

Table 4a. Imported refiner acquisition cost of crude oil, projected versus actual

Projected price in constant U.S. dollars

(constant USD per barrel in "dollar year" specific to each AEO)

AEO dollar																														
year*	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
AEO1994	1992	16.69	16.43	16.99	17.66	18.28	19.06	19.89	20.72	21.65	22.61	23.51	24.29	24.90	25.60	26.30	27.00	27.64	28.16											
AEO1995	1993		14.90	16.41	16.90	17.45	18.00	18.53	19.13	19.65	20.16	20.63	21.08	21.50	21.98	22.44	22.94	23.50	24.12											
AEO1996	1994			16.81	16.98	17.37	17.98	18.61	19.27	19.92	20.47	20.97	21.41	21.86	22.25	22.61	22.97	23.34	23.70	24.08	24.45	24.79	25.11	25.43						
AEO1997	1995				19.52	18.54	18.21	18.22	18.20	18.64	18.99	19.28	19.50	19.72	19.89	20.03	20.16	20.29	20.41	20.54	20.68	20.79	20.88	20.98						
AEO1998	1996					18.16	17.99	18.57	19.11	19.36	19.51	19.79	19.99	20.19	20.22	20.37	20.52	20.66	20.81	20.95	21.10	21.23	21.35	21.48	21.62	21.78	21.94	22.11	22.32	
AEO1999	1997						12.37	13.25	13.97	15.21	16.24	17.47	18.40	19.25	20.15	20.90	21.04	21.17	21.30	21.43	21.57	21.69	21.79	21.91	22.03	22.19	22.35	22.53	22.73	
AEO2000	1998							17.13	21.19	20.06	20.18	20.28	20.39	20.49	20.59	20.70	20.79	20.90	21.00	21.10	21.21	21.31	21.42	21.53	21.63	21.74	21.84	21.95	22.04	
AEO2001	1999								27.59	23.81	21.44	20.56	20.74	20.83	20.94	21.05	21.14	21.26	21.37	21.47	21.57	21.67	21.78	21.89	22.00	22.12	22.22	22.33	22.41	
AEO2002	2000									22.48	21.11	22.39	22.59	22.73	22.85	22.99	23.11	23.24	23.36	23.49	23.62	23.74	23.88	24.00	24.14	24.27	24.40	24.55	24.68	
AEO2003	2001										23.33	25.83	24.05	23.27	23.43	23.57	23.71	23.85	23.99	24.14	24.28	24.42	24.57	24.72	24.87	25.02	25.18	25.33	25.48	25.70
AEO2004	2002											27.25	23.84	23.30	23.47	23.65	23.83	24.00	24.17	24.37	24.53	24.72	24.90	25.07	25.26	25.45	25.64	25.84	26.02	26.21
AEO2005	2003												35.00	33.99	30.00	27.35	26.15	25.30	25.00	25.35	25.69	26.04	26.39	26.75	27.10	27.45	27.79	28.14	28.50	28.86
AEO2006	2004													49.70	53.95	51.46	48.98	46.49	43.99	43.78	43.59	43.39	43.19	43.00	43.39	43.78	44.19	44.59	44.99	45.59
AEO2007	2005														61.75	59.49	57.23	54.21	51.20	48.48	46.22	45.01	44.41	44.61	44.81	45.22	45.64	46.05	46.47	47.08
AEO2008	2006															62.10	72.77	68.32	65.18	62.67	60.06	57.36	54.67	52.03	49.37	49.50	50.15	50.92	51.55	52.08
AEO2009	2007																96.46	38.75	48.99	61.99	72.15	80.99	88.62	96.77	101.92	106.21	110.53	112.78	114.50	115.80
AEO2010	2008																	56.49	67.40	66.63	72.94	79.09	83.84	86.88	90.10	92.72	95.59	96.89	98.14	99.33
AEO2011	2009																		74.86	80.32	80.65	82.87	85.07	86.83	88.96	91.56	94.04	96.42	98.65	100.74
AEO2012	2010																			99.99	99.08	106.64	110.90	113.97	111.53	113.12	113.75	114.63	115.74	116.81
AEO2013	2011																				101.31	96.02	93.95	92.92	94.04	96.15	98.16	100.21	102.19	104.36
AEO2014	2012																					101.56	98.00	88.93	85.16	83.72	84.18	85.84	88.07	90.44
AEO2015	2013																						100.91	57.58	73.57	78.22	78.22	79.78	81.38	83.82
AEO2016	2015																							52.32	36.84	48.08	58.11	70.11	76.57	81.00
AEO2017	2016																								38.48	45.54	56.31	63.08	67.06	70.32
AEO2018	2017																									46.73	46.00	47.11	62.99	69.90
AEO2019	2018																										64.51	64.44	68.36	70.26
AEO2020	2019																											56.76	48.68	58.65
AEO2021	2020																												36.86	41.63
AEO2022	2021																													67.71
Actual in nominal dollars		16.14	15.51	17.14	20.64	18.53	12.04	17.26	27.70	22.00	23.71	27.71	35.90	48.86	59.02	67.04	92.77	59.17	75.86	102.63	101.09	98.11	89.56	46.40	38.75	49.12	60.95	57.94	37.41	65.78
Average absolute difference		0.92	0.94	0.33	1.87	0.53	5.91	2.57	5.85	1.78	1.69	3.44	9.09	17.86	23.06	26.36	43.39	19.09	28.32	45.68	45.58	39.86	37.98	28.18	31.27	33.13	36.02	38.03	38.90	41.78

Table 4a. Imported refiner acquisition cost of crude oil, projected versus actual (continued)

Projected versus actual
(percentage difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
AEO1994	5.9	10.8	5.8	-7.0	9.1	77.0	30.7	-13.3	16.7	14.8	4.2	-14.7	-33.7	-41.8	-46.0	-59.2	-34.0	-46.9													
AEO1995		-1.9	-0.2	-13.1	1.7	63.3	18.9	-21.8	3.5	0.0	-10.7	-27.7	-44.1	-51.2	-55.0	-66.1	-45.2	-55.6													
AEO1996			0.2	-14.5	-0.8	59.7	16.9	-22.9	2.7	-0.5	-11.1	-28.1	-44.3	-51.7	-55.6	-66.8	-46.7	-57.3	-67.3	-65.6	-63.5	-58.7	-18.4								
AEO1997				-3.7	3.6	58.4	12.2	-28.6	-5.9	-9.6	-20.0	-35.8	-50.8	-57.7	-61.5	-71.4	-54.6	-64.0	-72.6	-71.5	-70.0	-66.4	-34.1								
AEO1998					-0.3	53.7	12.3	-26.4	-4.0	-8.8	-19.3	-35.4	-50.6	-57.7	-61.5	-71.5	-54.6	-63.9	-72.6	-71.5	-69.9	-66.2	-33.7	-19.3	-34.7	-45.7	-41.4	-7.3			
AEO1999						3.9	-21.3	-47.1	-25.9	-25.4	-30.0	-41.5	-53.7	-58.6	-61.2	-71.2	-54.3	-63.7	-72.4	-71.3	-69.8	-66.1	-33.6	-19.2	-34.6	-45.6	-41.3	-7.2			
AEO2000							0.6	-20.7	-3.3	-8.3	-19.6	-36.0	-51.2	-58.2	-62.0	-71.9	-55.4	-64.6	-73.2	-72.1	-70.6	-67.1	-35.4	-21.6	-36.6	-47.5	-43.5	-11.0			
AEO2001								1.9	13.2	-3.9	-19.6	-35.8	-51.1	-58.0	-61.9	-71.8	-55.3	-64.5	-73.1	-72.0	-70.5	-67.0	-35.3	-21.3	-36.4	-47.3	-43.3	-10.8			
AEO2002									4.5	-7.5	-14.4	-31.6	-47.8	-55.2	-59.3	-69.9	-52.2	-62.0	-71.2	-70.1	-68.4	-64.6	-30.6	-15.6	-31.8	-43.4	-39.0	-3.9			
AEO2003										-0.1	-3.5	-28.8	-47.8	-55.1	-59.2	-69.8	-52.0	-61.9	-71.1	-69.9	-68.3	-64.4	-30.1	-14.9	-31.2	-42.9	-38.5	-3.0	-42.0		
AEO2004											0.3	-30.5	-48.5	-55.7	-59.7	-70.1	-52.4	-62.2	-71.2	-70.1	-68.4	-64.4	-30.2	-14.9	-31.1	-42.7	-38.2	-2.4	-41.8		
AEO2005												0.1	-26.3	-44.5	-54.3	-67.8	-50.8	-61.6	-70.7	-69.2	-67.3	-63.0	-27.0	-10.5	-27.1	-39.1	-34.0	4.8	-37.1		
AEO2006													4.9	-2.8	-16.2	-41.2	-12.0	-34.3	-50.6	-49.2	-47.0	-41.1	14.3	39.6	13.2	-5.7	1.9	61.1	-3.3		
AEO2007															7.9	-6.1	-33.4	-0.5	-25.8	-47.0	-47.7	-46.6	-41.3	15.0	39.7	13.4	-5.6	2.0	61.3	-3.2	
AEO2008																-4.9	-17.9	21.6	-8.4	-33.5	-34.1	-34.0	-29.9	30.1	49.3	20.4	0.6	9.4	73.6	3.9	
AEO2009																	6.0	-32.8	-33.0	-36.0	-23.0	-9.3	10.7	135.7	200.2	151.5	116.0	136.0	275.5	124.9	
AEO2010																		-3.9	-9.5	-32.5	-23.6	-13.1	2.8	107.6	160.4	115.4	83.3	98.9	215.8	89.3	
AEO2011																			-0.1	-19.2	-16.0	-9.6	3.6	106.2	155.5	111.4	79.1	96.7	215.4	90.8	
AEO2012																				-0.5	1.9	15.0	33.5	167.4	216.5	158.0	114.1	131.0	265.6	118.6	
AEO2013																					2.1	1.4	10.8	113.6	161.4	114.9	81.0	97.9	216.3	91.3	
AEO2014																						5.3	13.4	100.6	132.4	83.7	52.4	66.4	167.5	62.7	
AEO2015																							14.8	27.7	97.3	68.6	39.1	52.0	143.0	48.2	
AEO2016																								12.8	-4.0	0.7	0.5	29.8	122.2	39.2	
AEO2017																									-0.7	-5.5	-3.6	15.6	82.7	19.7	
AEO2018																											-4.9	-22.7	-15.3	77.6	16.7
AEO2019																											5.8	13.2	88.3	14.6	
AEO2020																												-2.0	31.7	-6.0	
AEO2021																													-1.5	-34.1	
AEO2022																														2.9	
Average absolute percentage difference	5.9	6.3	2.0	9.6	3.1	52.7	16.1	22.8	8.8	7.9	13.9	28.8	42.7	46.9	48.3	57.9	39.9	46.6	55.0	50.1	45.7	42.5	54.3	69.7	53.6	43.8	47.3	93.8	47.4		

Data source: Historical data are from the U.S. Energy Information Administration open data API (accessed April 2022), <http://www.eia.gov/opa/data>, series: TOTAL.RAIMUUS.A; projections: Annual Energy Outlook, Reference case projections from various editions

GDP data from the U.S. Bureau of Economic Analysis (accessed February 2022), <https://apps.bea.gov/national/xls/gdplev.xlsx>

Notes: shading indicates overestimation (blue) or underestimation (green).

*Dollar year refers to the year that GDP is reported in constant dollars in a respective AEO.