



Ms. Brenda Edwards
U.S. Department of Energy
Building Technologies Program
Mailstop EE-2J
1000 Independence Avenue, SW.
Washington, DC 20585-0121

Re: Notice of Proposed Rulemaking for Distribution Transformers

Docket Number: **EERE-2010-BT-STD-0048**
RIN: **1904-AC04**

Dear Ms. Edwards:

Thank you for the opportunity to comment on the recently released Notice of Proposed Rulemaking (NOPR) for Distribution Transformers ("Transformers"). Northeast Energy Efficiency Partnerships (NEEP) and the undersigned organizations would like to raise several important issues that we urge the Department to consider before publishing its Final Rule.

The effort to set strong energy efficiency standards for Transformers is of paramount importance for Northeast states, as we face some of the most aggressive energy reduction use goals in the country. Strong energy efficiency standards for transformers will help meet these goals by reducing consumption of electricity, as well as lowering peak electricity demand, significantly reducing pollution and creating new economic opportunities. Although we appreciate the hard work that the Department has put into the development of this proposed rule, we are not convinced the standard levels proposed secure all of the technically-feasible, economically-justified savings available though this product category.

Below, we offer a series of comments presenting our perspectives on a number of topics. The comments are organized in three sections; a section of general comments that relate to both Medium Voltage Liquid-immersed and Low Voltage Dry-Type Transformers, followed by sections that address specific issues to these two product categories.

- **General Observations**

- We observe that the Department largely based important efficiency level decisions on the potentially negative impacts on transformer manufacturers yet in the process undervalued the beneficial impacts of the standards for consumer and the general public. In many cases, the various DOE analyses show that efficiency levels much higher than those proposed would be cost effective for purchasers, yielding larger energy and economic benefits than the standards proposed. We acknowledge that the Department is charged with considering other factors, including impacts on manufacturers. Unfortunately, it appears that these proposed levels satisfy the positions of the "lowest common denominator" (i.e. DOE has proposed the *lowest* level any party suggested was acceptable) instead of weighing the impacts on all interests and securing the greatest level of net benefits.
- The Northeast stakeholders are interested in seeing the Distribution Transformer market accelerate towards increasing efficiencies. In order to hasten this evolution, we believe it is crucial to foster increased competition between the traditional steel core materials and those at the leading edge of efficiency. At the proposed Trial



Standard Levels (TSL), the standards would do little to promote the growth of competition between the various types of steel, failing in the process to provide a catalyst for a hastened transition to significantly improve efficiency.

- It appears that the Department has on a number of occasions misrepresented the TSLs in their Proposed Rule. The Department developed TSLs based on various Efficiency Levels (ELs) for a series of representative product categories (Design Lines). In proposing TSL 1 for Liquid-immersed Transformers, we expected to see the corresponding ELs for the various Design Lines (98.91% for Design Line 2). In the case of the NOPR, DOE selected 98.95% which does not correspond to any previous EL. There are other examples of these values lacking correspondence. The effect of this discrepancy may be that the impact analysis conducted as part of the NOPR does not reflect the potential impacts of the actual proposed levels. The Department needs to review these discrepancies and determine if analysis results should be redone.
- **Liquid Immersed Distribution Transformers**
 - At the crux of the Department's decision to select appropriate efficiency levels for Liquid-immersed Transformers is an attempted determination of which level will enable conventional (silicon) steels to compete economically in the market with "more efficient" amorphous steels. We as stakeholders agree that selecting a level where both materials can compete makes good sense. The Department has repeatedly voiced their support for this concept, yet proposed in some cases, levels below those supported during the negotiation process by major manufacturers. Given manufacturers interest in maintaining robust competition among core suppliers, we think their positions as expressed during the negotiation process should be given particular consideration. We are concerned that DOE's proposal has been based on unsubstantiated fears about the ability of the market to respond to higher standards rather than a careful analysis.
 - Based on the formal negotiation process and the public workshop, it is clear that there is disagreement over where this key "cross-over" efficiency level lies. In the absence of such agreement, it is imperative that the Departments conduct independent analysis determining where this point falls, including sensitivity analyses which account for the ability of competing materials suppliers to adjust prices in response to market pressures.
 - Part of the reason given by the Department for not selecting higher TSLs for Liquid immersed Transformers revolves around analysis that shows conventional steel would no longer be the lowest first cost option and lead to a singularly sourced market;

Although the industry can manufacture liquid-immersed transformers at TSL 3 from M3 or lower grade steels, the positive LCC and national impacts results described above are based on lowest first-cost designs, which include amorphous steel for all the design lines analyzed. As is the case with higher TSLs, DOE is concerned that the current supplier, together with others that might enter the market, would not be able to increase production of amorphous steel rapidly enough to supply the amounts that would be needed by transformer manufacturers before 2015. If manufacturers were to meet



standards at TSL 3 using M3 or lower grade steels, DOE's analysis shows that the LCC impacts are negative.¹

This analysis does not account for any elasticity in conventional steel prices. It appears DOE is making the assumption that materials prices will remain constant over the course of the analysis. We would argue that faced with competition, conventional high-grade electrical steel prices could come down and compete effectively with the more efficient amorphous materials. Production of high grade electrical steel for transformers is concentrated in the hands of just two domestic producers. Trade press reports indicate that electrical steel is among the most profitable product lines for these companies, indicating that they may have flexibility to adjust prices in response to increased competition from amorphous metal and remain profitable.

- o Higher TSLs offer significant benefits to consumers and the country. We urge the Department to consider the benefits described in the table below. Notice these include some results specific to Design Line 2 (common pole mounted transformer).
 - i. Just going to TSL 2 more than doubles each of the estimated impacts with over 85% of consumers receiving net benefits from the higher standard. TSL 4 nearly quadruples those same benefits with over 90% of consumers enjoying positive life cycle costs.

| Trail Standards Levels (TSL) | National Energy Savings (Quads) | Net Present Value of Consumer Benefits (7% discount rate) (2010\$ billion) | Consumer Life Cycle Cost Savings for Design Line 2 (2010\$) | % of Consumers with Net Benefit or positive LCC (Design Line 2) | Emission Reductions (million Metric tons) |
|------------------------------|---------------------------------|--|---|---|---|
| TSL 1 (Proposed) | .36 | .75 | 0 | 0 | 31.2 |
| TSL 2 | .74 | 1.51 | 309 | 85.8 | 62.7 |
| TSL 3 | .82 | 1.73 | 309 | 85.8 | 67.7 |
| TSL 4 | 1.44 | 2.96 | 338 | 90.2 | 113 |

• **Low Voltage Dry-Type Distribution Transformers**

- o DOE's proposed TSL 1 for Low Voltage Dry-type Transformers reflects an over concern for small manufacturers at the expense of consumer economics and national energy savings. Going to TSL 2 (NEMA Premium levels) or TSL 3 would achieve several important benefits. Note that the table below includes some results specific to Design Line 7 (representing the most prevalent dry-type transformers).

¹ Federal Register, Vol. 77, No. 28 / Friday, February 10, 2012 / Proposed Rules; page 7362



| Trail Standards Levels (TSL) | National Energy Savings (Quads) | Net Present Value of Consumer Benefits (7% discount rate) (2010\$ billion) | Consumer Life Cycle Cost Savings for Design Line 2 (2010\$) | % of Consumers with Net Benefit or positive LCC (Design Line 2) | Emission Reductions (million Metric tons) |
|------------------------------|---------------------------------|--|---|---|---|
| TSL 1 | 1.09 | 2.03 | 1714 | 98.2 | 82.1 |
| TSL 2 | 1.12 | 1.97 | 1714 | 98.2 | 83.9 |
| TSL 3 | 1.29 | 2.03 | 1793 | 98.0 | 96 |
| TSL 4 | 1.86 | 2.36 | 2270 | 96.2 | 137 |

- o The Department repeatedly voices its concern that higher standard levels for low voltage dry-type transformers would force manufacturers to invest in new fabrication equipment and that this economic strain may force them out of the business;

At TSL 3 and 4, DOE recognizes the risk of very large negative impacts on most manufacturers in the industry who have little experience with the steels that would be required. Small businesses, in particular, with limited engineering resources, may not be able to convert their lines to employ thinner steels and may be disadvantaged with respect to access to key materials, including Hi-B steels.²

We believe it is the responsibility of the Department to provide analysis showing what those impacts to small manufacturers might be. How many domestic small manufacturers make affected transformers? What portion of their business is comprised of transformers covered by these standards? What are their options for building compliant transformers? DOE has not addressed these critical questions, yet the agency’s decision leans primarily on purported impacts on small manufacturers. Even if some number of domestic small manufacturers may be affected, DOE should do a more comprehensive analysis of how much it would impact those small manufacturers. These kinds of investments may be affordable for companies for which covered transformers are a significant part of their business. Companies for which covered transformers are a small portion of their overall business may choose to exit this part of the market. Alternatively, DOE also states that some small manufacturers could choose to source their cores, which many are already doing;

Given their more limited engineering resources and capital, small businesses may find it difficult to make these designs at competitive prices and may have to exit the market. At the same time, however, those small manufacturers may be able to source their cores—and many are doing so to a significant extent currently—which could mitigate impacts.³

DOE should not sacrifice large national benefits to provide ill-defined benefits for a small number of manufacturers.

² Federal Register, Vol. 77, No. 28 / Friday, February 10, 2012 / Proposed Rules; page 7368

³ Federal Register, Vol. 77, No. 28 / Friday, February 10, 2012 / Proposed Rules; page 7365



- o Industry parties suggested higher efficiency on the record during the negotiation process, including the NEMA premium levels described in TSL 2. Several DOE analyses (LCC and NPV in particular) suggest even higher Efficiency levels would be cost effective. TSL 3 (EL4), one step above NEMA premium results in the lowest LCC while still attainable using conventional core steels.

In order to develop a strong Final Rule for Distribution Transformers, including Liquid Immersed and Low Voltage Dry Type, we urge the Department to seriously consider the issues we have raised. This includes clarifying discrepancies and conducting additional analysis. It is our position that the appropriate efficiency levels for both Liquid Immersed and Low Voltage Dry Type are certainly higher than what DOE has proposed in this NOPR and should be determined by a more focused analysis instead of overly relying on uncorroborated manufacturer claims of hardship. The Northeast does not want to see this opportunity to secure cost effective energy savings wasted. Feel free to contact us with clarifications or comments. Thank you again for your consideration.

Sincerely,

A handwritten signature in black ink that reads "Susan E. Coakley". The signature is written in a cursive, flowing style.

Susan E. Coakley, Executive Director

Supporting Organizations;

**Mark Sylvia, Commissioner
Massachusetts Department of Energy Resources**

**Seth Kaplan, Vice President for Policy and Climate Advocacy
Conservation Law Foundation**

**Daniel L. Sosland, Executive Director
Environment Northeast**