April 19, 20011

Mr. James Raba
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Building Technologies Program
EE-2J
1000 Independence Ave. SW
Washington, DC 20585-0121

RE: Docket EERE-2010-BT-STD-0027/ RIN 1904-AC28

Dear Mr. Raba,

The Appliance Standards Awareness Project (ASAP) and the National Electrical Manufacturers Association (NEMA) submit this letter in response to the DOE's Request for Information (RFI) concerning "Increased Scope of Coverage for Electric Motors" published on March 30, 2011. 76 Federal Register 17577. These comments are also supported by the American Council for an Energy-Efficient Economy, the Alliance to Save Energy, Natural Resources Defense Council, Northeast Energy Efficiency Partnerships, Northwest Energy Efficiency Alliance and the Northwest Power and Conservation Council.

In large part, the RFI is based upon comments we submitted on November 24th, 2010 in response to the DOE Framework document for the motors rulemaking. We very much appreciate DOE's responsiveness to our suggestions that DOE consider an expanded scope of coverage. NEMA will submit separately additional comments intended to address the specific questions raised by the RFI.

In these general comments, we wish to emphasize six points. First, the potential savings from expanded scope are very large. We present here a preliminary estimate developed by NEMA and ASAP. Second, we support inclusion of most of the motors covered in Table 1, but not all of them. Third, we are concerned that DOE has not solicited information on many motor types for which we recommended coverage in our November 24th comments. We reiterate that we support coverage for many motor types not listed in Table 1. Fourth, we do not support covering any of the motor types shown in Table 2 of the RFI, except as described in the separate NEMA comments. Fifth, in order to assure expected savings from both current standards and future standards and provide a level competitive playing field for all manufacturers, the federal government must significantly

increase its efforts to enforce motor standards with respect to imported motors. Sixth, as described in our comments at the Framework stage of the rulemaking, increasing standards beyond NEMA premium efficiency levels (i.e. those specified in NEMA MG 1 Table 12-12), would be counter-productive.

## 1. Potential Savings from Expanded Scope Are Large

Over the past several months, NEMA and ASAP have worked to better understand the potential energy savings impacts which would be achieved by our recommendations provided to DOE last fall. We estimate annual sales of currently covered motors (including imports) to be about 2 million units. With respect to our recommendation to apply table 12-12 standards to several categories of previously unregulated motors, we estimate that approximately 2.1 million motors (annual unit sales), representing about 20 million horsepower would be affected. For these currently unregulated motors, we estimate an average baseline efficiency and net efficiency gains by motor size as presented below:

**Table 1. Typical Efficiencies and Net Efficiency Gains Assumed in NEMA/ASAP Analysis**

| HP Range and Type units | Table 12-12 Nominal Efficiency | DOE 1998 Average Nominal Installed Efficiency | Net percentage efficiency gain |
|---|---|---|---|
| 1 to and including 5 HP | 89.5% | 82.7% | 8.2% |
| >5 to and including 20 HP | 91.7% | 86.8% | 5.6% |
| >20 to and including 50 HP | 94.1% | 89.2% | 5.5% |
| >50 to and including 100 HP | 95.0% | 91.9% | 3.4% |
| >100 to and including 200 HP | 95.4% | 92.7% | 2.9% |
| >200 to and including 500 HP | 95.8% | 93.4% | 2.6% |

Based on this analysis, we estimate an overall potential savings from motors we recommend to add to coverage of about 3.2 terawatt hours (TWh) per year.[1,2] Using a simple average of commercial and industrial electric rates of 9 cents/kWh, these savings would be worth about $300 million per year. Assuming standards are implemented in 2014, by 2020 average annual savings would reach about 23 TWh and by 2030 annual savings would reach about 55 TWh. Assuming electricity continues to cost 9 cents/kWh, 2020 savings will be worth $2 billion and 2030 savings worth $5 billion.

[1] Our calculation assumes a load factor of 1.

[2] The estimates provided here are larger than those included in NEMA's response to Question 5 in their comments to this docket, in part, because we recommend DOE expand scope to many more motors than those included in Table 1 of the RFI.

**2. We support coverage of most motors listed in Table 1.**

Table 1 of the RFI includes eight motor types. We support coverage of each of these motor types EXCEPT "Component Sets" and certain TENV motors. Component sets are sold without an enclosure, in some cases to a manufacturer of a final product which is a DOE-regulated motor. It is the motor which should be subject to DOE standards, rather than the components. We also believe it would be difficult to impossible for DOE to enforce standards with respect to component sets that are assembled into other products since component sets do not follow NEMA standards (see response to Questions #1 included in the NEMA comments submitted separately.)

We also suggest that "Partial Motors" (sometimes called "partial ¾ motors") should be categorized with "Integral Shafted Partial Motors." Together, these describe motors sold without one or both endplates. We support DOE coverage of these products.

We support inclusion of "Vertical Hollow Shaft Motors" as proposed by DOE. However, we suggest that DOE should expand the category to include all vertical shaft and thrust configurations (i.e. include hollow and solid shaft, and all thrust categories.)

We support coverage of Design A Motors from 201 to 500 HP, Brake Motors, Integral Gear Motors, TEAO Motors and 140 T and 180 T frame size TENV motors.

**3. DOE Should Address Certain Motors Not Included in Table 1.**

As we described at the public hearing and in our November 24th comments, we strongly recommend that DOE approach this rulemaking by establishing a broad scope of coverage for electric motors and then exempt clearly defined motor types. Such an approach will yield large savings and make enforcement of standards more straightforward. Table 1 includes *some* of the motors we recommend DOE cover in this rulemaking. In addition to motors listed in Table 1, we also recommended DOE address many additional types of motors. In our November 24th comments, we listed more than 60 motor types for which we recommend coverage. Many of these are currently covered by DOE standards, so we understand why DOE did not solicit information on them in the RFI. However, we would like to draw DOE's attention to several categories of motors for which DOE did not solicit information in the RFI, and for which we continue to recommend coverage in the current rulemaking.

*Subtype II Motors:* We recommend that DOE evaluate higher standards for Subtype II motors and adopt Table 12-12 efficiency for these motors.

*Additional motor types:* We recommended that DOE cover several types of motors not covered by current standards. The table below includes several types of motors for which we recommend coverage, but which were not included in the RFI.

Motor types **NOT REFERENCED** in DOE's RFI

| Motor Type | ASAP-NEMA Joint Recommendations | Comments |
|---|---|---|
| Shaft non-standard dimensions or additions | Should be in scope | May need to show compliance by testing a similar model that could be more easily attached to a dynamometer. |
| Double shaft | Should be in scope | Only some double shafts are currently in scope (i.e. as defined by MG 1). To make this easy to remember, all double shafts should be in scope. |
| Encapsulation | Should be in scope unless designed for submersible application | Encapsulation should not automatically exempt a motor. Only motors designed for submersible applications should be exempted. |
| Thrust bearings | Should be in scope | Test equivalent electrical design with standard bearings. |
| Sleeve bearings | Should be in scope | Test equivalent electrical design with standard bearings. |
| Customer defined endshields | Should be in scope | Test equivalent electrical design with standard endplate if not able to mount to dynamometer for test. |
| Flanged special | Should be in scope | |
| Special base or feet | Should be in scope | May need to show compliance by testing a similar model that could be more easily attached to a dynamometer. |
| All mounting configurations | Should be in scope | May need to show compliance by testing a similar model that could be more easily attached to a dynamometer |

*Smaller motors and 8 pole motors:* In addition, we note that our November 24th comment recommended that DOE address two digit frame sized motors not covered by the small motors rule. 56 T and above and IEC equivalents (e.g. IEC 100) should be covered by this rulemaking. In addition, NEMA is working on Table 12-12 efficiency levels for 8 pole motors and we recommend that they also be covered.

## 4. DOE Should Not Cover Certain Motors

We do not support the extension of coverage to the motors enumerated in Table 2 of the RFI, except as described with respect to inverter duty motors in the NEMA comment submitted in response to the RFI. Table 2 fairly captures our recommendations from last fall. DOE will need to adopt definitions for some of the excluded motor types which clearly capture their distinct characteristics so that they do not become loopholes. In addition to the motors shown in Table 2, we also recommend that Saw Arbor and non-continuous motors remain exempt. We recommend that motors designed to operate at frequencies other than 60 Hz also remain exempt.

We urge DOE to work with existing NEMA definitions wherever possible. In some cases, DOE will need to work with NEMA and other stakeholders to develop new, clear definitions to characterize exempt motors.

**5. Motor Standards Must be Effectively Enforced**

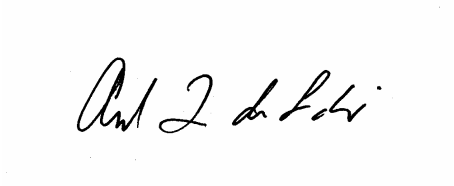
We estimate that between 400 and 500 thousand motors covered by current standards are imported into the United States each year, either as bare motors or imbedded in other equipment. The increased scope of coverage we recommend could increase this number to 1.8 to 2.0 million motors. However, the Customs Service has never issued rules for enforcing standards with respect to imports. The federal government's failure to enforce standards vis-à-vis imports means as much as an incremental terawatt hour (1 billion kWh) savings from existing motor standards is put at risk each year. Because motors last a very long time, any lost savings are incurred year after year until non-compliant motors are replaced with compliant ones. In addition, manufacturers who comply are placed at a competitive disadvantage. If the federal government continues to neglect border enforcement and also expands scope of coverage, this competitive disadvantage will be made even worse. We estimate that about two-thirds of the motors we recommend for new coverage are imported: thus about two-thirds of the savings we project are dependent on effective enforcement with respect to imports. Therefore, we strongly urge DOE to work with Customs to expedite efforts for improved monitoring and enforcement with respect to imported motors. Without improved enforcement, the benefits of both existing standards and future standards are jeopardized.

**6. Standards Above NEMA Table 12-12 Levels Would Be Counterproductive**

We wish to re-iterate that we do not support standards for any motors beyond the levels shown in NEMA Table 12-12. We explained multiple reasons for this recommendation in our comments at the framework stage. Please refer to page 2 of those comments for that discussion.

Thank you for considering these comments.

Sincerely yours,



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