

**Electric motor replacement program in Mexico**  
**Energy savings and emissions reduction**

Motor power	Motor efficiency by vintage and power, %					No of motors that may be replaced by			Energy savings if all motors were replaced by		
hp	1974-84	1985-94	1995-97	1998-99	High efficiency replacement	1974-84	1985-94	1995-97	1974-84	1985-94	1995-97
1	69,0	70	74,7	75,1	81,2	33858	58952	34175	21,77	34,13	10,76
1,5	73,9	75	78,4	79,3	84,0	49189	85646	49651	35,38	53,93	18,61
2	74,9	76	80,3	80,6	85,3	52381	91207	52875	50,33	76,90	22,68
3	76,8	78	80,8	80,9	87,6	49189	85646	49651	69,39	106,08	42,05
5	78,8	80	83,6	83,5	88,8	45366	78979	45782	95,25	143,74	47,12
7,5	79,8	81	85,4	85,4	90,0	36731	63958	37077	115,16	174,02	48,90
10	81,8	83	86	86,1	90,9	28442	49503	28695	102,85	152,31	52,85
15	83,7	85	86,5	87,0	91,4	51593	42212	19344	228,08	153,27	52,84
20	84,7	86	86,8	87,3	91,8	12766	22242	12896	68,41	96,03	47,56
25	85,7	87	88,4	88,8	92,3	6385	11122	6448	39,17	53,93	22,64
30	86,7	88	89,4	89,5	92,9	3831	6673	3869	26,09	35,26	14,37
40	87,7	89	89,5	89,8	93,4	2863	5001	2901	23,57	31,11	15,91
50	88,7	90	90,4	90,5	94,0	2230	3890	2256	21,04	27,02	14,04
60	89,1	90,5	90,9	91,2	94,0	1597	2781	1612	16,32	20,17	10,31
75	89,6	91	91	91,2	94,5	1274	2223	1289	16,12	19,94	11,56
100	90,1	91,5	91,5	91,9	94,7	945	1662	966	14,87	18,04	10,48
125	90,6	92	91,7	92,1	95,0	645	1116	646	12,06	14,07	8,99
150	91,1	92,5	92,1	92,1	95,2	510	890	516	10,59	12,02	8,04
200	91,6	93	92,7	92,7	95,3	396	672	387	9,84	10,25	6,69
250	91,6	93	93	93,0	95,3	335	562	323	10,41	10,71	6,16
300	91,6	93	93	93,0	95,4	61	110	64	2,34	2,62	1,53
350	91,6	93	93	93,0	95,5	54	86	49	2,47	2,50	1,42
400	91,6	93	93	93,0	95,7	19	34	20	1,06	1,21	0,71
500	91,6	93	93	93,0	95,8	10	11	11	0,73	0,50	0,53
600	91,6	93	93	93,0	95,8	11	12	14	0,93	0,66	0,78
									<b>994,21</b>	<b>1250,43</b>	<b>477,54</b>

Ex-ante estimate of % eligible motors replaced in proposed project	
Year	% of all motors
2005	0,5%
2006	0,7%
2007	1,0%
2008	1,5%
2009	2,0%
2010	2,0%
2011	2,3%

Operational parameters	
Load factor:	60 %
Operation	6 565 hours / year

Emissions factor	674 tCO <sub>2</sub> e/GWh
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**Note: This part of the spreadsheet sums motors of all power, but separated by vintage.**

	GWh savings in year 2006 from motors replaced in previous year, by vintage			GWh savings in year 2007 from motors replaced in previous years			GWh savings in year 2008 from motors replaced in previous years		
	1974-84	1985-94	1995-97	1974-84	1985-94	1995-97	1974-84	1985-94	1995-97
	4,97	6,25	2,39	4,97	6,25	2,39	4,97	6,25	2,39
				6,96	8,75	3,34	6,96	8,75	3,34
							9,94	12,50	4,78
Total	4,97	6,25	2,39	11,93	15,01	5,73	21,87	27,51	10,51

Year	2006	2007	2008	2009	2010	2011	2012	2013
Energy savings, GWh per year	13,61	32,67	59,89	100,72	155,16	209,61	272,22	272,22
Emissions reductions, tCO <sub>2</sub> e/year	9 174	22 017	40 365	67 886	104 581	141 276	183 475	183 475

**CERs up to 2012 568 774 tCO<sub>2</sub>e**

GWh savings in year 2009 from motors replaced in previous years			GWh savings in year 2010 from motors replaced in previous years			GWh savings in year 2011 from motors replaced in previous years			GWh savings in year 2012 from motors replaced in previous years			GWh savings in year 2013 from motors replaced in previous years		
1974-84	1985-94	1995-97	1974-84	1985-94	1995-97	1974-84	1985-94	1995-97	1974-84	1985-94	1995-97	1974-84	1985-94	1995-97
4,97	6,25	2,39	4,97	6,25	2,39	4,97	6,25	2,39	4,97	6,25	2,39	4,97	6,25	2,39
6,96	8,75	3,34	6,96	8,75	3,34	6,96	8,75	3,34	6,96	8,75	3,34	6,96	8,75	3,34
9,94	12,50	4,78	9,94	12,50	4,78	9,94	12,50	4,78	9,94	12,50	4,78	9,94	12,50	4,78
14,91	18,76	7,16	14,91	18,76	7,16	14,91	18,76	7,16	14,91	18,76	7,16	14,91	18,76	7,16
			19,88	25,01	9,55	19,88	25,01	9,55	19,88	25,01	9,55	19,88	25,01	9,55
						19,88	25,01	9,55	19,88	25,01	9,55	19,88	25,01	9,55
									22,87	28,76	10,98	22,87	28,76	10,98
36,79	46,27	17,67	56,67	71,27	27,22	76,55	96,28	36,77	99,42	125,04	47,75	99,42	125,04	47,75

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
272,22	272,22	272,22	272,22	272,22	272,22	172,80	172,80	172,80	172,80	172,80	172,80	172,80	3958,99
183 475	183 475	183 475	183 475	183 475	183 475	116 466	116 466	116 466	116 466	116 466	116 466	116 466	2 668 361

**CERs for entire crediting period    2 668 361    tCO<sub>2</sub>e**

GWh savings in year 2014 from motors replaced in previous years			GWh savings in year 2015 from motors replaced in previous years			GWh savings in year 2016 from motors replaced in previous years			GWh savings in year 2017 from motors replaced in previous years			GWh savings in year 2018 from motors replaced in previous years		
1974-84	1985-94	1995-97	1974-84	1985-94	1995-97	1974-84	1985-94	1995-97	1974-84	1985-94	1995-97	1974-84	1985-94	1995-97
4,97	6,25	2,39	4,97	6,25	2,39	4,97	6,25	2,39	4,97	6,25	2,39	4,97	6,25	2,39
6,96	8,75	3,34	6,96	8,75	3,34	6,96	8,75	3,34	6,96	8,75	3,34	6,96	8,75	3,34
9,94	12,50	4,78	9,94	12,50	4,78	9,94	12,50	4,78	9,94	12,50	4,78	9,94	12,50	4,78
14,91	18,76	7,16	14,91	18,76	7,16	14,91	18,76	7,16	14,91	18,76	7,16	14,91	18,76	7,16
19,88	25,01	9,55	19,88	25,01	9,55	19,88	25,01	9,55	19,88	25,01	9,55	19,88	25,01	9,55
19,88	25,01	9,55	19,88	25,01	9,55	19,88	25,01	9,55	19,88	25,01	9,55	19,88	25,01	9,55
22,87	28,76	10,98	22,87	28,76	10,98	22,87	28,76	10,98	22,87	28,76	10,98	22,87	28,76	10,98
<b>99,42</b>	<b>125,04</b>	<b>47,75</b>	<b>99,42</b>	<b>125,04</b>	<b>47,75</b>	<b>99,42</b>	<b>125,04</b>	<b>47,75</b>	<b>99,42</b>	<b>125,04</b>	<b>47,75</b>	<b>99,42</b>	<b>125,04</b>	<b>47,75</b>

Note: After 2019, we assume that motors of 1974-84 vintage are no longer operational														
GWh savings in year 2019 from motors replaced in previous years			GWh savings in year 2020 from motors replaced in		GWh savings in year 2021 from motors replaced in		GWh savings in year 2022 from motors replaced in		GWh savings in year 2023 from motors replaced in		GWh savings in year 2024 from motors replaced in		GWh savings in year 2025 from motors replaced in	
1974-84	1985-94	1995-97	1985-94	1995-97	1985-94	1995-97	1985-94	1995-97	1985-94	1995-97	1985-94	1995-97	1985-94	1995-97
4,97	6,25	2,39	6,25	2,39	6,25	2,39	6,25	2,39	6,25	2,39	6,25	2,39	6,25	2,39
6,96	8,75	3,34	8,75	3,34	8,75	3,34	8,75	3,34	8,75	3,34	8,75	3,34	8,75	3,34
9,94	12,50	4,78	12,50	4,78	12,50	4,78	12,50	4,78	12,50	4,78	12,50	4,78	12,50	4,78
14,91	18,76	7,16	18,76	7,16	18,76	7,16	18,76	7,16	18,76	7,16	18,76	7,16	18,76	7,16
19,88	25,01	9,55	25,01	9,55	25,01	9,55	25,01	9,55	25,01	9,55	25,01	9,55	25,01	9,55
19,88	25,01	9,55	25,01	9,55	25,01	9,55	25,01	9,55	25,01	9,55	25,01	9,55	25,01	9,55
22,87	28,76	10,98	28,76	10,98	28,76	10,98	28,76	10,98	28,76	10,98	28,76	10,98	28,76	10,98
99,42	125,04	47,75	125,04	47,75	125,04	47,75	125,04	47,75	125,04	47,75	125,04	47,75	125,04	47,75