734	14,735	13,488	13,546	14,631	13,930	15,043
UT	7,189	7,177	7,087	7,658	7,048	6,706	6,407	7,696	6,753	6,686	7,511	7,137	8,174
VT	2	2	6	-	-	-	-	-	-	-	-	2	-
VA	2,945	2,920	2,827	2,853	2,880	2,730	2,811	3,619	3,415	3,603	3,936	3,612	3,713
WA	1,718	1,866	1,791	1,699	1,576	1,505	1,560	1,616	1,737	1,691	1,945	1,791	1,901
WV	525	582	536	544	588	560	591	708	671	700	776	680	808
WI	673	778	754	723	630	464	624	619	731	727	814	754	903
WY	6,916	6,766	6,736	6,605	6,715	6,317	6,274	7,354	6,362	6,341	7,189	6,816	7,753
TOTAL	175,489	172,324	171,496	176,365	169,316	162,328	165,856	190,353	173,667	173,612	192,314	182,479	201,882

Table 3. Emission Reductions Breakdown by State and Vintage Year(tonnes CO₂e)

STATE	AUG.-DEC. 2010	JAN.-AUG. 2011
AL	7,714	14,362
AZ	82,457	137,034
AR	30,831	50,704
CA	58,456	92,643
CO	31,649	49,765
CT	961	1,771
DE	-	-
DC	0	0
FL	3,874	8,049
GA	-	-
ID	11,566	20,036
IL	18,647	32,357
IN	11,920	21,430
IA	30,865	49,369
KS	7,246	12,236
KY	6,844	13,169
LA	4,603	10,430
ME	-	-
MD	3,279	5,893
MA	-	-
MI	-	-
MN	6,483	10,217
MS	4,255	8,247
MO	28,914	49,329
MT	26,497	41,361
NE	51,250	81,728
NV	25,152	38,926
NH	-	-
NJ	276	428
NM	73,979	121,685
NY	2,528	3,698
NC	2,850	6,211
ND	8,925	14,308
OH	28,904	48,702
OK	55,949	90,665
OR	10,295	19,039
PA	23,461	39,900
RI	40	67
SC	1,753	4,118
SD	7,498	11,067
TN	34,300	59,915
TX	61,451	109,835
UT	36,159	57,070
VT	10	2
VA	14,424	27,439
WA	8,651	13,745
WV	2,776	5,495
WI	3,559	5,638
WY	33,739	54,407
TOTAL	864,990	1,442,490

APPENDIX A

Table A-7 Breakdown of Emissions and Emission Reductions by State for Feb. 2011

ST	ORIGIN-TO-DESTINATION -TRUCK EMISSIONS			RAMP-TO-RAMP PAIRS - INTERMODAL EMISSIONS			INTERMODAL DRAY EMISSIONS			EMISSION REDUCTIONS (tonnes CO2e)	EMISSION REDUCTIONS CORRECTED FOR LEAKAGE (tonnes CO2e)	
	TTL Miles	Miles (% of total)	BASELINE TRUCK EMISSIONS (tonnes CO2e)	TTL Miles	Miles (% of total)	BASELINE INTERMODAL EMISSIONS (tonnes CO2e)	PROJECT INTERMODAL EMISSIONS (tonnes CO2e)	TTL Miles	Miles (% of total)			PROJECT DRAY EMISSIONS (tonnes CO2e)
AL	1,794,200	1.2%	3,246	2,257,819	1.44%	307	1,418	185,313	1.4%	504	1,631	1,620
AZ	11,449,657	7.5%	20,713	8,719,488	5.57%	1,187	5,476	33,381	0.3%	91	16,333	16,220
AR	4,409,204	2.9%	7,977	3,446,085	2.20%	469	2,164	182,917	1.4%	497	5,784	5,744
CA	11,979,932	7.8%	21,672	11,776,970	7.52%	1,603	7,397	1,747,674	13.6%	4,750	11,128	11,051
CO	5,740,698	3.7%	10,385	9,643,259	6.16%	1,312	6,057	30,503	0.2%	83	5,558	5,520
CT	274,010	0.2%	496	190,096	0.12%	26	119	77,892	0.6%	212	190	189
DE	38,695	0.0%	70	36,868	0.02%	5	23	36,564	0.3%	99	(48)	-
DC	61	0.0%	0	-	0.00%	-	-	19	0.0%	0	0	0
FL	998,909	0.7%	1,807	837,683	0.53%	114	526	188,504	1.5%	512	883	876
GA	2,165,230	1.4%	3,917	2,408,946	1.54%	328	1,513	1,257,346	9.8%	3,418	(686)	-
ID	1,693,700	1.1%	3,064	1,633,227	1.04%	222	1,026	982	0.0%	3	2,258	2,242
IL	6,742,036	4.4%	12,197	8,768,352	5.60%	1,193	5,507	1,491,336	11.6%	4,054	3,829	3,803
IN	4,813,540	3.1%	8,708	5,834,508	3.72%	794	3,664	1,255,533	9.8%	3,413	2,425	2,408
IA	5,950,578	3.9%	10,765	8,792,171	5.61%	1,197	5,522	261,285	2.0%	710	5,729	5,690
KS	1,283,535	0.8%	2,322	1,163,282	0.74%	198	731	142,978	1.1%	389	1,361	1,352
KY	1,294,062	0.8%	2,341	1,122,934	0.72%	153	705	98,389	0.8%	267	1,521	1,511
LA	937,514	0.6%	1,696	1,011,283	0.65%	138	635	40,363	0.3%	110	1,089	1,081
ME	34,026	0.0%	62	-	0.00%	-	-	34,026	0.3%	92	(31)	-
MD	452,466	0.3%	819	200,302	0.13%	27	126	43,896	0.3%	119	601	597
MA	108,682	0.1%	197	107,286	0.07%	15	67	82,370	0.6%	224	(80)	-
MI	322,568	0.2%	584	-	0.00%	-	-	320,803	2.5%	872	(288)	-
MN	1,306,925	0.9%	2,364	1,701,628	1.09%	232	1,069	130,117	1.0%	354	1,173	1,165
MS	1,324,356	0.9%	2,396	1,674,346	1.07%	228	1,052	302,495	2.4%	822	750	745
MO	4,781,637	3.1%	8,650	2,465,607	1.57%	336	1,549	572,394	4.5%	1,556	5,881	5,841
MT	3,950,101	2.6%	7,146	4,591,976	2.93%	625	2,884	-	0.0%	-	4,887	4,853
NE	8,378,843	5.5%	15,158	11,677,840	7.46%	1,589	7,334	8,889	0.1%	24	9,389	9,324
NV	3,824,835	2.5%	6,919	4,955,525	3.16%	674	3,112	10,647	0.1%	29	4,452	4,422
NH	13,701	0.0%	25	-	0.00%	-	-	17,216	0.1%	47	(22)	-
NJ	425,861	0.3%	770	416,546	0.27%	57	262	181,635	1.4%	494	72	71
NM	9,877,758	6.4%	17,869	6,675,107	4.26%	908	4,192	575	0.0%	2	14,584	14,483
NY	896,686	0.6%	1,622	1,017,685	0.65%	139	639	250,770	2.0%	682	440	437
NC	881,472	0.6%	1,595	703,958	0.45%	96	442	234,747	1.8%	638	610	606
ND	1,542,306	1.0%	2,790	2,298,467	1.47%	313	1,444	43	0.0%	0	1,659	1,648
OH	4,877,654	3.2%	8,824	5,425,168	3.46%	738	3,407	261,015	2.0%	709	5,446	5,408
OK	7,914,245	5.2%	14,317	5,557,292	3.55%	756	3,490	173,708	1.4%	472	11,111	11,034
OR	1,949,961	1.3%	3,528	1,805,875	1.15%	246	1,134	174,227	1.4%	474	2,166	2,151
PA	5,009,197	3.3%	9,062	5,658,954	3.61%	770	3,554	661,446	5.2%	1,798	4,480	4,449
RI	11,230	0.0%	20	-	0.00%	-	-	5,945	0.0%	16	4	4
SC	580,438	0.4%	1,050	611,934	0.39%	83	384	127,909	1.0%	348	401	399
SD	755,119	0.5%	1,366	-	0.00%	-	-	87	0.0%	0	1,366	1,356
TN	4,763,763	3.1%	8,618	2,369,521	1.51%	322	1,488	313,104	2.4%	851	6,601	6,555
TX	11,036,180	7.2%	19,965	9,743,819	6.22%	1,326	6,120	863,941	6.7%	2,348	12,823	12,734
UT	6,162,119	4.0%	11,148	9,419,970	6.01%	1,282	5,916	22,557	0.2%	61	6,452	6,407
VT	4,826	0.0%	9	-	0.00%	-	-	4,130	0.0%	11	(2)	-
VA	2,182,456	1.4%	3,948	1,516,104	0.97%	206	952	136,701	1.1%	372	2,831	2,811
WA	1,806,689	1.2%	3,268	1,860,049	1.19%	253	1,168	287,780	2.2%	782	1,571	1,560
WV	435,816	0.3%	788	265,419	0.17%	36	167	22,939	0.2%	62	595	591
WI	1,717,660	1.1%	3,107	2,018,463	1.29%	275	1,268	546,550	4.3%	1,486	629	624
WY	4,649,880	3.0%	8,412	4,249,485	2.71%	578	2,669	1,221	0.0%	3	6,318	6,274
TOTAL	153,545,012	100%	277,772	156,631,299	100%	21,318	98,375	12,824,858	100%	34,859	165,856	165,856
FEB			277,772			21,318	98,375			34,859	165,856	

TTL POS ERs	167,013
TTL NEG ERs	1,157
TTL ERs CHECK	165,856

Table A-9 Breakdown of Emissions and Emission Reductions by State for Apr. 2011

ST	ORIGIN-TO-DESTINATION - TRUCK EMISSIONS			RAMP-TO-RAMP PAIRS - INTERMODAL EMISSIONS				INTERMODAL DRAY EMISSIONS			EMISSION REDUCTIONS (tonnes CO2e)	EMISSION REDUCTIONS CORRECTED FOR LEAKAGE (tonnes CO2e)
	TTL Miles	Miles (% of total)	BASELINE TRUCK EMISSIONS (tonnes CO2e)	TTL Miles	Miles (% of total)	BASELINE INTERMODAL EMISSIONS (tonnes CO2e)	PROJECT INTERMODAL EMISSIONS (tonnes CO2e)	TTL Miles	Miles (% of total)	PROJECT DRAY EMISSIONS (tonnes CO2e)		
AL	2,088,367	1.2%	3,604	2,525,291	1.41%	342	1,594	230,297	1.6%	605	1,746	1,731
AZ	12,486,278	7.2%	21,546	9,531,807	5.33%	1,290	6,017	36,773	0.3%	97	16,723	16,579
AR	4,996,689	2.9%	8,622	3,776,294	2.11%	511	2,384	204,746	1.4%	538	6,212	6,158
CA	13,002,946	7.5%	22,438	12,807,976	7.17%	1,734	8,086	1,920,062	13.1%	5,043	11,043	10,948
CO	6,683,956	3.8%	11,534	10,875,252	6.09%	1,472	6,866	39,155	0.3%	103	6,038	5,986
CT	331,062	0.2%	571	226,134	0.13%	31	143	100,366	0.7%	264	196	194
DE	52,065	0.0%	90	42,774	0.02%	6	27	39,064	0.3%	103	(34)	-
DC	68	0.0%	0	-	0.00%	-	-	22	0.0%	0	0	0
FL	1,206,025	0.7%	2,081	966,395	0.54%	131	610	211,591	1.4%	556	1,046	1,037
GA	2,429,389	1.4%	4,192	2,703,418	1.51%	366	1,707	1,451,187	9.9%	3,812	(960)	-
ID	2,005,559	1.2%	3,461	1,930,557	1.08%	261	1,219	1,126	0.0%	3	2,500	2,479
IL	7,764,541	4.5%	13,398	10,447,912	5.85%	1,414	6,596	1,670,356	11.4%	4,387	3,830	3,797
IN	5,572,378	3.2%	9,616	6,858,487	3.84%	928	4,330	1,440,398	9.9%	3,783	2,431	2,410
IA	6,694,910	3.8%	11,553	9,848,512	5.51%	1,333	6,217	278,290	1.9%	731	5,938	5,887
KS	1,485,761	0.9%	2,564	1,346,135	0.75%	182	850	182,916	1.3%	480	1,416	1,404
KY	1,475,125	0.8%	2,545	1,337,972	0.75%	181	845	121,693	0.8%	320	1,562	1,549
LA	1,172,046	0.7%	2,022	1,139,375	0.64%	154	719	33,343	0.2%	88	1,370	1,358
ME	32,383	0.0%	56	-	0.00%	-	-	32,383	0.2%	85	(29)	-
MD	576,931	0.3%	996	245,150	0.14%	33	155	61,484	0.4%	161	712	706
MA	118,090	0.1%	204	127,993	0.07%	17	81	106,402	0.7%	279	(139)	-
MI	353,766	0.2%	610	-	0.00%	-	-	351,346	2.4%	923	(312)	-
MN	1,574,977	0.9%	2,718	2,014,548	1.13%	273	1,272	154,717	1.1%	406	1,312	1,301
MS	1,634,867	0.9%	2,821	1,877,051	1.05%	254	1,185	311,430	2.1%	818	1,072	1,063
MO	5,357,614	3.1%	9,245	3,145,577	1.76%	426	1,986	654,253	4.5%	1,718	5,967	5,916
MT	4,636,244	2.7%	8,000	5,429,116	3.04%	735	3,427	-	0.0%	-	5,308	5,262
NE	9,411,837	5.4%	16,241	13,043,987	7.30%	1,766	8,235	9,366	0.1%	25	9,747	9,664
NV	4,163,988	2.4%	7,185	5,473,389	3.06%	741	3,455	13,020	0.1%	34	4,437	4,399
NH	15,333	0.0%	26	-	0.00%	-	-	19,245	0.1%	51	(24)	-
NJ	510,222	0.3%	880	529,578	0.30%	72	334	229,914	1.6%	604	14	14
NM	10,666,837	6.1%	18,407	7,257,999	4.06%	982	4,582	426	0.0%	1	14,806	14,679
NY	1,060,829	0.6%	1,831	1,212,748	0.68%	164	766	298,328	2.0%	784	446	442
NC	1,081,074	0.6%	1,865	933,100	0.52%	126	589	245,360	1.7%	644	758	752
ND	1,839,772	1.1%	3,175	2,717,485	1.52%	368	1,716	5	0.0%	0	1,827	1,811
OH	5,732,290	3.3%	9,892	6,458,812	3.61%	874	4,077	285,271	2.0%	749	5,939	5,888
OK	8,457,511	4.9%	14,594	6,376,102	3.57%	863	4,025	238,437	1.6%	626	10,806	10,713
OR	2,271,381	1.3%	3,919	2,096,933	1.17%	284	1,324	195,782	1.3%	514	2,365	2,345
PA	5,913,008	3.4%	10,203	6,737,238	3.77%	912	4,253	790,607	5.4%	2,077	4,786	4,745
RI	12,745	0.0%	22	-	0.00%	-	-	6,128	0.0%	16	6	6
SC	731,952	0.4%	1,263	743,659	0.42%	101	469	144,991	1.0%	381	513	509
SD	827,475	0.5%	1,428	-	0.00%	-	-	-	0.0%	-	1,428	1,416
TN	5,591,326	3.2%	9,648	2,800,177	1.57%	379	1,768	318,139	2.2%	836	7,424	7,360
TX	12,666,928	7.3%	21,858	10,953,445	6.13%	1,483	6,915	1,073,933	7.4%	2,821	13,605	13,488
UT	7,008,585	4.0%	12,094	10,572,638	5.92%	1,431	6,675	14,806	0.1%	39	6,812	6,753
VT	3,714	0.0%	6	-	0.00%	-	-	3,330	0.0%	9	(2)	-
VA	2,777,941	1.6%	4,794	1,868,826	1.05%	253	1,180	160,632	1.1%	422	3,445	3,415
WA	2,145,900	1.2%	3,703	2,234,231	1.25%	302	1,410	320,921	2.2%	843	1,752	1,737
WV	524,313	0.3%	905	332,720	0.19%	45	210	23,855	0.2%	63	677	671
WI	2,015,179	1.2%	3,477	2,450,171	1.37%	332	1,547	580,471	4.0%	1,525	738	731
WY	5,066,376	2.9%	8,743	4,682,675	2.62%	634	2,956	1,406	0.0%	4	6,417	6,362
TOTAL	174,228,551	100%	300,648	178,679,636	100%	24,187	112,801	14,607,771	100%	38,368	173,667	173,667
APR			300,648			24,187	112,801			38,368	173,667	
										TTL POS ERs	175,168	
										TTL NEG ERs	1,501	
										TTL ERs CHECK	173,667	

Table A-12 Breakdown of Emissions and Emission Reductions by State for Jul. 2011

ST	ORIGIN-TO-DESTINATION - TRUCK EMISSIONS			RAMP-TO-RAMP PAIRS - INTERMODAL EMISSIONS				INTERMODAL DRAY EMISSIONS			EMISSION REDUCTIONS (tonnes CO2e)	EMISSION REDUCTIONS CORRECTED FOR LEAKAGE (tonnes CO2e)
	TTL Miles	Miles (% of total)	BASELINE TRUCK EMISSIONS (tonnes CO2e)	TTL Miles	Miles (% of total)	BASELINE INTERMODAL EMISSIONS (tonnes CO2e)	PROJECT INTERMODAL EMISSIONS (tonnes CO2e)	TTL Miles	Miles (% of total)	PROJECT DRAY EMISSIONS (tonnes CO2e)		
AL	2,029,124	1.2%	3,648	2,455,371	1.41%	332	1,548	251,513	1.7%	640	1,792	1,780
AZ	12,123,773	7.1%	21,796	9,251,868	5.31%	1,250	5,832	37,086	0.3%	94	17,120	17,005
AR	4,973,111	2.9%	8,941	4,004,928	2.30%	541	2,524	204,240	1.4%	520	6,437	6,394
CA	12,622,785	7.4%	22,693	12,445,890	7.14%	1,682	7,845	1,904,206	13.0%	4,849	11,681	11,603
CO	6,390,676	3.8%	11,489	10,240,446	5.88%	1,384	6,455	40,184	0.3%	102	6,316	6,274
CT	350,001	0.2%	629	242,256	0.14%	33	153	102,147	0.7%	260	249	247
DE	50,881	0.0%	91	42,714	0.02%	6	27	43,630	0.3%	111	(41)	-
DC	29	0.0%	0	-	0.00%	-	-	19	0.0%	0	0	0
FL	1,085,063	0.6%	1,951	837,911	0.48%	113	528	189,294	1.3%	482	1,054	1,047
GA	2,433,699	1.4%	4,375	2,656,963	1.52%	359	1,675	1,515,844	10.3%	3,860	(801)	-
ID	1,938,554	1.1%	3,485	1,849,605	1.06%	250	1,166	722	0.0%	2	2,567	2,550
IL	7,674,760	4.5%	13,797	10,319,487	5.92%	1,395	6,504	1,683,342	11.5%	4,287	4,401	4,371
IN	5,483,907	3.2%	9,859	6,902,019	3.96%	933	4,350	1,425,952	9.7%	3,631	2,810	2,791
IA	6,420,603	3.8%	11,543	9,525,267	5.47%	1,287	6,004	288,748	2.0%	735	6,091	6,050
KS	1,528,188	0.9%	2,747	1,266,020	0.73%	171	798	174,117	1.2%	443	1,677	1,666
KY	1,536,453	0.9%	2,762	1,344,453	0.77%	182	847	129,535	0.9%	330	1,767	1,755
LA	1,157,364	0.7%	2,081	1,055,139	0.61%	143	665	48,359	0.3%	123	1,435	1,425
ME	37,365	0.0%	67	-	0.00%	-	-	37,365	0.3%	95	(28)	-
MD	592,557	0.3%	1,065	244,377	0.14%	33	154	70,206	0.5%	179	765	760
MA	134,000	0.1%	241	144,644	0.08%	20	91	103,616	0.7%	264	(95)	-
MI	325,736	0.2%	586	-	0.00%	-	-	323,564	2.2%	824	(238)	-
MN	1,417,238	0.8%	2,548	1,871,342	1.07%	253	1,180	137,225	0.9%	349	1,272	1,263
MS	1,671,979	1.0%	3,006	1,807,005	1.04%	244	1,139	358,124	2.4%	912	1,199	1,191
MO	5,392,229	3.2%	9,694	3,166,075	1.82%	428	1,996	580,184	4.0%	1,477	6,649	6,604
MT	4,227,177	2.5%	7,599	5,041,070	2.89%	681	3,177	-	0.0%	-	5,103	5,069
NE	9,203,980	5.4%	16,547	12,656,562	7.26%	1,710	7,978	6,968	0.0%	18	10,262	10,193
NV	4,214,976	2.5%	7,578	5,393,873	3.10%	729	3,400	11,087	0.1%	28	4,878	4,846
NH	18,040	0.0%	32	-	0.00%	-	-	24,168	0.2%	62	(29)	-
NJ	476,513	0.3%	857	470,657	0.27%	64	297	215,941	1.5%	550	74	73
NM	10,419,812	6.1%	18,732	7,217,224	4.14%	975	4,549	413	0.0%	1	15,158	15,056
NY	1,093,843	0.6%	1,966	1,231,818	0.71%	166	776	309,985	2.1%	789	567	563
NC	1,125,073	0.7%	2,023	936,153	0.54%	127	590	242,715	1.7%	618	941	935
ND	1,679,269	1.0%	3,019	2,523,255	1.45%	341	1,590	-	0.0%	-	1,770	1,758
OH	5,557,198	3.3%	9,991	6,372,403	3.66%	861	4,017	292,271	2.0%	744	6,091	6,050
OK	8,420,609	4.9%	15,138	6,532,797	3.75%	883	4,118	245,950	1.7%	626	11,277	11,202
OR	2,185,162	1.3%	3,928	1,991,058	1.14%	269	1,255	178,771	1.2%	455	2,487	2,471
PA	5,737,945	3.4%	10,315	6,640,867	3.81%	897	4,186	766,410	5.2%	1,952	5,075	5,041
RI	11,844	0.0%	21	-	0.00%	-	-	5,025	0.0%	13	8	8
SC	720,268	0.4%	1,295	708,211	0.41%	96	446	143,798	1.0%	366	578	574
SD	754,582	0.4%	1,357	-	0.00%	-	-	-	0.0%	-	1,357	1,347
TN	5,724,928	3.4%	10,292	2,970,782	1.70%	401	1,873	383,151	2.6%	976	7,845	7,793
TX	12,228,507	7.2%	21,984	10,491,827	6.02%	1,418	6,613	1,085,606	7.4%	2,765	14,024	13,930
UT	6,792,750	4.0%	12,212	10,070,917	5.78%	1,361	6,348	15,564	0.1%	40	7,185	7,137
VT	5,499	0.0%	10	-	0.00%	-	-	3,158	0.0%	8	2	2
VA	2,787,682	1.6%	5,012	1,963,165	1.13%	265	1,237	158,172	1.1%	403	3,637	3,612
WA	1,990,046	1.2%	3,578	2,053,343	1.18%	277	1,294	297,665	2.0%	758	1,803	1,791
WV	510,121	0.3%	917	342,953	0.20%	46	216	24,655	0.2%	63	684	680
WI	1,909,071	1.1%	3,432	2,284,743	1.31%	309	1,440	605,422	4.1%	1,542	759	754
WY	5,114,850	3.0%	9,195	4,706,336	2.70%	636	2,966	986	0.0%	3	6,862	6,816
TOTAL	170,279,814	100%	306,124	174,273,792	100%	23,551	109,846	14,667,100	100%	37,350	182,479	182,479
JUL			306,124			23,551	109,846			37,350	182,479	
										TTL POS ERs	183,710	
										TTL NEG ERs	1,231	
										TTL ERs CHECK	182,479	

Table A-13 Breakdown of Emissions and Emission Reductions by State for Aug. 2011

ORIGIN-TO-DESTINATION - TRUCK EMISSIONS				RAMP-TO-RAMP PAIRS - INTERMODAL EMISSIONS				INTERMODAL DRAY EMISSIONS				EMISSION REDUCTIONS (tonnes CO2e)	EMISSION REDUCTIONS CORRECTED FOR LEAKAGE (tonnes CO2e)
ST	TTL Miles	Miles (% of total)	BASELINE TRUCK EMISSIONS (tonnes CO2e)	TTL Miles	Miles (% of total)	BASELINE INTERMODAL EMISSIONS (tonnes CO2e)	PROJECT INTERMODAL EMISSIONS (tonnes CO2e)	TTL Miles	Miles (% of total)	PROJECT DRAY EMISSIONS (tonnes CO2e)			
AL	2,228,381	1.2%	3,953	2,699,732	1.38%	363	1,691	226,256	1.4%	591	2,034	2,020	
AZ	13,623,020	7.1%	24,166	10,371,956	5.30%	1,393	6,495	41,506	0.3%	108	18,956	18,824	
AR	5,464,321	2.9%	9,693	4,519,517	2.31%	607	2,830	212,223	1.3%	554	6,916	6,868	
CA	14,379,343	7.5%	25,508	14,165,836	7.24%	1,902	8,871	2,121,669	13.3%	5,543	12,997	12,907	
CO	7,299,451	3.8%	12,949	11,708,833	5.99%	1,572	7,332	41,484	0.3%	108	7,081	7,031	
CT	370,020	0.2%	656	252,980	0.13%	34	158	117,290	0.7%	306	226	224	
DE	52,439	0.0%	93	44,861	0.02%	6	28	51,099	0.3%	133	(63)	-	
DC	30	0.0%	0	-	0.00%	-	-	4	0.0%	0	0	0	
FL	1,170,886	0.6%	2,077	921,552	0.47%	124	577	199,293	1.2%	521	1,103	1,095	
GA	2,590,335	1.4%	4,595	2,839,345	1.45%	381	1,778	1,540,627	9.7%	4,025	(826)	-	
ID	2,165,730	1.1%	3,842	2,064,772	1.06%	277	1,293	1,074	0.0%	3	2,823	2,804	
IL	8,694,098	4.5%	15,423	11,457,145	5.86%	1,539	7,175	1,873,417	11.7%	4,894	4,893	4,859	
IN	6,233,599	3.3%	11,058	7,674,306	3.92%	1,031	4,806	1,591,222	10.0%	4,157	3,126	3,104	
IA	7,577,728	4.0%	13,442	11,045,960	5.65%	1,483	6,917	351,780	2.2%	919	7,090	7,040	
KS	1,592,909	0.8%	2,826	1,342,308	0.69%	180	841	186,953	1.2%	488	1,677	1,665	
KY	1,634,163	0.9%	2,899	1,385,653	0.71%	186	868	153,548	1.0%	401	1,816	1,804	
LA	1,241,211	0.6%	2,202	1,110,030	0.57%	149	695	57,920	0.4%	151	1,504	1,494	
ME	40,034	0.0%	71	-	0.00%	-	-	40,759	0.3%	106	(35)	-	
MD	644,925	0.3%	1,144	255,061	0.13%	34	160	80,187	0.5%	209	809	803	
MA	134,661	0.1%	239	151,179	0.08%	20	95	119,527	0.7%	312	(148)	-	
MI	372,122	0.2%	660	-	0.00%	-	-	372,371	2.3%	973	(313)	-	
MN	1,624,049	0.8%	2,881	2,089,078	1.07%	281	1,308	155,572	1.0%	406	1,447	1,437	
MS	1,769,067	0.9%	3,138	1,960,973	1.00%	263	1,228	358,230	2.2%	936	1,238	1,229	
MO	5,782,505	3.0%	10,258	3,276,375	1.67%	440	2,052	605,123	3.8%	1,581	7,065	7,016	
MT	4,752,371	2.5%	8,430	5,626,995	2.88%	756	3,524	-	0.0%	-	5,662	5,623	
NE	10,734,546	5.6%	19,042	14,623,146	7.47%	1,964	9,157	10,763	0.1%	28	11,821	11,739	
NV	5,049,679	2.6%	8,958	6,373,599	3.26%	856	3,991	12,516	0.1%	33	5,790	5,750	
NH	17,812	0.0%	32	-	0.00%	-	-	23,029	0.1%	60	(29)	-	
NJ	532,231	0.3%	944	526,384	0.27%	71	330	233,248	1.5%	609	76	75	
NM	11,715,157	6.1%	20,782	8,115,450	4.15%	1,090	5,082	673	0.0%	2	16,788	16,671	
NY	1,152,809	0.6%	2,045	1,292,062	0.66%	174	809	330,304	2.1%	863	547	543	
NC	1,246,476	0.7%	2,211	1,002,268	0.51%	135	628	290,133	1.8%	758	960	954	
ND	1,930,749	1.0%	3,425	2,816,536	1.44%	378	1,764	-	0.0%	-	2,040	2,025	
OH	6,456,081	3.4%	11,453	7,318,571	3.74%	983	4,583	330,648	2.1%	864	6,989	6,940	
OK	9,499,040	5.0%	16,851	7,173,536	3.67%	963	4,492	264,779	1.7%	692	12,630	12,542	
OR	2,414,997	1.3%	4,284	2,203,220	1.13%	296	1,380	192,489	1.2%	503	2,697	2,679	
PA	6,593,344	3.4%	11,696	7,558,451	3.86%	1,015	4,733	857,366	5.4%	2,240	5,738	5,698	
RI	12,818	0.0%	23	-	0.00%	-	-	4,133	0.0%	11	12	12	
SC	756,408	0.4%	1,342	769,780	0.39%	103	482	137,990	0.9%	360	603	598	
SD	776,525	0.4%	1,378	-	0.00%	-	-	-	0.0%	-	1,378	1,368	
TN	6,090,384	3.2%	10,804	3,132,294	1.60%	421	1,961	406,739	2.5%	1,063	8,201	8,144	
TX	13,423,238	7.0%	23,812	11,424,195	5.84%	1,534	7,154	1,165,267	7.3%	3,044	15,148	15,043	
UT	7,882,143	4.1%	13,982	11,616,955	5.94%	1,560	7,275	13,852	0.1%	36	8,232	8,174	
VT	4,025	0.0%	7	-	0.00%	-	-	2,741	0.0%	7	(0)	-	
VA	2,932,800	1.5%	5,203	2,039,233	1.04%	274	1,277	176,395	1.1%	461	3,739	3,713	
WA	2,202,289	1.1%	3,907	2,272,051	1.16%	305	1,423	334,725	2.1%	874	1,915	1,901	
WV	607,778	0.3%	1,078	393,677	0.20%	53	247	27,111	0.2%	71	814	808	
WI	2,156,598	1.1%	3,826	2,527,693	1.29%	339	1,583	640,233	4.0%	1,673	910	903	
WY	5,925,890	3.1%	10,512	5,488,933	2.81%	737	3,437	1,996	0.0%	5	7,807	7,753	
TOTAL	191,551,212	100%	339,801	195,632,477	100%	26,270	122,506	15,956,263	100%	41,684	201,882	201,882	
AUG_11													
										TTL POS ERs	203,295		
										TTL NEG ERs	1,413		
										TTL ERs CHECK	201,882		

APPENDIX B

Calculation Procedures

This appendix includes the procedures and formulae used to calculate total baseline emissions (BE), project emissions (PE), and emission reductions (ERs) for JB Hunt's Intermodal (JBI) transport project. The procedures are in two parts:

- Part A describes the procedures for calculation of total BE, PE, and ERs across all states based on JBI's overall operations in the US.
- Part B describes the procedures used to split the total values calculated in Part A by State based on the miles traveled by JBI freight via train and truck (dray) in each state.

An example calculation for August 2010 is also included.

PART A- Procedures to Calculate Total Emissions and Emission Reductions

Baseline Emissions

The 2010 data for intermodal transport in the US indicates that about 16 percent of the total loads transported by intermodal rail and truck were transported by rail. Therefore under the project baseline, 16 percent of the loads are assumed to be transported by intermodal rail and the remaining 84 percent were transported by JB Hunt's truck fleet (JBT). Emissions from each mode are calculated as shown.

Truck

Total fuel consumed by JBT trucks under the baseline was calculated by dividing the baseline truck miles by the weighted average of JBT and independent contractor (IC) fuel economies. Monthly truck miles were calculated from the Rand McNally loaded JBI miles and the industry intermodal average for truck. To determine the actual miles that would have been driven, the Rand McNally loaded miles for each year were multiplied by monthly loaded mile adjustment and variance factors. Baseline emissions were calculated by multiplying the fuel consumption by the GHG emission factors for the trucks.

$$\text{Baseline Emissions}_{\text{truck}} = \frac{(\text{Loaded JBI Miles} \times (1 - I_{\text{avg}}/100) \times \text{Load Adjustment Factor} \times \text{Variance Factor} / \text{JBT/IC weighted average fuel Economy}) \times \text{GHG EFs}}$$

Where:

$$\text{Loaded JBI Miles} = \text{Monthly loaded Rand McNally Miles for the JBI fleet}$$

$$I_{\text{avg}} = \text{Industry average intermodal factor (\%)}$$

$$\text{JBT/IC Fuel Economy} = \text{Miles per US gal, monthly weighted average for the JBT and IC fleets}$$

$$\text{GHG EFs} = \text{CO}_2 \text{ Emissions Factor} + \text{CH}_4 \text{ Emissions Factor} + \text{N}_2\text{O Emissions Factor}$$

Using this equation baseline truck emissions for August 2010 are calculated as,

$$\text{Baseline Emissions}_{\text{truck}} = (170,318,725 \text{ miles} \times (1 - 16.00/100) \times 1.1463 \times 1.0885) / 6.0549 \text{ miles/US gal.} \times ((0.01015 \text{ tonne CO}_2/\text{US gal}) + (3.02 \times 10^{-8} \text{ tonne CH}_4/\text{US gal.} \times 21) + (2.84 \times 10^{-8} \text{ tonne N}_2\text{O}/\text{US gal} \times 310))$$

$$\text{Baseline Truck Emissions (Aug. 2010)} = 299,519 \text{ tonnes CO}_2\text{e}$$

Intermodal (includes train and truck dray)

In order to calculate the emissions from freight that would have been transported by rail an emission factor based on the project emissions was used. As intermodal mode of transportation uses rail as well as truck drayage transport; emissions from both sources were included. The calculated emission factor, which is expressed in tonnes CO₂e per ton-mile of freight transported, was multiplied by the fraction of intermodal baseline miles and average weight of the freight to get the baseline emissions from intermodal.

The calculation for the emission factor is shown under Project Emissions. The monthly baseline is calculated using the following equation:

$$\text{Baseline Emissions}_{\text{intermodal}} = (\text{Loaded JBI Miles} \times (\text{Iavg}/100) \times \text{Average Weight of Freight (tons)} \\ \times \text{Emission factor based on the total project emissions (tonnes CO}_2\text{e/ton-mile)}).$$

Using this equation, baseline intermodal emissions for August 2010 are calculated as,

$$\text{Baseline Emissions}_{\text{intermodal}} = (170,318,725 \text{ miles} \times 16.00/100) \times 19.292 \text{ tonnes} \\ \times 0.00004494 \text{ tonne CO}_2\text{e/ baseline ton-mile}.$$

$$\text{Baseline Intermodal Emissions (Aug. 2010)} = 23,625 \text{ tonnes CO}_2\text{e}$$

Total Baseline Emissions

$$\text{Total Baseline Emissions} = \text{Baseline Truck Emissions} + \text{Baseline Intermodal Emissions}$$

For Aug. 2010, total baseline emissions are calculated as,

$$\begin{aligned} \text{Total Baseline Emissions (tonnes CO}_2\text{e)} &= 299,519 + 23,625 \\ &= 323,144 \text{ tonnes CO}_2\text{e} \end{aligned}$$

Project Emissions

The project emissions are based on the emissions produced from trucks associated with the JBI truck fleet and the train locomotives hauling J.B. Hunt freight. The fuel economies of the trucks are reported as miles per gallon (mpg) and the fuel economies of the trains are derived from the reported energy intensities.

Truck

Total fuel consumption includes fuel consumption of the JBI, IC, and outsourced (OS) truck fleets and was calculated using the following equation:

$$\text{Truck Fuel Consumption} = (\text{JBI Miles} / \text{JBI Truck Fuel Economy}) + (\text{IC Miles} / \text{IC Truck Fuel Economy}) \\ + (\text{OS Truck Miles} / \text{OS Truck Fuel Economy})$$

Where:

$$\begin{aligned} \text{JBI or IC or OS Miles} &= \text{Rand McNally Miles} \times \text{Load Adjustment Factor} \times \text{Variance Factor} \\ \text{JBI, IC, or OS Fuel Economy} &= \text{Monthly average mpg values for each category} \end{aligned}$$

Using this equation, truck fuel consumption for August 2010 is calculated as,

$$\text{JBI Fuel Consumed} = ((11,502,580 \text{ miles} \times 1.4799 \times 1.0885) / 6.1870 \text{ miles/US gal.}) + ((148,694 \text{ miles} \times 1.4585 \times 1.0885) / 5.756 \text{ miles/US gal.}) + ((2,547,669 \text{ miles} \times 1.0058 \times 1.0885) / 5.006 \text{ miles/US gal.})$$

$$\text{JBI Fuel Consumed} = 2,994,787 + 41,011 + 557,150 \text{ US gal.}$$

$$\text{JBI Truck Fuel Consumption (Aug. 2010)} = 3,592,948 \text{ US gal.}$$

Train

The train fuel consumption was calculated using the following equation:

$$\text{JBI Train Fuel Consumption US gal} = (\text{Energy Intensity by railway (Btu/ton-mile)} \times \text{fuel intensity adjustment factor} / 138,700 \text{ Btu/US gal.}) \times \text{Average Weight of Freight (tons)} \times \text{Actual rail miles (miles)}$$

Where:

Energy Intensity by railway = Individual railway reported fuel efficiency of Class 1 freight transport
Fuel Intensity Adjustment factor = Increase in fuel intensity of intermodal rail transport compared to Class 1 (average value = 1.22)

Actual rail miles = Rand McNally miles x PC rail and empty mile adjustment factors

Using this equation, train fuel consumption for August 2010 is calculated as,

$$\begin{aligned} \text{Train Fuel Consumption} &= (278 \text{ Btu/ton-mile}_{\text{BNSF}} \times 1.22 / 138,700 \text{ Btu/US gal.}) \\ &\times (19.2922 \text{ tons} \times 131,879,741 \times 1.2107 \text{ miles}_{\text{BNSF}}) + \\ &(336 \text{ Btu/ton-mile}_{\text{NS}} \times 1.22 / 138,700 \text{ Btu/US gal.}) \\ &\times (19.2922 \text{ tons} \times 30,204,675 \times 1.2107 \text{ miles}_{\text{NS}}) + \\ &(287 \text{ Btu/ton-mile}_{\text{Avg. Class 1}} \times 1.22 / 138,700 \text{ Btu/US gal.}) \\ &\times (19.2922 \text{ tons} \times 20,922,933 \times 1.2107 \text{ miles}_{\text{Avg Class 1}}) \end{aligned}$$

$$\text{Train Fuel Consumption} = 7,531,048 + 2,084,020 + 1,231,842 \text{ US gal.}$$

$$\text{Train Fuel Consumption (Aug. 2010)} = 10,846,910 \text{ US gal.}$$

Total Project Emissions

To calculate total project emissions, the diesel fuel consumption for both the truck and train components were multiplied by their respective GHG emissions factors using the following equation:

$$\text{Project Emissions} = (\text{JBI Fleet Fuel Consumed} + \text{Train Fuel Consumed}) \times (\text{GHG Emissions Factors})$$

Using this equation, total project emissions for August 2010 are calculated as,

$$\begin{aligned} \text{Project Emissions} &= 3,592,942 \text{ US gal.} \times [(0.01015 \text{ tonne CO}_2\text{/US gal.}) + (3.02 \times 10^{-8} \text{ tonne CH}_4\text{/US gal.} \times 21) + (2.84 \times 10^{-8} \text{ tonne N}_2\text{O/US gal.} \times 310)] + \\ &10,846,910 \text{ US gal.} \times [(0.01015 \text{ tonne CO}_2\text{/US gal.}) + (8.00 \times 10^{-7} \text{ tonne CH}_4\text{/US gal.} \times 21) + (2.60 \times 10^{-7} \text{ tonne N}_2\text{O/US gal.} \times 310)] \\ &= 36,502 \text{ tonnes CO}_2\text{e (dray truck)} + 111,153 \text{ tonnes CO}_2\text{e (train)} \end{aligned}$$

$$\text{Project Emissions (Aug. 2010)} = 147,655 \text{ tonnes CO}_2\text{e}$$

Calculation of emission factor for intermodal train transport

The emission factor for baseline emissions from intermodal train transport is calculated by using the following equation:

$$\text{Emission Factor} = \frac{\text{Total monthly project emissions}}{(\text{Average monthly weight of freight in tons} \times \text{monthly loaded JBI miles})}$$

Using this equation, the emission factor for August 2010 is calculated as,

$$\text{Emission factor (August 2010)} = 147,655 \text{ tonnes CO}_2\text{e} / (170,318,725 \times 19.2922)$$

$$\text{Emission factor (August 2010)} = 0.00004894 \text{ tonne CO}_2\text{e} / \text{baseline ton-mile.}$$

Emission Reductions

The following equation is used to determine the annual emissions reductions.

$$\text{ERs} = \text{Baseline Emissions} - \text{Project Emissions}$$

$$\text{ERs Aug. 2010} = 323,144 \text{ tonnes CO}_2\text{e} - 147.655 \text{ tonnes CO}_2\text{e}$$

$$\text{ERs Aug. 2010} = 175,489 \text{ tonnes CO}_2\text{e}$$

A summary of the calculated emissions and ERs for August 2010 is shown in Table B-1.

Table B-1 Emissions Summary for August 2010 (tonnes CO₂e)

Baseline (truck)	299,519
Baseline Intermodal (train + dray truck)	23,625
Total Baseline (BE)	323,144
Project Intermodal (train)	111,153
Project Intermodal (dray truck)	36,502
Total Project (PE)	147,655
Emission Reductions (ER = BE - PE)	175,489

PART B - Procedures to Split Total Emissions and ERs by State

Emissions generated by the project in each State are proportional to the miles traveled in that State. Therefore for each emission source shown in Table B-1, calculated monthly emissions were split among the states based on the miles traveled within each State. The following procedures were used to calculate the breakdown of miles traveled in each State. The source of emissions to which each step is applied is also indicated.

Step A: Calculate road miles traveled by state based on load origin and destination cities:

Under the baseline, the majority of JBI loads would have been transported by truck using the most practical route between the origin and destination cities. In this step, the mileage between all pairs of origin and destination cities are aggregated by State and are used to calculate the splits for “Baseline Truck” source of emissions.

Key Assumptions:

- Use PCMiller 21 to estimate highway miles by state.
- Select single month to run.
- The Norfolk Southern Toledo, OH ramp zip code 43602 is not recognized by PCMiller 21. Used zip 43601 as a substitute.
- Loads moving to/from Canadian ramps are included in the monthly spreadsheet data for the Intermodal Project. They are excluded from this process because Canadian Postal Codes are not recognized in PCMiller BatchPro.

Process:

- Use Access database IMMilesByState.mdb
- Develop the following queries:
 - Qry 007 Train Load by Orig and Dest for Batch 2010
 - Creates table tblDetail
 - List of origin and destination pair zip codes (one record for each load [not empty])
 - Numerous queries to replace invalid zip codes.
 - Open qry 031... can change create table name (tblIMMYYYYODPairs).
- Run macro macReplace Zips ODPairs
 - Create table tblIMMYYYY ODPairs
 - Excludes all ramp pairs with a Canadian postal code as the origin or destination
- Export tblIMMYYYY ODPairs as tab delimited text file with no text qualifiers.

Batch Process Results:

Column Headers in Results file

- Column 1: State
- Column 2: Total Miles
- Column 3: Toll Miles
- Column 4: Freeway Miles
- Column 5: Ferry Miles

State	Total Miles	Toll Miles	Freeway Miles	Ferry Miles
AL	1798169.6	0.1	1798169.5	0.0
AZ	12129814.8	0.0	12129814.8	0.0
AR	4839906.3	0.0	4839906.3	0.0
CA	13156286.4	3120.5	13153165.9	0.0
CO	6700018.2	30679.3	6669338.9	0.0
CT	295990.5	0.0	295990.5	0.0
DE	40058.1	5752.6	34305.6	0.0
DC	71.1	0.0	71.1	0.0
FL	864554.7	128968.3	735586.4	0.0
GA	2010676.3	0.0	2010676.3	0.0
ID	1749469.0	0.0	1749469.0	0.0
IL	7381675.2	951556.3	6430118.9	0.0
IN	5301060.3	1812047.5	3489012.7	0.0
IA	6853376.9	0.2	6853376.7	0.0
KS	1451363.3	128183.9	1323179.4	0.0
KY	1179877.2	0.0	1179877.2	0.0
LA	929084.6	0.0	929084.6	0.0
ME	36918.7	24328.9	12589.8	0.0
MD	491379.1	8038.9	483340.2	0.0
MA	121798.4	24875.7	96922.8	0.0
MI	370801.0	0.0	370801.0	0.0
MN	1454418.6	0.0	1454418.6	0.0
MS	1368302.4	0.0	1368302.4	0.0
MO	5116031.2	0.0	5116031.2	0.0
MT	4420342.9	0.0	4420342.9	0.0
NE	9666629.7	0.1	9666629.6	0.0
NV	4678374.0	0.0	4678374.0	0.0
NH	18277.6	5216.6	13060.9	0.0
NJ	490791.3	53009.5	437781.8	0.0
NM	10634422.6	0.0	10634422.6	0.0
NY	984668.8	562791.9	421876.9	0.0
NC	912003.7	0.0	912003.7	0.0
ND	1744976.9	0.0	1744976.9	0.0
OH	5576162.2	2826371.1	2749791.1	0.0
OK	8636649.7	2083504.6	6553145.1	0.0
OR	1844857.3	16.1	1844841.2	0.0
PA	5791833.6	1370462.1	4421371.5	0.0
RI	12866.8	0.0	12866.8	0.0
SC	625398.0	0.0	625398.0	0.0
SD	809755.8	0.0	809755.8	0.0
TN	5008418.4	0.0	5008418.4	0.0
TX	11182854.0	8025.7	11174828.3	0.0
UT	7197510.7	23.9	7197486.8	0.0
VT	8028.6	0.0	8028.6	0.0
VA	2284326.0	615.6	2283710.4	0.0
WA	2055881.0	20.1	2055860.9	0.0
WV	416398.3	66667.4	349730.9	0.0
WI	1839688.9	0.0	1839688.9	0.0
WY	5309661.7	0.0	5309661.7	0.0
Total	167791880.4	10094276.9	157697603.4	0.0

Figure B-1 Step A Results for August 2010

Step B: Calculate miles traveled by state based on rail ramp-to-ramp pairs

Under the project condition, JBI loads are transported by truck (dray) to a rail ramp nearest to the point of origin and dispatched by rail to the ramp nearest the point of destination. There may be some intermediate ramp-to-ramp transfers. Loads are finally delivered from the destination ramp to the customer via dray truck. In this step, the mileage between all ramp pairs used by JBI are aggregated by state and used to calculate the splits for “Project Intermodal (train)” source of emissions. Project Dray miles are aggregated in Step C.

The results of this step were also used to calculate the splits for the “Baseline Intermodal (train + dray truck)” source of emissions. As indicated in Section 2, a small percentage of the loads about 16 percent

would have been transported via intermodal under the baseline. Since baseline intermodal emissions are about 13 percent of total ERs, and dray emissions are about 25 percent of total baseline intermodal emissions, baseline intermodal dray emissions are only about 3 percent of the total ERs. Therefore using this Step to split baseline dray emissions (instead of Step C) does not materially affect the ER splits.

Key Assumptions:

- Use PCMiller 21 to estimate rail miles by state
- Select single month to run.
- The Norfolk Southern Toledo, OH ramp zip code 43602 is not recognized by PCMiller 21. Used zip 43601 as a substitute.
- Loads moving to/from Canadian ramps are included in the monthly spreadsheet data for the Intermodal Project. They are excluded from this process because Canadian Postal Codes are not recognized in PCMiller BatchPro.

Process:

- Create Access database IMMilesByState.mdb
- Use QMF query Blue_Source_Q4_IMT as a guide (match the criteria used in the monthly spreadsheet data) to create query qry Train Load by Ramp Pair for Batch 2010.
- Develop the following queries and run them in order:
 - Qry 005 Train Load by Ramp Pair for Batch 2010
 - Creates table tblDetail
 - List of origin and destination ramp pair zip codes (one record for each load [not empty] moved between the ramp pair)
 - Qry 010 Change Orig Zip 43602 to 43601
 - Replaces all origin 43602 zips with 43601 since 43602 is invalid in PCMiller (238 records changed)
 - Qry 020 Change Dest Zip 43602 to 43601
 - Replaces all destination 43602 zips with 43601 (300 records changed)
 - Qry 030 Eliminate Canadian Zips
 - Create table tblMMYYYYY (change output table name)
 - Excludes all ramp pairs with a Canadian postal code as the origin or destination
 - Export tblMMYYYYY as tab delimited text file with no text qualifiers.
- Run PCMiller Batch Pro
 - Borders Open not checked will prevent US origin/destination loads from crossing into Canada.
 - Run PCMiller Practical routes.
 - Generate the State mileage report with distances in miles.

State	Column 1	Column 2	Column 3	Column 4
AL	2317778.8	0.0	2317778.8	0.0
AZ	9153432.1	0.0	9153432.1	0.0
AR	3597727.1	0.0	3597727.1	0.0
CA	12871745.0	0.0	12871745.0	0.0
CO	11030298.8	0.0	11030298.8	0.0
CT	209416.3	0.0	209416.3	0.0
DE	28999.0	2368.1	26630.9	0.0
FL	764736.3	80862.0	683874.3	0.0
GA	2146592.6	0.0	2146592.6	0.0
ID	1665719.7	0.0	1665719.7	0.0
IL	9774346.5	956902.2	8817444.3	0.0
IN	6327968.9	3645395.8	2682573.1	0.0
IA	10037481.4	0.0	10037481.4	0.0
KS	1320208.1	135022.4	1185185.7	0.0
KY	1047851.2	0.0	1047851.2	0.0
LA	1024533.4	0.0	1024533.4	0.0
MD	175999.0	5397.8	170601.2	0.0
MA	116456.4	25766.3	90690.1	0.0
MN	1936769.7	0.0	1936769.7	0.0
MS	1725749.2	0.0	1725749.2	0.0
MO	2624383.5	0.0	2624383.5	0.0
MT	5225606.2	0.0	5225606.2	0.0
NE	13411744.5	0.0	13411744.5	0.0
NV	6007994.8	0.0	6007994.8	0.0
NJ	489556.2	51334.4	438221.8	0.0
NM	6951520.6	0.0	6951520.6	0.0
NY	1144418.7	259202.8	885215.9	0.0
NC	685842.3	0.0	685842.3	0.0
ND	2615657.8	0.0	2615657.8	0.0
OH	6340209.7	4619320.1	1720889.6	0.0
OK	5879426.4	1078524.7	4800901.8	0.0
OR	1733692.7	0.0	1733692.7	0.0
PA	6643645.4	741697.8	5901947.6	0.0
SC	671455.9	0.0	671455.9	0.0
TN	2089777.5	0.0	2089777.5	0.0
TX	10089971.4	34922.8	10055048.6	0.0
UT	10846588.2	0.0	10846588.2	0.0
VA	1420260.6	0.0	1420260.6	0.0
WA	2206042.5	0.0	2206042.5	0.0
WV	290358.5	60044.4	230314.1	0.0
WI	2330240.0	0.0	2330240.0	0.0
WY	4921599.8	0.0	4921599.8	0.0
Total	171893802.6	11696761.6	160197041.1	0.0

Figure B-2 Step B Results for August 2010

Step C: Calculate dray miles traveled by State based on load origin/destination and rail ramps.

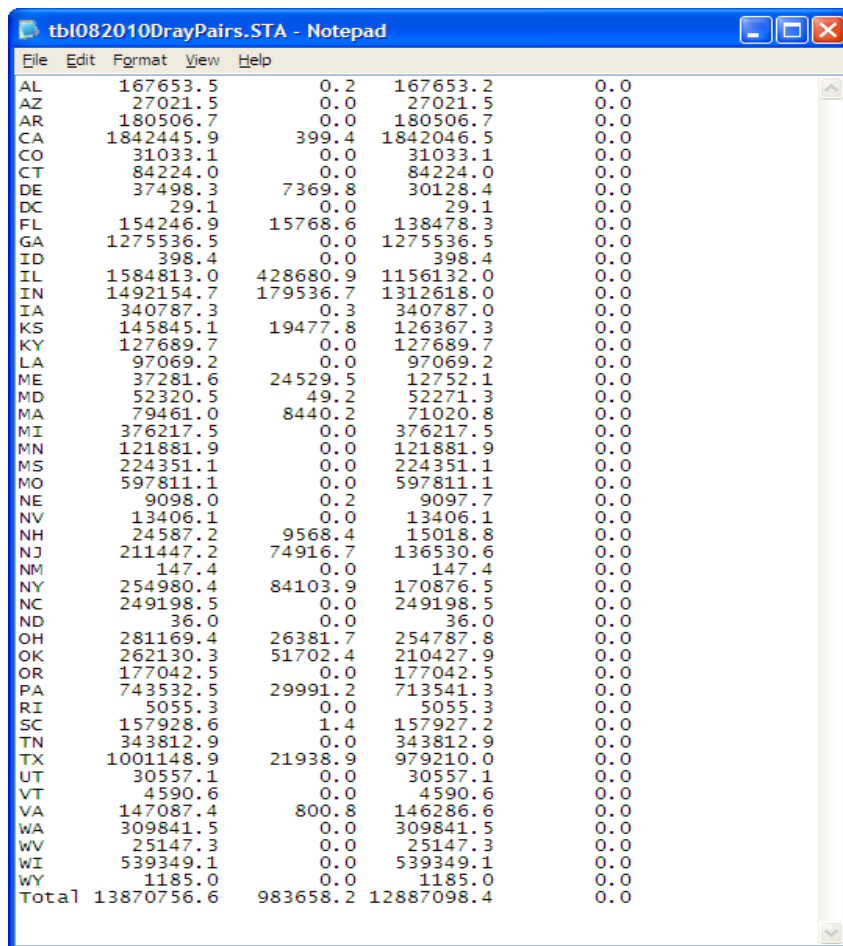
Under the project condition, dray miles occur in those states where JBI or contractor trucks pick up and deliver loads between customer locations and rail ramps. In this step the miles traveled by dray trucks in each State are aggregated and are used to calculate the splits for “Project Intermodal (dray truck)” source of emissions.

Key Assumptions:

- Use PCMIler 21 to estimate dray miles by state.
- Select single month to run.
- The Norfolk Southern Toledo, OH ramp zip code 43602 is not recognized by PCMIler 21. Used zip 43601 as a substitute.
- Loads moving to/from Canadian ramps are included in the monthly spreadsheet data for the Intermodal Project. They are excluded from this process because Canadian Postal Codes are not recognized in PCMIler BatchPro.

Process:

- Use Access database IMMilesByState.mdb
- Develop the following queries:
 - Qry 008 Train Load Shipper to Orig Ramp for Batch 2010
 - Qry 009 Train Load Dest Ramp to Receiver for Batch 2010
 - Populates table tblDetail
 - Numerous queries to replace invalid zip codes.
 - Open qry 031 and change output file name (tblMMYYYY Dray Pairs).
- Run macro macReplace Zip Dray Pairs
 - Create table tblMMYYYY DrayPairs
 - Export tblMMYYYY DrayPairs as tab delimited text file with no text qualifiers.
- Run the text file through PCMiller BatchPro.



The screenshot shows a Notepad window titled "tbl082010DrayPairs.STA - Notepad". The window contains a tab-delimited text file with the following data:

AL	167653.5	0.2	167653.2	0.0
AZ	27021.5	0.0	27021.5	0.0
AR	180506.7	0.0	180506.7	0.0
CA	1842445.9	399.4	1842046.5	0.0
CO	31033.1	0.0	31033.1	0.0
CT	84224.0	0.0	84224.0	0.0
DE	37498.3	7369.8	30128.4	0.0
DC	29.1	0.0	29.1	0.0
FL	154246.9	15768.6	138478.3	0.0
GA	1275536.5	0.0	1275536.5	0.0
ID	398.4	0.0	398.4	0.0
IL	1584813.0	428680.9	1156132.0	0.0
IN	1492154.7	179536.7	1312618.0	0.0
IA	340787.3	0.3	340787.0	0.0
KS	145845.1	19477.8	126367.3	0.0
KY	127689.7	0.0	127689.7	0.0
LA	97069.2	0.0	97069.2	0.0
ME	37281.6	24529.5	12752.1	0.0
MD	52320.5	49.2	52271.3	0.0
MA	79461.0	8440.2	71020.8	0.0
MI	376217.5	0.0	376217.5	0.0
MN	121881.9	0.0	121881.9	0.0
MS	224351.1	0.0	224351.1	0.0
MO	597811.1	0.0	597811.1	0.0
NE	9098.0	0.2	9097.7	0.0
NV	13406.1	0.0	13406.1	0.0
NH	24587.2	9568.4	15018.8	0.0
NJ	211447.2	74916.7	136530.6	0.0
NM	147.4	0.0	147.4	0.0
NY	254980.4	84103.9	170876.5	0.0
NC	249198.5	0.0	249198.5	0.0
ND	36.0	0.0	36.0	0.0
OH	281169.4	26381.7	254787.8	0.0
OK	262130.3	51702.4	210427.9	0.0
OR	177042.5	0.0	177042.5	0.0
PA	743532.5	29991.2	713541.3	0.0
RI	5055.3	0.0	5055.3	0.0
SC	157928.6	1.4	157927.2	0.0
TN	343812.9	0.0	343812.9	0.0
TX	1001148.9	21938.9	979210.0	0.0
UT	30557.1	0.0	30557.1	0.0
VT	4590.6	0.0	4590.6	0.0
VA	147087.4	800.8	146286.6	0.0
WA	309841.5	0.0	309841.5	0.0
WV	25147.3	0.0	25147.3	0.0
WI	539349.1	0.0	539349.1	0.0
WY	1185.0	0.0	1185.0	0.0
Total	13870756.6	983658.2	12887098.4	0.0

Figure B-3 Step C Results for August 2010

Step D. Split total emissions based on miles traveled in each State

Emissions from each source shown in Table B-1 are split by State using the following equation

$$E_{i,j,k} = (SM_{i,j}) / (TM_j) \times ES_{j,k}$$

where,

- $E_{i,j,k}$ = Emissions in State i during month j from source k (tonnes CO₂e)
- $SM_{i,j}$ = Total miles traveled in State i during month j using appropriate STEP A,B, or C
- TM_j = Total miles traveled in all states during month j using same STEP A, B, or C
- $ES_{j,k}$ = Total emissions in month j from source k (tonnes CO₂e)

Example Calculation

As an example, calculations for the State of Alabama during Aug. 2010 are outlined below.

Baseline truck emissions are calculated using mileage splits from Step A (Figure B-1)

$$\begin{aligned} E_{AL, \text{ Aug 2010, baseline truck}} &= 1,798,169.6 / 167,791,880.4 \times 299,519 \\ &= 3,210 \text{ tonnes CO}_2\text{e} \end{aligned}$$

Baseline intermodal emissions (train + dray truck) are calculated using data from Step B (Figure B-2)

$$\begin{aligned} E_{AL, \text{ Aug 2010, baseline intermodal}} &= 2,317,778.8 / 171,893,802.6 \times 23,625 \\ &= 319 \text{ tonnes CO}_2\text{e} \end{aligned}$$

Project intermodal emissions (train) are calculated using data from Step B (Figure B-2)

$$\begin{aligned} E_{AL, \text{ Aug 2010, project train}} &= 2,317,778.8 / 171,893,802.6 \times 111,153 \\ &= 1,499 \text{ tonnes CO}_2\text{e} \end{aligned}$$

Project intermodal emissions (dray truck) are calculated using data from Step C (Figure B-3)

$$\begin{aligned} E_{AL, \text{ Aug 2010, project dray truck}} &= 167,653.5 / 13,870,756.6 \times 36,502 \\ &= 441 \text{ tonnes CO}_2\text{e} \end{aligned}$$

Emission reductions are calculated as the difference between baseline and project emissions.

Accordingly,

$$\begin{aligned} ER_{AL, \text{ Aug 2010}} &= (3,210 + 319) - (1,499 + 441) \\ &= 1,588 \text{ tonnes CO}_2\text{e} \end{aligned}$$

A similar procedure was used to calculate ERs for the other states.

Table B-2 shows the calculated breakdown of emissions by State for August 2010. Calculated ERs and the ERs corrected for leakage (described below) are also shown in the table.

Leakage Correction

While ERs in Alabama are positive, the transport of JBI loads via intermodal can cause small emission increases in other States when compared to the baseline (leakage). For example in the State of Georgia, the Atlanta ramp is a major hub for intermodal traffic. This results in increased drayage transport emissions within the State from the movement of goods from neighboring states that use this hub. The net effect is an emission increase in Georgia.

Total leakage emissions are small (~1 percent of total ERs). To account for these emission increases, the calculated ERs for each state with an emission increase (i.e. negative ER) was set to zero and the ERs for each of the remaining states were reduced in proportion to its share of the total ERs. The total ERs across all states remained unchanged.

As shown in Table B-2 for August 2010, a total of 176,835 tonnes CO₂e of emission decreases (positive ERs) and a total of 1,346 tonnes CO₂e of emission increases (negative ERs) were generated. The ERs for Alabama were corrected as

$$\begin{aligned} \text{Corrected ER}_{AL, \text{ Aug 2010}} &= 1,588 - 1,588 / 176,835 \times 1,346 \\ &= 1,576 \text{ tonnes CO}_2\text{e} \end{aligned}$$

Table B-2 Breakdown of Emissions and Emission Reductions by State for Aug. 2010

ST	ORIGIN-TO-DESTINATION - TRUCK EMISSIONS			RAMP-TO-RAMP PAIRS - INTERMODAL EMISSIONS				INTERMODAL DRAY EMISSIONS			EMISSION REDUCTIONS (tonnes CO ₂ e)	EMISSION REDUCTIONS CORRECTED FOR LEAKAGE (tonnes CO ₂ e)
	TTL Miles	Miles (% of total)	BASELINE TRUCK EMISSIONS (tonnes CO ₂ e)	TTL Miles	Miles (% of total)	BASELINE INTERMODAL EMISSIONS (tonnes CO ₂ e)	PROJECT INTERMODAL EMISSIONS (tonnes CO ₂ e)	TTL Miles	Miles (% of total)	PROJECT DRAY EMISSIONS (tonnes CO ₂ e)		
AL	1,798,170	1.1%	3,210	2,317,779	1.35%	319	1,499	167,654	1.2%	441	1,588	1,576
AZ	12,129,815	7.2%	21,652	9,153,432	5.33%	1,258	5,919	27,022	0.2%	71	16,920	16,792
AR	4,839,906	2.9%	8,640	3,597,727	2.09%	494	2,326	180,507	1.3%	475	6,333	6,284
CA	13,156,286	7.8%	23,485	12,871,745	7.49%	1,769	8,323	1,842,446	13.3%	4,849	12,082	11,990
CO	6,700,018	4.0%	11,960	11,030,299	6.42%	1,516	7,133	31,033	0.2%	82	6,262	6,214
CT	295,991	0.2%	528	209,416	0.12%	29	135	84,224	0.6%	222	200	199
DE	40,058	0.0%	72	28,999	0.02%	4	19	37,498	0.3%	99	(42)	-
DC	71	0.0%	0	-	0.00%	-	-	29	0.0%	0	0	0
FL	864,555	0.5%	1,543	764,736	0.44%	105	495	154,247	1.1%	406	748	742
GA	2,010,676	1.2%	3,589	2,146,593	1.25%	295	1,388	1,275,537	9.2%	3,357	(861)	-
ID	1,749,469	1.0%	3,123	1,665,720	0.97%	229	1,077	398	0.0%	1	2,274	2,256
IL	7,381,675	4.4%	13,177	9,774,347	5.69%	1,343	6,320	1,584,813	11.4%	4,171	4,029	3,998
IN	5,301,060	3.2%	9,463	6,327,969	3.68%	870	4,092	1,492,155	10.8%	3,927	2,314	2,296
IA	6,853,377	4.1%	12,234	10,037,481	5.84%	1,380	6,491	340,787	2.5%	897	6,226	6,178
KS	1,451,363	0.9%	2,591	1,320,208	0.77%	181	854	145,845	1.1%	384	1,535	1,523
KY	1,179,877	0.7%	2,106	1,047,851	0.61%	144	678	127,690	0.9%	336	1,237	1,227
LA	929,085	0.6%	1,658	1,024,533	0.60%	141	662	97,069	0.7%	255	881	875
ME	36,919	0.0%	66	-	0.00%	-	-	37,282	0.3%	98	(32)	-
MD	491,379	0.3%	877	175,999	0.10%	24	114	52,321	0.4%	138	650	645
MA	121,798	0.1%	217	116,456	0.07%	16	75	79,461	0.6%	209	(51)	-
MI	370,801	0.2%	662	-	0.00%	-	-	376,218	2.7%	990	(328)	-
MN	1,454,419	0.9%	2,596	1,936,770	1.13%	266	1,252	121,882	0.9%	321	1,289	1,279
MS	1,368,302	0.8%	2,443	1,725,749	1.00%	237	1,116	224,351	1.6%	590	973	966
MO	5,116,031	3.0%	9,132	2,624,384	1.53%	361	1,697	597,811	4.3%	1,573	6,223	6,176
MT	4,420,343	2.6%	7,891	5,225,606	3.04%	718	3,379	-	0.0%	-	5,230	5,190
NE	9,666,630	5.8%	17,256	13,411,745	7.80%	1,843	8,673	9,098	0.1%	24	10,402	10,323
NV	4,678,374	2.8%	8,351	6,007,995	3.50%	826	3,885	13,406	0.1%	35	5,257	5,217
NH	18,278	0.0%	33	-	0.00%	-	-	24,587	0.2%	65	(32)	-
NJ	490,791	0.3%	876	489,556	0.28%	67	317	211,447	1.5%	556	70	70
NM	10,634,423	6.3%	18,983	6,951,521	4.04%	955	4,495	147	0.0%	0	15,443	15,325
NY	984,669	0.6%	1,758	1,144,419	0.67%	157	740	254,980	1.8%	671	504	500
NC	912,004	0.5%	1,628	685,842	0.40%	94	443	249,199	1.8%	656	623	618
ND	1,744,977	1.0%	3,115	2,615,658	1.52%	359	1,691	36	0.0%	0	1,783	1,769
OH	5,576,162	3.3%	9,954	6,340,210	3.69%	871	4,100	281,169	2.0%	740	5,985	5,940
OK	8,636,650	5.1%	15,417	5,879,426	3.42%	808	3,802	262,130	1.9%	690	11,733	11,644
OR	1,844,857	1.1%	3,293	1,733,693	1.01%	238	1,121	177,043	1.3%	466	1,944	1,930
PA	5,791,834	3.5%	10,339	6,643,645	3.86%	913	4,296	743,533	5.4%	1,957	4,999	4,961
RI	12,867	0.0%	23	-	0.00%	-	-	5,055	0.0%	13	10	10
SC	625,398	0.4%	1,116	671,456	0.39%	92	434	157,929	1.1%	416	359	356
SD	809,756	0.5%	1,445	-	0.00%	-	-	-	0.0%	-	1,445	1,434
TN	5,008,418	3.0%	8,940	2,089,778	1.22%	287	1,351	343,813	2.5%	905	6,971	6,918
TX	11,182,854	6.7%	19,962	10,089,971	5.87%	1,387	6,525	1,001,149	7.2%	2,635	12,190	12,097
UT	7,197,511	4.3%	12,848	10,846,588	6.31%	1,491	7,014	30,557	0.2%	80	7,245	7,189
VT	8,029	0.0%	14	-	0.00%	-	-	4,591	0.0%	12	2	2
VA	2,284,326	1.4%	4,078	1,420,261	0.83%	195	918	147,087	1.1%	387	2,967	2,945
WA	2,055,881	1.2%	3,670	2,206,043	1.28%	303	1,427	309,842	2.2%	815	1,731	1,718
WV	416,398	0.2%	743	290,359	0.17%	40	188	25,147	0.2%	66	529	525
WI	1,839,689	1.1%	3,284	2,330,240	1.36%	320	1,507	539,349	3.9%	1,419	678	673
WY	5,309,662	3.2%	9,478	4,921,600	2.86%	676	3,182	1,185	0.0%	3	6,969	6,916
TOTAL	167,791,880	100%	299,519	171,893,803	100%	23,625	111,153	13,870,757	100%	36,502	175,489	175,489
AUG			299,519			23,625	111,153			36,502	175,489	
											TTL POS ERs	176,835
											TTL NEG ERs	1,346
											TTL ERs CHECK	175,489