



# “Dimmability” is a Satisfaction Concern

## Worked with EPA through 2011-2012

- Both EPA working group and NEMA working group
- Identified parameters of interest and explored them in detail

## The issue is complex and subjective

- If it were as easy, industry would have solved it already (MFR technical hotlines)
- Product-specific solutions do exist, but installed base varies

## Not ready for Dimmability/Compatibility Standards yet in Lamps Spec

- Several international standards are in progress
- Risk of stifling innovation/trade if move too early
- Avoid IP-specific solutions



# Backwards or Forwards?

- 💡 **Backward-looking dimming compatibility**
  - Pro: Good for installed base and today's complaints
  - Con: Bad for new technology and tomorrow's systems
- 💡 **Forward-looking dimming compatibility**
  - Pro: Better for evolutionary technology, less risk to innovation
  - Con: Leaves today's issues open
- 💡 **Has been suggested that MFRs be left to decide and declare, inherent choice of backwards or forwards**
  - Good idea, but lacking.
  - MFRs declare compatibility on UL records today. If this data was useful, it would be leveraged more.
  - Declaring one (or even ten) reference dimmer begs litigation. Maintain choice, increase awareness.



# Defining “dimmable”

## Challenge: Subjectivity

- Quantifying an electrical and physical response risks stifling, expensive requirements with no guarantee of satisfaction
- Much like the current state of Flicker research; interesting, but begs proper, lengthy studies to provide sufficient scientific data on which to base decisions with billions of dollars in ramifications

## Challenge: Repeatability

- Variations in results from one lab to the next and from one test subject to the next are heavy with risk for biased results and unpredictability
- No guarantee that consumers will be satisfied even with strict requirements, due to wide variation of installed base and installations/fixtures, as well as subjectivity in users



# What to put in ES Lamps Spec v1?

## For Dimming requirements? Nothing, yet

- International and Regional standards already in progress need to finish and get wrung out
- Then objective, carefully chosen requirements can be put in place

## What can be done today?

- Continued outreach. Yesterday's dimmers were built for yesterday's lamps. These are being superseded, so too should their dimmers.
- Specific guidance on compatible/optimal combinations lies with MFR testing and recommendations (as done today)
  - Yes, it's still a challenge as to what to recommend even then, but the same standards above should serve this need too



# Moving Forward



## EPA Dimming working group continues

- Periodically review status of standards development, as we are doing here today
- Reconvene for ES Lamps v2 and see which new standards might be applicable
- Start small and avoid potential restrictions on innovation, choice and trade