DOCKET # 13-CCEJA-1
COMMENTS ON PROPOSITION 39 GUIDELINES

TO:	CA ENERGY COMMISSION - DOCKET@ENERGY.CA.GOV
FROM:	CAMILO ARANGO, CEM (POWERSMITHS INTERNATIONAL CORP)
SUBJECT:	DOCKET # 13-CCEJA-1: COMMENTS ON PROPOSITION 39 GUIDELINES EXTENTION OF EUL ON THE HIGH-EFFICIENCY TRANSFORMER ECM
DATE:	SEPTEMBER 24, 2015
ATTACHEMENTS:	DOE, FANIEMAE DOCUMENTS ON EUL AND FACTORY WARRANTY

To Whom It May Concern:
The following comments are based on empirical data that California LEA's can greatly benefit from extending the posted EUL (Effective Useful Life) for Electrical High Efficiency Transformers on the Program Implementation Guidelines from 15 years (existing) to 30 years (proposed).
Please reference form #: CEC-400-2014-022-CMF (Dec. 2014) Page E-2 of appendix E

Summary
Now that Electrical High Efficiency Transformers are a part of the program, some projects may not fit the required SIR because the listed EUL of the transformers does not reflect the actual useful life of the equipment. Correcting this issue will allow for more LEA's to include this measure into energy efficiency projects that go beyond the "low hanging fruit".
The U.S. Department of Energy produced the following document to validate the EUL of Transformers (Document Attached):

> **Title: Federal Registry (10 CFR Part 430)**
> **Excerpts:** *"The Department defined distribution transformer service life as the age at which the transformer retires from service. NEMA suggested that the Department use a transformer lifetime of 30 years for the LCC analysis. (NEMA, No. 7 at pp. 10–11)...". "The Department assumed, based on ORNL–6847, Determination Analysis of Energy Conservation Standards for Distribution Transformers, that the average life of distribution transformers is 32 years."*

Also attached is a EUL table, produced by Fannie Mae, which shows transformers at 30 years EUL. (pg. 10).

Using the correct 30 year EUL for transformers, would allow more LEA's in districts with lower utility rates to include this important measure into their energy project, and meet the require SIR for approval.

Recommendation:
Effective Useful Life for Energy Measures in Years, per the current Prop 39 Guidelines, are listed in Appendix E; it is recommended that Electrical High Efficiency Transformer go from 15 to 30 years to promote the auditing and implementation of this ECM. The following is a recommendation for the revision of the handbook.

Current Language	Proposed or Suggested Language
15	30

Thank you for your consideration. Please feel free to contact me with any questions.

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Federal Register

Thursday,
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Part II

Department of Energy

Office of Energy Efficiency and Renewable Energy

10 CFR Part 430

Energy Conservation Program for Commercial and Industrial Equipment: Energy Conservation Standards for Distribution Transformers; Proposed Rule

calculator that calculates customer bills based on information collected from a representative set of utility tariffs, seasonal charges, tariff blocks, and the fixed, energy, and demand charges in each block. The Department collected 218 published utility tariffs from 90 utilities to provide the data for the bill calculator.

As highlighted in section IV.E, the Department seeks input from stakeholders regarding the appropriate energy costs to use in this rulemaking.

g. Electricity Price Trends

NRDC commented that all three of the proposed electricity price trend scenarios explore real electricity price increases relative to 2001 prices. (NRDC, No. 27 at p. 2) CDA commented that there are growing indications that electricity prices will not be declining in future years as demand catches up with, and perhaps exceeds, available generation and transmission capacity. (CDA, No. 43 at p. 2)

For the relative change in electricity prices for future years, the Department used the price trends from three *AEO 2003* forecast scenarios and a constant real price scenario. LCC spreadsheet users have the choice of four scenarios: *AEO 2003* low growth scenario, *AEO 2003* reference scenario, *AEO 2003* high growth scenario, and constant real price scenario. To reflect the uncertainty in forecasts of economic growth, the *AEO 2003* forecasts use high and low economic growth cases along with the reference case to project the possible energy markets. The high economic growth case incorporates higher population, labor force, and productivity growth rates than the reference case. Investment, disposable income, and industrial production are higher and economic output is projected to increase by 3.5 percent per year between 2001 and 2025. The low economic growth case assumes lower population, labor force, and productivity gains, with resulting higher prices and interest rates and lower industrial output growth. In the low economic growth case, economic output is expected to increase by 2.5 percent per year over the forecast horizon. The ANOPR uses the trend from the reference scenario, 3.0 percent, as its default ''medium'' scenario.

h. Equipment Lifetime

The Department defined distribution transformer service life as the age at which the transformer retires from service. NEMA suggested that the Department use a transformer lifetime of 30 years for the LCC analysis. (NEMA, No. 7 at pp. 10–11) NEMA later suggested that DOE should investigate the actual lifetime of dry-type distribution transformers which it felt could be closer to 20 years, rather than the 32 years assumed in the Department's analysis. (NEMA, No. 26 at p. 3) CDA commented that it is not uncommon to find transformers 50-plus years old still in service. (CDA, No. 43 at p. 3)

The Department assumed, based on ORNL–6847, Determination Analysis of Energy Conservation Standards for Distribution Transformers, that the average life of distribution transformers is 32 years. After preparing an in-depth review of average lifetimes during the Determination Analysis, ORNL found it to be 32 years. The Department still believes this is an accurate representation of the average lifetime of a distribution transformer. This lifetime assumption includes a constant failure rate of 0.5 percent/year due to lightning and other random failures unrelated to transformer age and an additional corrosive failure rate of 0.5 percent/year at year 15 and beyond. The Department adjusted the retirement distribution to maintain an average life of 32 years for both liquid-immersed and dry-type transformers.

i. Maintenance Costs

The Department assumed that the cost for general maintenance of distribution transformers will not change with increased efficiency. In practice, there is little scheduled maintenance for distribution transformers. The maintenance that does occur normally consists of brief annual checks for dust buildup, vermin infestation, and accident or lightning damage.

j. Discount Rates

The discount rate is the rate at which future expenditures are discounted to estimate their present value. Stakeholders expressed concern over the appropriate discount rate to use in the LCC analysis. NEMA stated that 8 percent should be the minimum discount rate considered and that a discount range of 15–20 percent adjusted for inflation (real) would more closely reflect opportunity costs for business. (NEMA, No. 7 at p. 11) NEMA also suggested that the Department use a high hurdle rate of 35 percent for the LCC analysis. (NEMA, No. 26 at p. 2) Mr. John Ainscough also noted that DOE should consider the opportunity cost of capital that may be diverted from other areas to pay for more expensive transformers. (J. Ainscough, No. 15 at p. 1) NRDC stated that the 35 percent discount rate is unjustified, pointing out that this discount rate is evidence of the type of market failure that standards are supposed to address. (NRDC, No. 27 at p. 3) NRDC stated that an 8 percent discount rate is too high. NRDC noted that it has demonstrated in previous appliance rulemakings that market rates of return on investment are in the range of 5–5.5 percent real, at best. (NRDC, No. 5 at p. 4) NRDC stated that these are the highest rates that are defensible and recommended that the distribution of rates used for the analysis center around 2–3 percent real to reflect reduced societal risk resulting from energy efficiency standards. NRDC also stated that it agrees with the Department that the actual cost of capital represents the appropriate discount rate for the LCC analysis. (NRDC, No. 25 at p. 2 and No. 27 at p. 2) Cooper Power Systems commented that the discount rate selection method should be similar to that used by DOE to determine the present value of improved efficiency in other energy savings projects such as for refrigerators and motor efficiency. (Cooper Power Systems, No. 34 at p. 2)

Lacking stakeholder consensus, the Department used the classic economic definition that discount rates are equal to the cost of capital. The cost of capital is a combination of debt interest rates and the cost of equity capital to the affected firms and industries. For each design line, the Department divided ownership into classes of potential customers. Table II.10 shows the classes of owners and their percentages by design line. The Department determined from the Damodaran online investment survey *(http://pages.stern.nyu.edu/adamodar/)* that each class of potential owners has a distribution of discount rates. The discount rate distribution for each design line analyzed in the LCC analysis is a weighted sample that combines estimated ownership percentages based on the 2001 shipment estimates and their respective discount rates. Table II.10 also shows the mean real discount rates by ownership category used by DOE in the analysis. In addition, Table II.10 shows the resultant weighted average discount rates for each design line. A more detailed description of the data sources is provided in Chapter 8 of the TSD. As highlighted in section IV.E, the Department seeks input from stakeholders on the appropriateness of these discount rates.

FannieMae

INSTRUCTIONS FOR PERFORMING A MULTIFAMILY PROPERTY CONDITION ASSESSMENT (Version 2.0)

APPENDIX F

ESTIMATED USEFUL LIFE TABLES

These Estimated Useful Life Tables for multifamily property systems and components are intended to represent standardized average estimated useful life ("EUL") values and are not intended to replace the professional judgment of the PCA Consultant in determining the Effective Age and Remaining Useful Life of the systems and components at the Property. The PCA Consultant should consider preventive maintenance practices, as well as environment, geographic, resident, and other factors when determining Effective Age and Remaining Useful Life of the systems and components of a multifamily Property. In addition to providing guidance on EUL values typically considered capital expenditure items, the EUL tables may include items that are typically considered general maintenance and repair items to be handled by in-house maintenance staff.

Estimated Useful Life (EUL) Tables

FLATWORK, PARKING AREAS AND WALKWAYS	Multifamily / Coop	Seniors	Students
Asphalt pavement	25	25	25
Asphalt seal coat	5	5	5
Concrete pavement	50	50	50
Curbing, asphalt	25	25	25
Curbing, concrete	50	50	50
Parking, stall striping	5	5	5
Parking, gravel surfaced	15	15	15
Security gate (site ingress/egress) - rolling gate / lift arm	10	10	10
Sidewalk, asphalt	25	25	25
Sidewalk, brick paver	30	30	30
Sidewalk, concrete	50	50	50

BUILDING HEATING WATER TEMPERATURE CONTROLS	Multifamily / Coop	Seniors	Students
Chilled Water Distribution	50+	50+	50+
Chilling Plant	15	15	15
Cooling Tower	25	25	25
Fuel Oil Storage	25	25	25
Fuel Transfer System	25	25	25
Gas Distribution	50+	50+	50+
Heat Sensors	15	15	15
Heat Exchanger	35	35	35
Heating Risers and Distribution	50+	50+	50+

VENTILATION SYSTEMS	Multifamily / Coop	Seniors	Students
Combustion Air, Duct with fixed louvers	30	30	30
Combustion Air, Motor louver and duct	25	25	25
Flue Exhaust	w/boiler	w/boiler	w/boiler
Free Standing Chimney	50+	50+	50+

ELECTRICAL SYSTEMS	Multifamily / Coop	Seniors	Students
Common area	15	15	15
Buzzer/Intercom, central panel	20	20	20
Central Unit Exhaust, roof mounted	15	15	15
Compactors	15	15	15
Dumpsters	10	10	10
Electrical distribution center	40	40	40
Electric main	40	40	40
Emergency Generator	25	25	25
Gas lines	40	40	40
Gas main	40	40	40
Heating supply/ return	40	40	40
Power distribution	40	40	40
Transformer	30	30	30