

Matrix 1a

In-Use Compliance Cost Range Estimates

Oct. 14, 03

This Matrix calculates the in-use cost of compliance for TRUs and TRU gen sets ("TRUs"). It takes the annual TRU population numbers (same as used for emissions inventory purposes) and multiplies them by the capital and annual costs for the compliance technology shown. The capital costs are amortized over an assumed ten-year useful life, and all annual costs are converted to constant year (2002) dollars using standard present worth analysis techniques.

In this scenario, on a year-by-year basis, population figures for each engine category are multiplied by the annualized capital cost and the early retirement allowance factor; these products are then summed to determine the compliance cost for a given year.

Interest Rates Used for Present Worth Analysis

Capital Costs: 0.05 Real interest rate, which is a 7% nominal rate minus an assumed 2% inflation rate
 Annual Costs: 0.05 Real interest rate, which is a 7% nominal rate minus an assumed 2% inflation rate

Assumptions: 10-year useful life for compliance technology; capital cost is amortized over a 10-year period.

Lack of VDECS Scenario:

Early Retirement Allowance Profile (cost factor attributable to ATCM)

Compliance Scenario	Size	Cap. Cost	Ann. Cost	Year												
				1	2	3	4	5	6	7	8	9	10			
LETRU: TRU Replacement	<15 HP	\$10,000	\$0	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
	15-25 HP	\$15,000	\$0	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
	>25 HP	\$20,000	\$0	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
LETRU-GEN: Replacement w/new	>25 HP	\$12,000	\$0	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
	<15 HP	\$4,000	\$0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	15-25 HP	\$4,500	\$0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
ULETRU: Engine Replacement	>25 HP	\$5,000	\$0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	>25 HP	\$5,000	\$0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	>25 HP	\$5,000	\$0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Engine Model Year	Calendar Year	Engine Population Category										Rear/for	Total 25-50 hp (In/lo Only)	Total (this year)	< 15HP	Capital Cost Subtotal	< 15HP	Capital Cost Subtotal	< 15HP	Early																								
		< 15hp	15-25 hp	25-50 hp CA-based	25-50 hp Out-of-State	25-50 hp CA-based	25-50 hp Out-of-State	25-50 hp Rear/for																																				
-2001	2008	2125	880	11162	3721	856	285	822	16846	19851																																		
-1998	2008	1061	462	6045	2015	509	170	539	9278	10801	\$1,373,995																																	
1999	2008	322	195	2215	738	80	27	89	3149	3666	\$1,373,995	\$416,990																																
2000	2008	353	139	1803	601	124	41	94	2663	3155	\$1,373,995	\$416,990	\$457,135																															
2001	2008	383	84	1099	366	142	47	100	1754	2221	\$1,373,995	\$416,990	\$457,135	\$495,985																														
2002	2009	311	124	1419	473	156	52	105	2205	2640	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745																													
2003	2010	326	128	1493	498	172	57	110	2330	2784	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868																												
2004	2011	340	132	1571	524	189	63	116	2463	2935	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868	\$176,120																											
2005	2012	356	136	1652	551	209	70	122	2604	3096	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868	\$176,120	\$184,408																										
2006	2013	372	140	1738	579	230	77	128	2752	3264	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868	\$176,120	\$184,408	\$192,696																									
2007	2014	389	144	1829	610	254	85	135	2913	3446	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868	\$176,120	\$184,408	\$192,696	\$201,502																								
2008	2015	407	148	1924	641	279	93	142	3079	3634	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868	\$176,120	\$184,408	\$192,696	\$201,502	\$210,826																							
2009	2016	426	153	2024	675	308	103	149	3259	3838	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868	\$176,120	\$184,408	\$192,696	\$201,502	\$210,826	\$220,668																						
2010	2017	445	157	2129	710	339	113	157	3448	4050	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868	\$176,120	\$184,408	\$192,696	\$201,502	\$210,826	\$220,668	\$230,510																					
2011	2018	465	162	2240	747	374	125	165	3651	4278	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868	\$176,120	\$184,408	\$192,696	\$201,502	\$210,826	\$220,668	\$230,510	\$240,870																				
2012	2019	486	167	2356	785	412	137	174	3864	4517	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868	\$176,120	\$184,408	\$192,696	\$201,502	\$210,826	\$220,668	\$230,510	\$240,870	\$251,748																			
2013	2020	509	172							681	\$1,373,995	\$416,990	\$457,135	\$495,985	\$402,745	\$168,868	\$176,120	\$184,408	\$192,696	\$201,502	\$210,826	\$220,668	\$230,510	\$240,870	\$251,748	\$263,662																		
2021																											\$184,408	\$192,696	\$201,502	\$210,826	\$220,668	\$230,510	\$240,870	\$251,748	\$263,662	\$1,996,890								
2022																																				\$192,696	\$201,502	\$210,826	\$220,668	\$230,510	\$240,870	\$251,748	\$263,662	\$1,812,482

										Early Retirement																				Capital Cost S																			
										25-50 HP Gen Sets CA-based										25-50 HP Gen Sets CA-based																													
										Capital Cost Subtotal										Early Retirement Cost Subtotal																													
										25-50 HP Gen Sets CA-based										25-50 HP Gen Sets CA-based																													
										Capital Cost Subtotal										Early Retirement Cost Subtotal																													
										\$118,648	\$264,180																														\$264,180	\$39,627							
										\$137,296	\$264,180	\$41,958																														\$306,138	\$39,627						
										\$166,200	\$264,180	\$41,958	\$63,714																												\$369,852	\$39,627							
										\$199,301	\$264,180	\$41,958	\$63,714	\$73,038																											\$442,890	\$39,627							
										\$235,664	\$264,180	\$41,958	\$63,714	\$73,038	\$80,808																										\$523,698	\$39,627							
\$44,548										\$280,212	\$264,180	\$41,958	\$63,714	\$73,038	\$80,808	\$36,908																									\$560,606	\$39,627							
\$44,548	\$48,951									\$329,163	\$264,180	\$41,958	\$63,714	\$73,038	\$80,808	\$36,908	\$40,793																								\$601,398	\$39,627							
\$44,548	\$48,951	\$54,131								\$383,294	\$264,180	\$41,958	\$63,714	\$73,038	\$80,808	\$36,908	\$40,793	\$45,325																							\$646,723	\$39,627							
\$44,548	\$48,951	\$54,131	\$59,570							\$442,864	\$264,180	\$41,958	\$63,714	\$73,038	\$80,808	\$36,908	\$40,793	\$45,325	\$49,858																							\$696,581	\$39,627						
\$44,548	\$48,951	\$54,131	\$59,570	\$65,786						\$508,650	\$264,180	\$41,958	\$63,714	\$73,038	\$80,808	\$36,908	\$40,793	\$45,325	\$49,858	\$55,038																							\$751,618	\$39,627					
\$44,548	\$48,951	\$54,131	\$59,570	\$65,786	\$72,261					\$462,263		\$41,958	\$63,714	\$73,038	\$80,808	\$36,908	\$40,793	\$45,325	\$49,858	\$55,038	\$60,218																							\$547,656					
\$44,548	\$48,951	\$54,131	\$59,570	\$65,786	\$72,261	\$79,772				\$523,387			\$63,714	\$73,038	\$80,808	\$36,908	\$40,793	\$45,325	\$49,858	\$55,038	\$60,218	\$66,693																							\$572,390				
\$44,548	\$48,951	\$54,131	\$59,570	\$65,786	\$72,261	\$79,772	\$87,801			\$582,284				\$73,038	\$80,808	\$36,908	\$40,793	\$45,325	\$49,858	\$55,038	\$60,218	\$66,693	\$73,168																							\$581,844			
\$44,548	\$48,951	\$54,131	\$59,570	\$65,786	\$72,261	\$79,772	\$87,801	\$96,866		\$646,050					\$80,808	\$36,908	\$40,793	\$45,325	\$49,858	\$55,038	\$60,218	\$66,693	\$73,168	\$80,938																							\$589,743		
\$44,548	\$48,951	\$54,131	\$59,570	\$65,786	\$72,261	\$79,772	\$87,801	\$96,866	\$106,708	\$716,394						\$36,908	\$40,793	\$45,325	\$49,858	\$55,038	\$60,218	\$66,693	\$73,168	\$80,938	\$88,708																							\$597,643	
	\$48,951	\$54,131	\$59,570	\$65,786	\$72,261	\$79,772	\$87,801	\$96,866	\$106,708	\$0	\$671,846						\$40,793	\$45,325	\$49,858	\$55,038	\$60,218	\$66,693	\$73,168	\$80,938	\$88,708	\$0																						\$560,735	
	\$54,131	\$59,570	\$65,786	\$72,261	\$79,772	\$87,801	\$96,866	\$106,708	\$0	\$622,895								\$45,325	\$49,858	\$55,038	\$60,218	\$66,693	\$73,168	\$80,938	\$88,708	\$0	\$519,943																					\$519,943	
	\$59,570	\$65,786	\$72,261	\$79,772	\$87,801	\$96,866	\$106,708	\$0	\$568,764										\$49,858	\$55,038	\$60,218	\$66,693	\$73,168	\$80,938	\$88,708	\$0	\$474,618																					\$474,618	

