

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

- 1. Introductions**
 - **Brian Coffey-Navigant Consulting**
- 2. Minutes from San Diego**
- 3. Negotiated Final Rule in Process**
- 4. Negotiation Schedule.**
- 5. New Issues for 2011**
- 6. Future Direction**
- 7. Assignments**
- 8. Next meeting in Nashville**

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Distribution Transformer Subcommittee Task force / Working Group Report

Document #: _____ Current Standard Date: _____

Document Title: TF Transformer Efficiency And Loss Evaluation (DOE Activity)

Chair: _____ S. Schull Vice-Chair: _____

PAR Date: _____ PAR Expiration Date: _____

PAR Status: _____

Current Draft Being Worked On: _____ Dated: _____

Meeting Date: _____ 4/12/2011 Time: _____ 3:15 pm

| | | |
|-------------|------------------------------|----|
| Attendance: | Members | 28 |
| | Guests | 47 |
| | Guests Requesting Membership | 5 |
| | Total | 75 |

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Meeting Minutes / Significant Issues / Comments:

A quorum was present. There were no patents to disclose. The Minutes from the October 26, 2010, meeting in Toronto, Canada, were approved as written.

Mr. Hopkinson welcomed Matt Hartley and Hisham Araji from Navigant Consulting. Navigant Consulting is a contractor working for DOE on the distribution transformer efficiency rulemaking.

1. Mr. Hopkinson reviewed slides from his presentation titled “Distribution Transformer Energy Efficiency Task Force.” The presentation is posted on the IEEE Transformer Committee Website under the Distribution Transformers Subcommittee.

Dates for the DOE Rulemaking are:

- An ANOPR published March 2011
- NOPR expected to be published by October 1, 2011
- Final Rule expected to be published by October 1, 2012
- Effective date 1/1/2016

It was noted that the effective date may be earlier, but will be no later than 2016.

Corrections were made to slide #53 and #73. Updated presentation will be posted on IEEE website.

2. Public Comment on DOE rulemaking

DOE is seeking comments on the distribution rulemaking. The DOE website for rulemaking is:

http://www1.eere.energy.gov/buildings/appliance_standards/commercial/distribution_transformers.html

Public comments are due April 18, 2011. To submit comments:

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

3.. Phil Hopkinson is working closely with Navigant Consulting and has noticed errors in the material prices and final transformer selling prices that were used in the engineering analysis of the Candidate Standard Levels (CSL's). Phil will be gathering inputs to provide a composite view of the errors to Navigant Consulting directly. Phil will welcome inputs from the manufacturers to try to develop a range of prices to the DOE so that they can correct the report. Please respond directly to Phil if you want to have your data included in the ranges. Phil will not divulge any names to the DOE.

4.. Certification and Compliance Rules

Certification and Compliance rules were published March 7, 2011. The document may be found at:

http://www1.eere.energy.gov/buildings/appliance_standards/certification_enforcement.html

5.. New Business

There was no new business.

The next meeting is planned for the fall in Boston. The meeting adjourned at 4:43 PM.

| | |
|----------------------|-----------------------|
| Submitted By: | <u>Scott Choinski</u> |
| Date: | <u>April 13, 2011</u> |

PW:IEEE

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Distribution Transformer Subcommittee Working Group Report

Interested persons may submit comments, identified by the notice title, the Notice of Public Meeting (NOPM) for Energy Conservation Standards for Distribution Transformers, and provide the docket number EERE-2010-BT-STD-0048 and/or regulatory information number (RIN) 1904-AC04. Comments may be submitted using any of the following methods:

- Federal eRulemaking Portal: [http:// www.regulations.gov](http://www.regulations.gov). Follow the instructions for submitting comments.

- E-mail: DistributionTransformers-2010-STD-0048@ee.doe.gov. Include EERE-2010-BT-STD-0048 and/or RIN 1904-AC04 in the subject line of the message.

- Mail: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Mailstop EE-2J, Public Meeting for Distribution Transformers, EERE-2010-BT-STD- 0048 and/or RIN 1904-AC04, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Phone: (202) 586-2945. Please submit one signed paper original.

- Hand Delivery/Courier: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, 6th Floor, 950 L'Enfant Plaza, SW., Washington, DC 20024. Phone: (202) 586-2945. Please submit one signed paper original.

Instructions: All submissions received must include the agency name and docket number or RIN for this proposed rulemaking

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Negotiated Settlement in process for New Final Rules

A. Richard Parker Moderator appointed by DOE from U of V Law School

B. Ground rules established

C. Two Negotiating Teams

1. LV
2. MV

D. Focus on Loading, Present worth of losses, materials, and transformer selling prices vs. efficiency.

E. Timing: Short window with year-end target

F. Consensus: Based on 100% agreement

Fallback Position: DOE establishes final rule

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Negotiated Settlement in process for New Final Rules

A.The Negotiating Teams:

1. Limited to 26 members for each team
2. Balanced makeup of:
 - a. Transformer Manufacturers
 - b. Materials Suppliers
 - c. Users of Transformers
 - d. Energy Conservation Advocates
 - e. State and Federal Regulators
3. Conservation advocates want higher efficiency
4. Manufacturers and users want economically justified efficiencies with widely available materials
5. Life Cycle cost minimization is the yardstick
- 6. Major push to verify economic models, BIL sensitivity, and impacts on suppliers, manufacturers, and users.**

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Low Voltage Negotiating Team 15 Members

| Name | Title | Affiliation | Phone Number | Email |
|------------------|-------------------------------------------------|-------------------|----------------|----------------------------------------|
| Ballo, Timothy | Associate Attorney | Earthjustice | (202) 667-4500 | tballo@earthjustice.org |
| Beck, Scott | Product Engineering Manager | Lakeview Metals | (847) 838-9800 | ScottB@LVMetals.com |
| Petersen, Eric | Director of Customer Services & Research | AK Steel | (513) 425-5000 | Eric.Petersen@aksteel.com |
| Fernstrom, Gary | Senior Project Manager | PG&E | (510) 530-1789 | gbf1@pge.com |
| DeLaski, Andrew | Executive Director | ASAP | (617) 363-9470 | adelaski@standardsASAP.org |
| Roy, Robin | Director | NRDC | (212) 727-2700 | rroy@nrdc.org |
| Nadel, Steve | Executive Director | ACEEE | (202) 507-4011 | snadel@aceee.org |
| Robles, Eduardo | | Eaton | (915) 238-9846 | eduardorobles@eaton.com |
| Greeson, Robert | Sr. Electrical Design Engineer | Federal Pacific | (276) 645-8210 | rgreeson@federalpacific.com |
| Tendulkar, Vijay | | ONYX Power | | vijay.tendulkar@onyxpower.com |
| Kennedy, Chad | Manager, Industry Standards | Schneider | (803) 695-7813 | chad.kennedy@us.schneider-electric.com |
| Caskey, John | Assistant Vice President of Industry Operations | NEMA | (703) 841-3233 | john.caskey@nema.org |
| Millure, David | Sr. Vice President | Metglas | (843) 349-7380 | dave.millure@metglas.com |
| Cymbalsky, John | Supervisory Operations Research Analyst | DOE | (202) 287-1692 | john.cymbalsky@ee.doe.gov |
| Stoering, Mark | VP of Business Development | Xcel Energy; ERAC | (612) 215-4570 | mark.e.stoering@xcelenergy.com |

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Medium Voltage Negotiating Team ~25 Members

| 1 | Name | Title | Affiliation | Phone Number | Email |
|----|-------------------|-------------------------------------------------|----------------------------------|--------------------|--------------------------------------------------------------------------|
| 2 | Anderson, Richard | Manager of Electrical Engineering | Fayetteville PWC | (910) 223-4517 | rick.anderson@faypwc.com |
| 3 | Ballo, Tim | Associate Attorney | Earthjustice | (202) 667-4500 | tballo@earthjustice.org |
| 4 | Beck, Scott | Product Engineering Manager | Lakeview Metals | (847) 838-9800 | ScottB@LVMetals.com |
| 5 | Caskey, John | Assistant Vice President of Industry Operations | NEMA | 703-841-3233 | john.caskey@nema.org |
| 6 | Corkran, Jerry | Staff Engineer | Cooper Power Systems | (262) 524-4355 | jerry.corkran@cooperindustries.com |
| 7 | Cymbalsky, John | Supervisory Operations Research Analyst | DOE | (202) 287-1692 | john.cymbalsky@ee.doe.gov |
| 8 | DeLaski, Andrew | Executive Director | ASAP | (617) 363-9470 | adelaski@standardsASAP.org |
| 9 | Eckman, Tom | Manager | NWPower and Conservation Council | (503) 222-5161 | Teckman@nwcouncil.org |
| 10 | Fernstrom, Gary | Senior Project Manager | PG&E | (510) 530-1789 | gbf1@pge.com |
| 11 | Gaytan, Carlos | Manager of Engineering | GE Prolec | +52 (818) 030-2162 | carlos.gaytan@ge.com |

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Medium Voltage Negotiating Team ~25 Members

| 1 | Name | Title | Affiliation | Phone Number | Email |
|----|------------------------|-----------------------------------------------------|----------------------------|-----------------------|-------------------------------------|
| 12 | Greeson, Robert | Sr. Electrical Design Engineer | Federal Pacific | (276) 645-8210 | rgreeson@federalpacific.com |
| 13 | Hirsch, Bruce | Management Consultant | Baltimore Gas and Electric | | bruce.r.hirsch@bge.com |
| 14 | Hodge, Gerald | Consulting Engineer | Howard Industries | (601) 425-3151 | jhodge@howard.com |
| 15 | Hopkinson, Phil | President and CEO | HVOLT | (704) 846-3290 | phopkinson@hvolt.com Deleted |
| 16 | Hyland, Michael | Sr. Vice President | APPA | (202) 467-2900 | mhyland@appanet.org |
| 17 | Millure, David | Sr. Vice President | Metglas | (843) 349-7380 | dave.millure@metglas.com |
| 18 | Nadel, Steve | Executive Director | ACEEE | 202-507-4011 | snadel@aceee.org |
| 19 | Patterson, Wes | Vice President of Technology | ABB | (919) 829-4364 | wes.patterson@us.abb.com |
| 20 | Petersen, Eric | Director of Customer Services & Research | AK Steel | (513) 425-5000 | Eric.Petersen@aksteel.com |
| 21 | Polinski, Ray | General Manager of Grain-Oriented Electrical Steels | Allegheny Ludlum | (724) 845-0259 | Raymond.Polinski@ATImetals.com |
| 22 | Rosenstock, Steve | Manager of Energy Solutions | Edison Electric Institute | (202) 508-5000 | srosenstock@eei.org |

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Medium Voltage Negotiating Team ~25 Members

| 1 | Name | Title | Affiliation | Phone Number | Email |
|----|----------------|------------------------------------------------------------|----------------------|----------------|--------------------------------|
| 23 | Roy, Robin | Director | NRDC | (212) 727-2700 | rroy@nrdc.org |
| 24 | Saint, Robert | Principal Transmission & Distribution Engineering | NRECA | (703) 907-5863 | robert.saint@nreca.coop |
| 25 | Simmons, Chuck | Manager of Distribution Standards | Progress Energy | (919) 662-6033 | chuck.simmons@pgnmail.com |
| 26 | Stoering, Mark | Vice President of Business Development | Xcel Energy; ERAC | (612) 215-4570 | mark.e.stoering@xcelenergy.com |
| | | Director of Customer Services | | | |

- Most members attend regularly
- Guests and observers allowed in meetings
- Meeting agenda with tight timetable at each meeting
- Focus on fact finding and results.

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Timetable for Remaining meetings

November 8-9, 2011

| Working Group | Date and Time | Address |
|----------------|-----------------------------------|-------------------------------------------------------------------------------------------|
| Medium-Voltage | November 8; 9:00 a.m. – 6:00p.m. | Edison Electric Institute 701 Pennsylvania Avenue, N.W. Washington, D.C. 20004-2696 |
| Low-Voltage | November 9; 9:00 a.m. – 6:00 p.m. | 950 L'Enfant Plaza Washington, DC 20024 Room: 2 |

November 30 – December 2, 2011

| Working Group | Date and Time | Address |
|----------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Medium-Voltage | November 30; 9:00 a.m. – 5:00p.m. December 1; 9:00 a.m. – 12:00 p.m. | American Public Power Association 1875 Connecticut Ave. NW, Suite 1200, Washington, DC 20009-5715 |
| Low-Voltage | December 1; 1:00 p.m. – 5:00 p.m. | American Public Power Association 1875 Connecticut Ave. NW, Suite 1200, Washington, DC 20009-5715 |
| Low-Voltage | December 2; 9:00 a.m. – 3:30 | DOE, Forrestal Building 1000 Independence Ave, SW Washington, DC 20585 Room: 8E-089 |

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Key Issues to establishing New Standards

- 1. Transformer RMS Equivalent Load**
 - a. Currently 35% for LV
 - b. Currently 50% for MV
- 2. Present worth value of a watt saved in 30 years with 3% inflation and 7% cost of money**
 - a. Worth may be \$6.71 for Utilities
 - b. Worth probably < \$9.91 for Industrials and Commercials as 30 years horizon believed excessive by manufacturers and users
- 3. Core materials to be the basis of a minimum national standard**
 - a. M3 believed to be limit by manufacturers and domestic steel makers
 - b. Amorphous pushed by Conservation advocates
- 4. Transformer selling price versus efficiency**
 - a. OPS data questioned by LV and MV manufacturers
 - b. Cost data still being accumulated.

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

References of Value

1. DOE Materials

- a. August 31, 2011 issued documents
- b. March 2011 documents

2. Studies by Carlos Gaytan, Wes Patterson, and Phil Hopkinson

- a. M3 based designs have steep cost curve versus efficiency
- b. The cost /watts saved for each makes higher efficiency look costly

3. AK Steel Global steel report

- a. M3 believed as far as domestics can support
- b. ZDMH not available in the US
- c. Amorphous not adequately available to support 100% of DT's

4. Reports by Utilities, Amorphous makers, users including field failures

- a. Loading examined
- b. Field failures analyzed.

Distribution Transformer Energy Efficiency Task Force

Philip J Hopkinson, PE

Future Posted Materials

- 1. Reference Materials released to me**
- 2. Decisions by DOE**

Next Meeting in Nashville