

DOCKETED

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**Nancy Clanton's Comments on 15-Day Express Terms 2019
CALGREEN Voluntary Provisions Docket 17-BSTD-03**

Additional submitted attachment is included below.

Nancy Clanton's Comments on 15-Day Express Terms 2019 CALGREEN Voluntary Provisions Docket 17-BSTD-03

1. The 2014 NEEA study (performed by Clanton & Associates and VTTI) quoted in NEMA's (TN #222653) first item is based on roadway visibility at speeds of 35mph, when the object is 250 feet away from the driver. Therefore, referencing the roadway visibility sections of these studies is not applicable to general hardscape areas.

The NEEA study also shows a lower CCT preference in the subjective evaluations from pedestrians.

The study also summarized the other three cities studied (by Clanton & Associates and VTTI) including San Diego and San Jose in California. In the San Diego study, the 3500K CCT significantly outperformed the higher CCT light sources. In both San Diego and San Jose, subjective evaluations from pedestrian participants significantly preferred the lower CCT lighting.

2. The DOE study that NEMA referenced is also focused on streetlighting not general hardscape applications.
3. Virginia Tech Transportation Institute (VTTI), with funding from Southern California Edison (SCE) and the Illuminating Engineering Society (IES), conducted a study about visibility in parking lots. This study is currently under final peer review, but the researchers have presented their findings to the IES Roadway Lighting Committee (2018 spring and fall meetings) and also at the 2018 IES Street and Area Lighting Conference.

Their findings show that there is no statistically relevant data that showed there were visual performance differences between 3000K CCT and 5000K CCT light sources in the parking lots. The study also shows that visibility plateaus at 2 lux average in a parking lot.

NEMA's claim of "less safe lighting" (TN # 224751) is completely unfounded and not backed up by any research for hardscape lighting environments. In fact, the VTTI current peer reviewed research completely contradicts this claim.

Our recommendation is to keep 3000K as the CCT upper limit in 2019 CALGreen Voluntary Provisions in order to provide quality lighting for hardscapes with minimal environmental consequences.

Sincerely,

Nancy E. Clanton, PE, FIES, FIALD, LEED Fellow
CEO - Clanton & Associates, Inc.

