The following specifications shall be used for the purchase of new motors.

A. The motor shall meet or exceed the efficiency levels from NEMA MG1 Table 12-11 which comply with levels set by The Energy Policy Act and Conservation Act (EPCA), as amended by the Emergency and Security Act of 2007 (EISA). See NEMA MG1 Table 12-11.

B. The motor efficiency shall be determined using the test standards found in IEEE Standard 112-2004, Standard Test Procedure for Polyphase Induction Motors and Generators, or by other internationally accepted methods.

C. The motor shall be properly sized for the given load.

D. The motor shall be Totally-Enclosed, Fan-Cooled (TEFC), unless noted. Open Drip Proof (ODP) is acceptable in cases where TEFC is not available.

E. The motor shall have a minimum service factor of 1.15.

F. The motor shall have a minimum insulation class of F.

G. Motors used with variable frequency drives shall be examined for inverter duty motor applicability.

H. The following parameters shall be specified for the motor:

1. Motor horsepower
2. Voltage
3. Full load amps
4. Speed
5. Frequency
6. Phase
7. Shaft size
8. Environmental conditions (ambient operating temperature range, humidity level, etc.)
9. Starting torque (loaded or unloaded)
10. Classification of hazard (explosion proof, non-explosion proof, etc.)
11. Special equipment requirements (thermal protection, space heaters for outside, wet or high humidity area, standard or nonstandard conduit boxes, etc.)
12. Maximum number of starts per day/per hour
13. High temperature grease (for special cases, if required)

I. Where a Contractor is required to coat a motor, the motor shall be coated with an industrial enamel at a thickness of 5 mil D.F.T. The coating color shall be gray, U.S. Government Federal Register 595 Paint Color Number 16473.

NEMA MG1 Table 12-11
Motor Efficiencies

OPEN MOTORS

HP	FULL-LOAD EFFICIENCIES OF ENERGY EFFICIENT MOTORS							
	Nominal Efficiency 2 POLE	Minimum Efficiency 2 POLE	Nominal Efficiency 4 POLE	Minimum Efficiency 4 POLE	Nominal Efficiency 6 POLE	Minimum Efficiency 6 POLE	Nominal Efficiency 8 POLE	Minimum Efficiency 8 POLE
1	…	…	82.5	80.0	80.0	77.0	74.0	70.0
1.5	82.5	80.0	84.0	81.5	84.0	81.5	75.5	72.0
2	84.0	81.5	84.0	81.5	85.5	82.5	85.5	82.5
3	84.0	81.5	86.5	84.0	86.5	84.0	86.5	84.0
5	85.5	82.5	87.5	85.5	87.5	85.5	87.5	85.5
7.5	87.7	85.5	88.5	86.5	88.5	86.5	88.5	86.5
10	88.5	86.5	89.5	87.5	90.2	88.5	89.5	87.5
15	89.5	87.5	91.0	89.5	90.2	88.5	89.5	87.5
20	90.2	88.5	91.0	89.5	91.0	89.5	90.2	88.5
25	91.0	89.5	91.7	90.2	91.7	90.2	90.2	88.5
30	91.0	89.5	92.4	91.0	92.4	91.0	91.0	89.5
40	91.7	90.2	93.0	91.7	93.0	91.7	91.0	89.5
50	92.4	91.0	93.0	91.7	93.0	91.7	91.7	90.2
60	93.0	91.7	93.6	92.4	93.6	92.4	92.4	91.0
75	93.0	91.7	94.1	93.0	93.6	92.4	93.6	92.4
100	93.0	91.7	94.1	93.0	94.1	93.0	93.6	92.4
125	93.6	92.4	94.5	93.6	94.1	93.0	93.6	92.4
150	93.6	92.4	95.0	94.1	94.5	93.6	93.6	92.4
200	94.5	93.6	95.0	94.1	94.5	93.6	93.6	92.4
250	94.5	93.6	95.4	94.5	95.4	94.5	94.5	93.6
300	95.0	94.1	95.4	94.5	95.4	94.5	…	…
350	95.0	94.1	95.4	94.5	95.4	94.5	…	…
400	95.4	94.5	95.4	94.5	…	…	…	…
450	95.8	95.0	95.8	95.0	…	…	…	…
500	95.8	95.0	95.8	95.0	…	…	…	…

NEMA MG1 Table 12-11
Motor Efficiencies

ENCLOSED MOTORS

HP	FULL-LOAD EFFICIENCIES OF ENERGY EFFICIENT MOTORS							
	Nominal Efficiency 2 POLE	Minimum Efficiency 2 POLE	Nominal Efficiency 4 POLE	Minimum Efficiency 4 POLE	Nominal Efficiency 6 POLE	Minimum Efficiency 6 POLE	Nominal Efficiency 8 POLE	Minimum Efficiency 8 POLE
1	75.5	72.0	82.5	80.0	80.0	77.0	74.0	70.0
1.5	82.5	80.0	84.0	81.5	85.5	82.5	77.0	74.0
2	84.0	81.5	84.0	81.5	86.5	84.0	82.5	80.0
3	85.5	82.5	87.5	85.5	87.5	85.5	84.0	81.5
5	87.5	85.5	87.5	85.5	87.5	85.5	85.5	82.5
7.5	88.5	86.5	89.5	87.5	89.5	87.5	85.5	82.5
10	89.5	87.5	89.5	87.5	89.5	87.5	88.5	86.5
15	90.2	88.5	91.0	89.5	90.2	88.5	88.5	86.5
20	90.2	88.5	91.0	89.5	90.2	88.5	89.5	87.5
25	91.0	89.5	92.4	91.0	91.7	90.2	89.5	87.5
30	91.0	89.5	92.4	91.0	91.7	90.2	91.0	89.5
40	91.7	90.2	93.0	91.7	93.0	91.7	91.0	89.5
50	92.4	91.0	93.0	91.7	93.0	91.7	91.7	90.2
60	93.0	91.7	93.6	92.4	93.6	92.4	91.7	90.2
75	93.0	91.7	94.1	93.0	93.6	92.4	93.0	91.7
100	93.6	92.4	94.5	93.6	94.1	93.0	93.0	91.7
125	94.5	93.6	94.5	93.6	94.1	93.0	93.6	92.4
150	94.5	93.6	95.0	94.1	95.0	94.1	93.6	92.4
200	95.0	94.1	95.0	94.1	95.0	94.1	94.1	93.0
250	95.4	94.5	95.0	94.1	95.0	94.1	94.5	93.6
300	95.4	94.5	95.4	94.5	95.0	94.1	…	…
350	95.4	94.5	95.4	94.5	95.0	94.1	…	…
400	95.4	94.5	95.4	94.5	…	…	…	…
450	95.4	94.5	95.4	94.5	…	…	…	…
500	95.4	94.0	95.8	95.0	…	…	…	…