

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
WASHINGTON, D.C. 20460



**OFFICE OF  
AIR AND RADIATION**

December 9, 2014

Dear Transformer Manufacturers and Other Interested Parties:

The U.S. Environmental Protection Agency (EPA) is pleased to announce the launch of a process to develop an ENERGY STAR<sup>®</sup> specification for medium voltage liquid-immersed distribution transformers. This letter provides background on the ENERGY STAR program, explains EPA's interest in distribution transformers and current thinking regarding this product category, and outlines EPA's goals and next steps for this specification development.

A significant amount of all electricity network losses are due to distribution transformers<sup>1</sup> and the use of more efficient medium voltage, liquid-immersed distribution transformers has the potential to yield large energy and monetary savings when projected over the products' lifetime. Despite substantial improvements made to distribution transformer efficiencies over recent years and new efficiency standards set to take effect in 2016, EPA estimates that additional savings of up to 4-5 TWh per year<sup>2</sup> can be achieved through identification and further deployment of the most efficient transformers available on the market today. Given the aggregate energy losses of millions of medium voltage distribution transformers, EPA considers these products to be a good candidate for the ENERGY STAR program.

## **Background**

ENERGY STAR is a voluntary program with 18,000 private and public sector partners. More than 2,000 manufacturers currently participate in the program, qualifying over 40,000 product models across more than 70 product categories, including over 15 commercial products. (A complete list of ENERGY STAR products can be found at [www.energystar.gov](http://www.energystar.gov)). ENERGY STAR is an influential brand that is recognized by over 85% of Americans nationwide and is required for federal government and many state and local government and institutional purchasing. Products that earn the ENERGY STAR prevent greenhouse gas emissions by meeting strict energy efficiency guidelines.

The ENERGY STAR program is designed to encourage the manufacture, purchase, and use of energy efficient products to help protect the environment. ENERGY STAR partners that certify

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<sup>1</sup> M. Scholand, T. Blackburn, E. Carey, P. Hopkinson and M. Sampat: "SEAD Standards & Labelling Working Group Distribution Transformers Collaboration," CLASP, 2013.

<sup>2</sup> U.S. Environmental Protection Agency (EPA): "Market and Industry Scoping Report for Medium Voltage Transformers", February 2014, [www.energystar.gov/scoping](http://www.energystar.gov/scoping).

their products to the ENERGY STAR requirements use the label as a tool to demonstrate the enhanced value of these products. Last year alone, Americans, with the help of ENERGY STAR, prevented more than 277 million metric tons of GHG emissions—providing over \$10 billion in benefits to society due to reducing damages from climate change. So far in 2014, nearly 700 utilities and other energy efficiency program sponsors servicing over 88 percent of U.S. households in 50 states, leverage ENERGY STAR to deliver greater energy efficiency.

In assessing the suitability of new products for inclusion in the ENERGY STAR program and establishing ENERGY STAR product performance specifications, EPA considers a set of well-tested program principles. In consideration of these principles, EPA ensures that product categories proposed for inclusion in the ENERGY STAR portfolio will yield significant energy savings on a national basis. Further, EPA pursues products where product energy consumption and performance can be measured and verified with testing. When establishing eligibility criteria, EPA proposes levels that maintain product performance such that performance is not traded for efficiency. Additionally, the Agency sets specifications that enable purchasers to recover their investments in greater efficiency within a reasonable period of time and such that more than one manufacturer can meet them.

In previous years, EPA developed a specification for low voltage, dry-type transformers and provided ENERGY STAR recognition for utilities that both performed an economic analysis of total transformer-owning costs and purchased more efficient transformers.<sup>3</sup> EPA sunset its distribution transformer program in 2007 when the Department of Energy (DOE) introduced new efficiency standards, thus removing the differentiation provided by the ENERGY STAR. EPA signaled to stakeholders that as energy efficient technologies evolved, improved, and matured, EPA would consider a revised specification.

### **EPA Interest in Medium Voltage, Liquid Immersed Distribution Transformers**

EPA recently conducted an analysis to evaluate medium voltage liquid-immersed distribution transformers as a potential product category for re-introduction to the ENERGY STAR program. This effort included a review of the market and all analysis completed during the DOE rulemaking process and interviews with manufacturers, investor-owned and municipal utilities, rural coops, federal procurement officials, research entities, and efficiency advocates. An evaluation of the publicly available data and findings that emerged from the DOE rulemaking process indicates the potential for additional medium voltage distribution transformer savings of up to 4-5 TWh per year. The payback depends on the equipment class but can be achieved in approximately 10 years, which compares favorably with the 32-year average lifetime, and typical 20 year capitalization periods.<sup>4</sup> Despite existing barriers, such as high up-front capital costs, the efficiency opportunity and payback timeframe make transformers a ripe opportunity for ENERGY STAR recognition. EPA believes that the ENERGY STAR designation will be helpful to incentivize more efficient transformers by identifying for a broad range of stakeholders the most efficient transformer solutions available in the market. Purchasing high efficiency transformers will contribute to a more efficient distribution system nationwide.

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<sup>3</sup> EPA: ENERGY STAR Transformer Program. [http://www.energystar.gov/ia/partners/manuf\\_res/brochure.pdf](http://www.energystar.gov/ia/partners/manuf_res/brochure.pdf)

<sup>4</sup> U.S. Department of Energy (DOE): “Technical Support Document: Energy Efficiency Program for Consumer Power and Commercial and Industrial Equipment Distribution Transformers”, <http://www.regulations.gov/#!documentDetail;D=EERE-2010-BT-STD-0048-0760>

As a starting point, EPA has drafted the attached framework document for medium voltage liquid-immersed distribution transformers, which identifies opportunities for more efficient products and outlines an approach for developing a specification. This document address the following topics, on each of which EPA is seeking your feedback:

- Proposed scope of products for inclusion;
- Proposed definitions of products;
- Potential efficiency criteria;
- Questions related to testing of products;
- International harmonization.

Stakeholders are encouraged to provide feedback on the issues presented in the attached document as well as other thoughts related to EPA developing an ENERGY STAR specification for this product category. Additionally, EPA seeks feedback from stakeholders on the extent to which additional tools and/or stakeholder engagement could help incentivize the manufacture and purchase of more efficient distribution transformers.

### **Launch Webinar and Next Steps**

The exchange of ideas and information between EPA, industry, and other interested parties is critical to the success of ENERGY STAR. Stakeholder participation is key to the ENERGY STAR specification development process and is strongly encouraged. Stakeholders are encouraged to submit comments to EPA on the issues identified and proposals outlined in the attached framework document as well as any other issues associated with the development of an ENERGY STAR specification for medium voltage, liquid-immersed distribution transformers no later than **January 28, 2015**. Additionally, EPA will host a launch webinar on **January 14, 2014** to discuss the issues identified in this framework and encourage feedback from stakeholders to inform a proposed path forward. Please [register to attend the webinar](#).

As EPA moves forward with developing a specification, EPA will solicit input from all stakeholders on an ongoing basis via draft specifications and stakeholder meetings. EPA intends to distribute a first draft of the specification in **late winter or early spring 2015** for stakeholder review and comment, and will likely host an in-person meeting for all stakeholders to discuss the draft. Comments received will inform subsequent drafts, culminating with the finalization of a product efficiency specification. Multiple opportunities to actively discuss proposed elements for each specification will be provided through meetings and webinars. All documents related to each specification development will be posted on the ENERGY STAR web site.

Please feel free to forward this letter to colleagues who might be interested in being a part of this effort. To be added to the distribution transformers e-mail distribution list, please send your full contact information to [distributiontransformers@energystar.gov](mailto:distributiontransformers@energystar.gov). If you have any questions about the ENERGY STAR program and this effort in particular, please contact me at Verena Radulovic, EPA, at [Radulovic.Verena@epa.gov](mailto:Radulovic.Verena@epa.gov) and (202) 343-9845 or Matt Malinowski, ICF International, at [Matt.Malinowski@icfi.com](mailto:Matt.Malinowski@icfi.com) and (202) 862-2693.

Thank you for your support of ENERGY STAR. I look forward to working with you during the specification development process.

Sincerely,

A handwritten signature in black ink, reading "Verena Radulovic". The signature is written in a cursive style with a large initial 'V'.

Verena Radulovic, Product Manager  
ENERGY STAR for Distribution Transformers