

## APPENDIX 12C. NATIONAL SHIPMENTS ESTIMATES FOR SMALL ELECTRIC MOTORS

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March 24, 2008

### 12C.1 INTRODUCTION

*Context:*

The Department of Energy (DOE) is conducting an energy-efficiency standards rulemaking for small electric motors. The purpose of this rulemaking is to evaluate energy-efficiency standards for small electric motors. To complete this standard, DOE must estimate potential energy savings from new standard levels imposed. To do this accurately, DOE usually bases any energy savings on national shipment estimates provided by manufacturers. A request was submitted by a DOE contractor to NEMA on December 7, 2007 to request shipment data for this purpose. However, NEMA has not received adequate data from its membership and thus DOE must pursue an alternate approach.

### 12C.2 METHODOLOGY

*New Method Proposed:*

For the Small Motors Determination Analysis published on July 10, 2006 (71 FR 38799), NEMA provided shipment data on small electric motors to DOE. This data is now being used to project an estimate of national shipments for 2007, instead of obtaining shipment specific data from manufacturers. The result of this projection is shown on the attached pages. DOE invites NEMA and/or its members to review and provide comment on this shipment estimate. Any and all comment must be received by March 31, 2008, upon which time, the shipments estimate for the ANOPR must be locked down. NEMA and its members will have an opportunity to comment on the shipments estimate again once it is published by DOE later this year, however for the purposes of completing the ANOPR analysis on schedule, DOE's contractors must prepare this estimate and finalize it by the 31<sup>st</sup> of March.

### 12C.3 REQUESTED ACTION

*Action Required:*

Please review the attached tables for reasonableness and comment by **March 31, 2008**.

### 12C.4 CONTACT INFORMATION

*Contacts:*

If you have any questions or comments, please contact:

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## 12C.5 POLYPHASE SHIPMENT FIGURES

Description: Polyphase MG-1 1987 general-purpose AC single-speed induction motors in 2-digit NEMA frame size, open construction, rated for continuous duty. Average annual growth rate calculated for polyphase motors (considering shipment data from 1990 through 1999) as 3.4%.

**Table 12C-1. Polyphase Small Electric Motors NEMA Shipment Data, 2000**

	<b>2-pole</b>	<b>4-pole</b>	<b>6-pole</b>	<b>Total</b>
1/4 HP	*	*	*	9,163
1/3 HP	2,585	12,899	3,788	19,272
1/2HP	2,856	39,501	6,478	48,835
3/4 HP	65,405	47,084	9,729	122,218
1 HP	*	56,783	*	84,670
1 1/2 HP	*	115,638	*	124,959
2-3 HP	10,149	22,384	-	32,533
				441,650

\* Data withheld by NEMA due to insufficient number of manufacturers reporting for those ratings / poles.

**Table 12C-2. Polyphase Small Electric Motors Estimated National Shipments, 2007**

	<b>2-pole</b>	<b>4-pole</b>	<b>6-pole</b>	<b>Total</b>
1/4 HP	1,967	7,637	1,967	11,571
1/3 HP	3,264	16,289	4,784	24,338
1/2HP	3,607	49,884	8,181	61,671
3/4 HP	82,596	59,460	12,286	154,342
1 HP	17,608	71,708	17,608	106,925
1 1/2 HP	5,885	146,033	5,885	157,804
2-3 HP	12,817	28,268	-	41,084
				557,735

## 12C.6 CSIR SHIPMENT FIGURES

Description: Capacitor Start Induction Run (CSIR) MG-1 1987 general-purpose AC single-speed induction motors in 2-digit NEMA frame size, open construction, rated for continuous duty. Average annual growth rate calculated for CSIR motors (considering shipment data from 1990 through 1999) as 1.1 %.

**Table 12C-3. CSIR Small Electric Motors NEMA Shipment Data, 2000**

	<b>2-pole</b>	<b>4-pole</b>	<b>6-pole</b>	<b>Total</b>
1/4 HP	*	342,064	*	882,878
1/3 HP	354,258	609,264	551,566	1,515,088
1/2HP	465,799	493,151	301,198	1,260,148
3/4 HP	*	385,013	*	1,121,644
1 HP	143,571	53,042	-	196,613
>1 HP	24,892	23,638	-	48,530
<b>TOTAL</b>				<b>5,024,901</b>

\* Data withheld by NEMA due to insufficient number of manufacturers reporting for those ratings / poles.

**Table 12C-4. CSIR Small Electric Motors Estimated National Shipments, 2007**

	<b>2-pole</b>	<b>4-pole</b>	<b>6-pole</b>	<b>Total</b>
1/4 HP	223,615	384,581	348,160	956,357
1/3 HP	383,742	659,971	597,471	1,641,183
1/2HP	504,566	534,194	326,266	1,365,025
3/4 HP	449,108	475,480	290,405	1,214,994
1 HP	155,520	57,456	-	212,976
>1 HP	26,964	25,605	-	52,569
<b>TOTAL</b>				<b>5,443,104</b>

## 12C.7 CSCR SHIPMENT FIGURES

Due to reporting policy guidelines, NEMA was unable to provide detailed shipment data on Capacitor Start Capacitor Run (CSCR) shipments; however the Determination Analysis published by DOE in 2006 indicates that approximately 5% of capacitor-start motor sales are CSCR motors. Therefore, the estimate below simply uses a 19 to 1 ratio to scale CSIR units sold to CSCR units sold.

**Table 12C-5. CSCR Small Electric Motors Estimated National Shipments, 2007**

	<b>2-pole</b>	<b>4-pole</b>	<b>6-pole</b>	<b>Total</b>
1/4 HP	11,769	20,241	18,324	50,335
1/3 HP	20,197	34,735	31,446	86,378
1/2HP	26,556	28,115	17,172	71,843
3/4 HP	23,637	25,025	15,284	63,947
1 HP	8,185	3,024	-	11,209
>1 HP	1,419	1,348	-	2,767
<b>TOTAL</b>				<b>286,479</b>