

ENERGY STAR. The simple choice for energy efficiency.

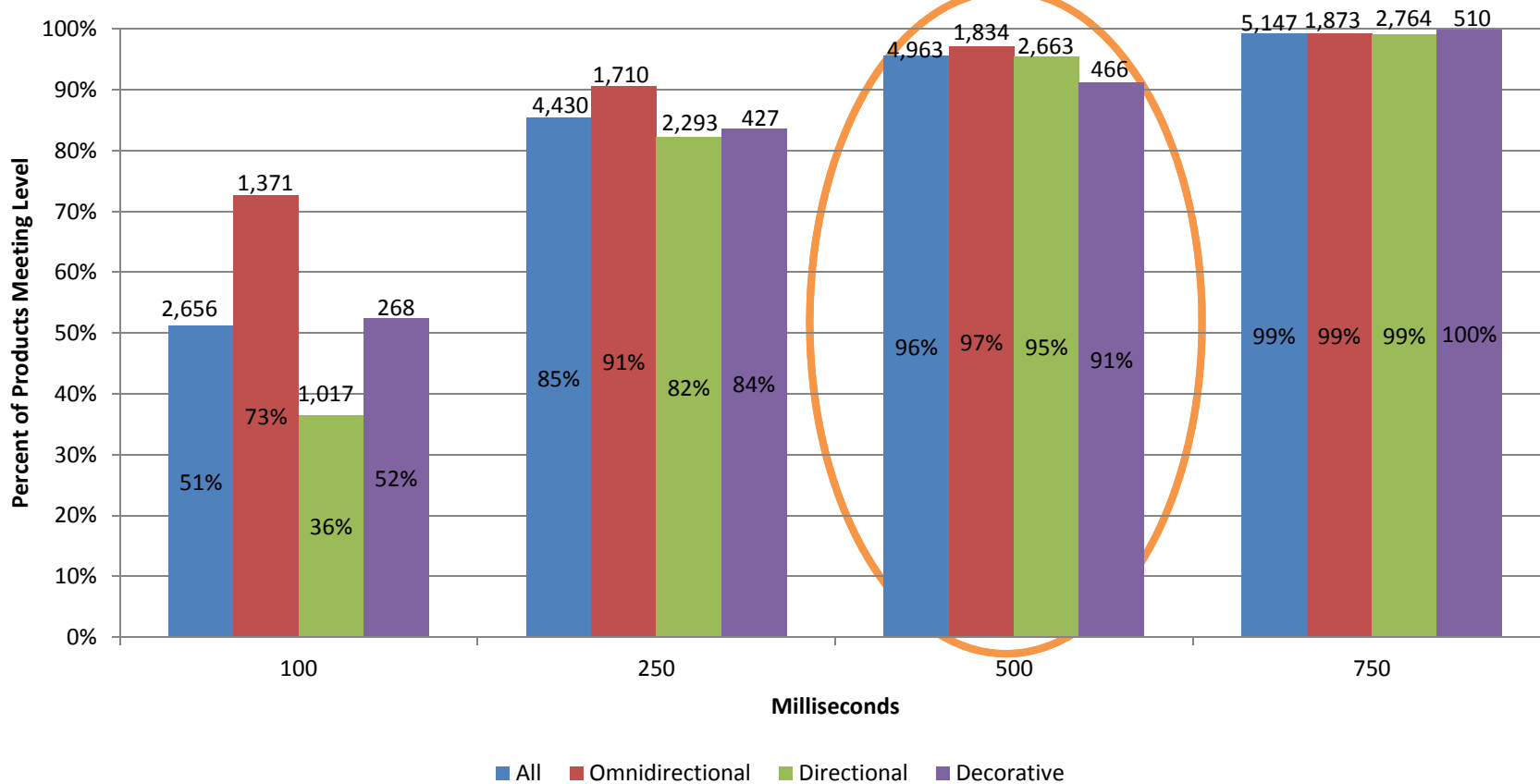


# Start-up Time, Run-up Time, and R9 Analysis for ENERGY STAR Lamps V2.0 Draft 1



# Section 11.4: Start Time

Start-up Time for Lamps meeting V1.1 Efficacy Requirements – by Lamp Category



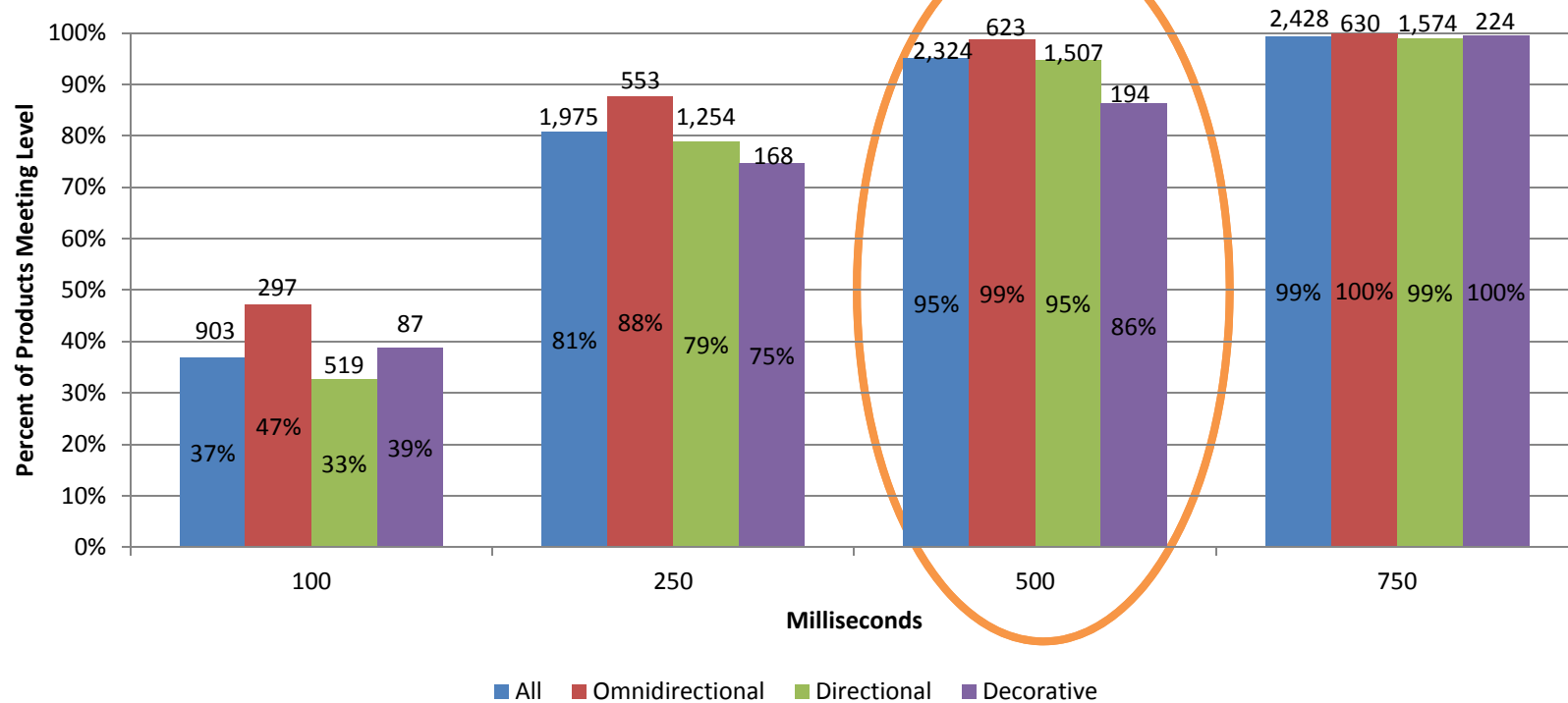
- Data pulled from QPL on 3/5/15
- V1.1: Start time must be  $\geq 1000$  milliseconds of application of electrical power
- Proposed V2.0: Start time must be  $\geq 500$  milliseconds of application of electrical power





# Section 11.4: Start Time

## Start-up Time for Lamps meeting V2.0 Proposed Efficacy Requirements – by Lamp Category

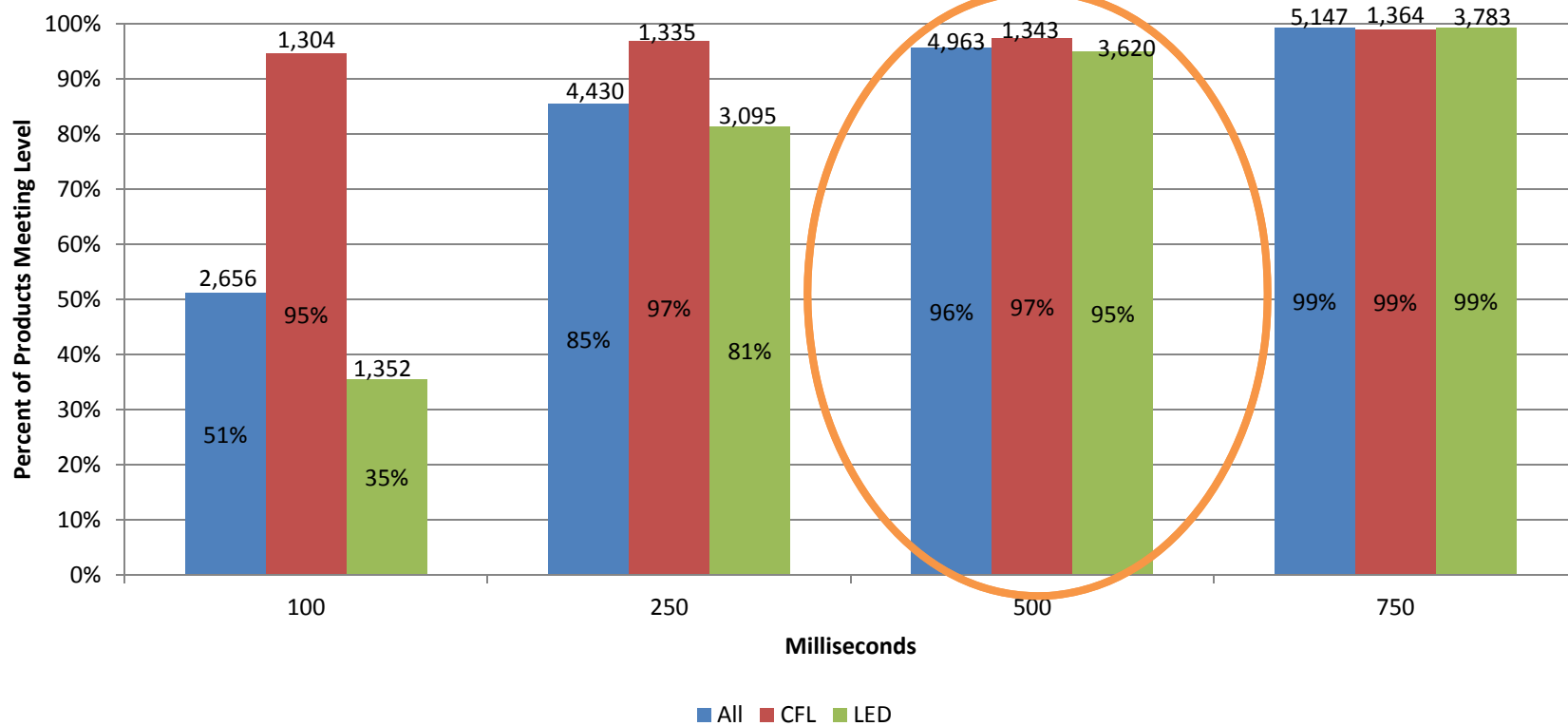


- V1.1: Start time must be  $\geq 1000$  milliseconds of application of electrical power
- Proposed V2.0: Start time must be  $\geq 500$  milliseconds of application of electrical power.
  - 95% of lamps that meet the proposed efficacy levels have a start time of 500 milliseconds or less.



# Section 11.4: Start Time

### Start-up Time for Lamps meeting V1.1 Efficacy Requirements - by Technology

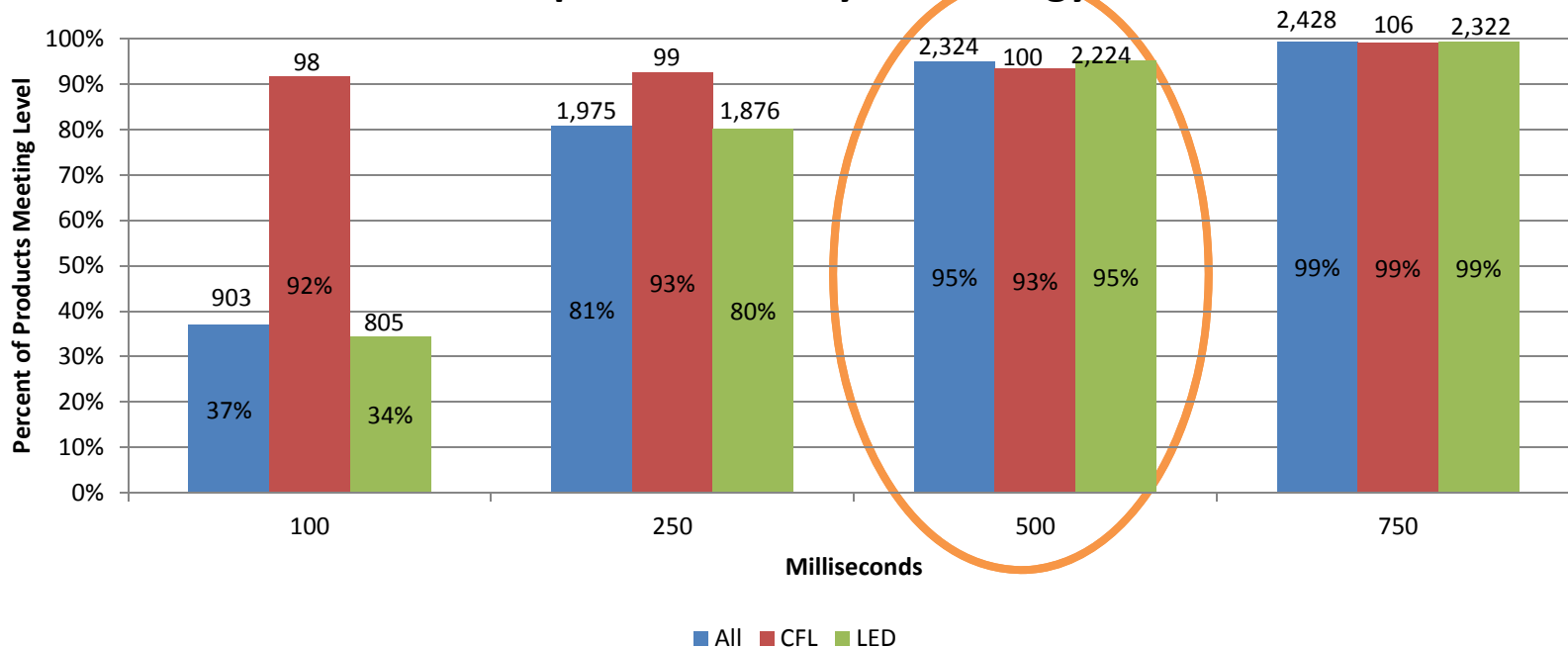


- V1.1: Start time must be  $\geq 1000$  milliseconds of application of electrical power
- Proposed V2.0: Start time must be  $\geq 500$  milliseconds of application of electrical power



# Section 11.4: Start Time

**Start-up time for Lamps meeting V2.0 Proposed Efficacy Requirements – by Technology**

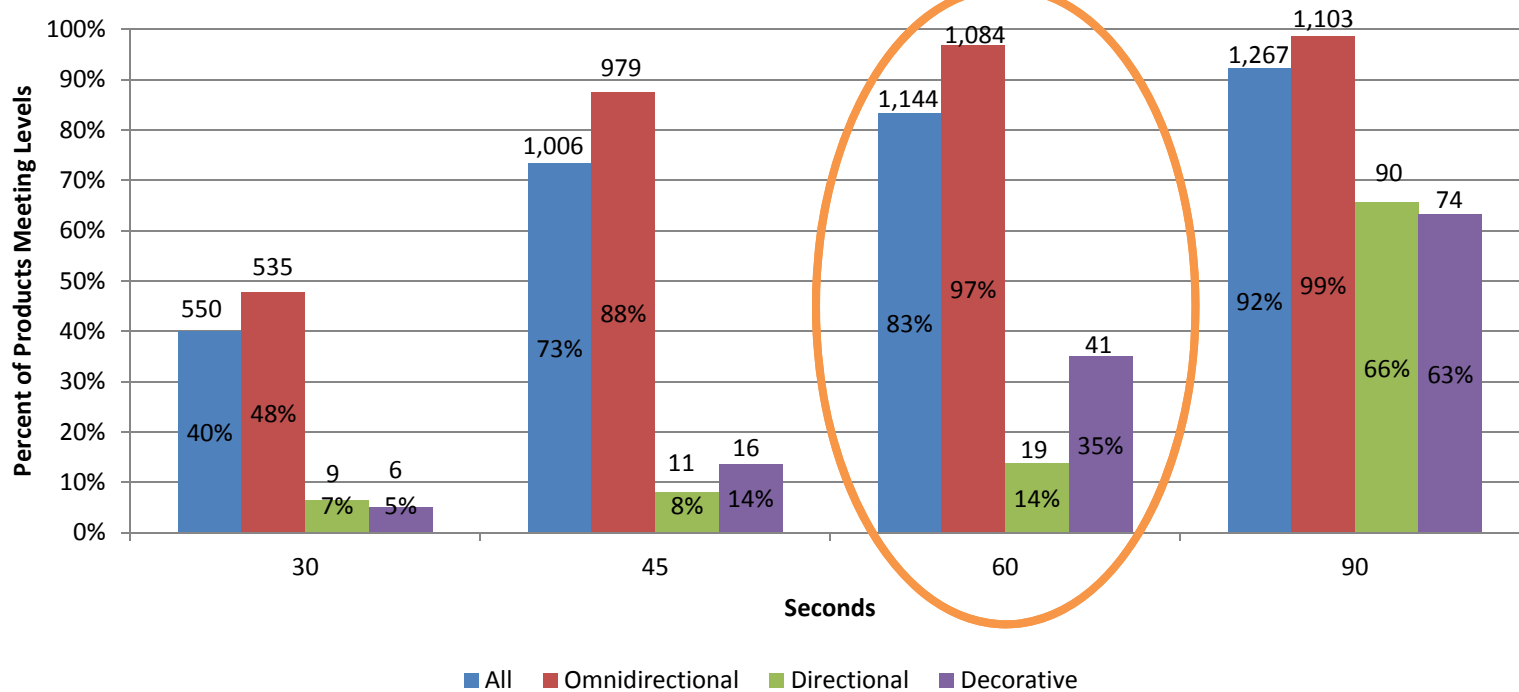


- V1.1: Start time must be  $\geq 1000$  milliseconds of application of electrical power
- Proposed V2.0: Start time must be  $\geq 500$  milliseconds of application of electrical power.
  - 95% of lamps that meet the proposed efficacy levels have a start time of 500 milliseconds or less.



# Section 11.5: CFL Run-Up Time

Run-up Time for CFL Lamps Meeting V1.1 Efficacy Requirements – by Lamp Category

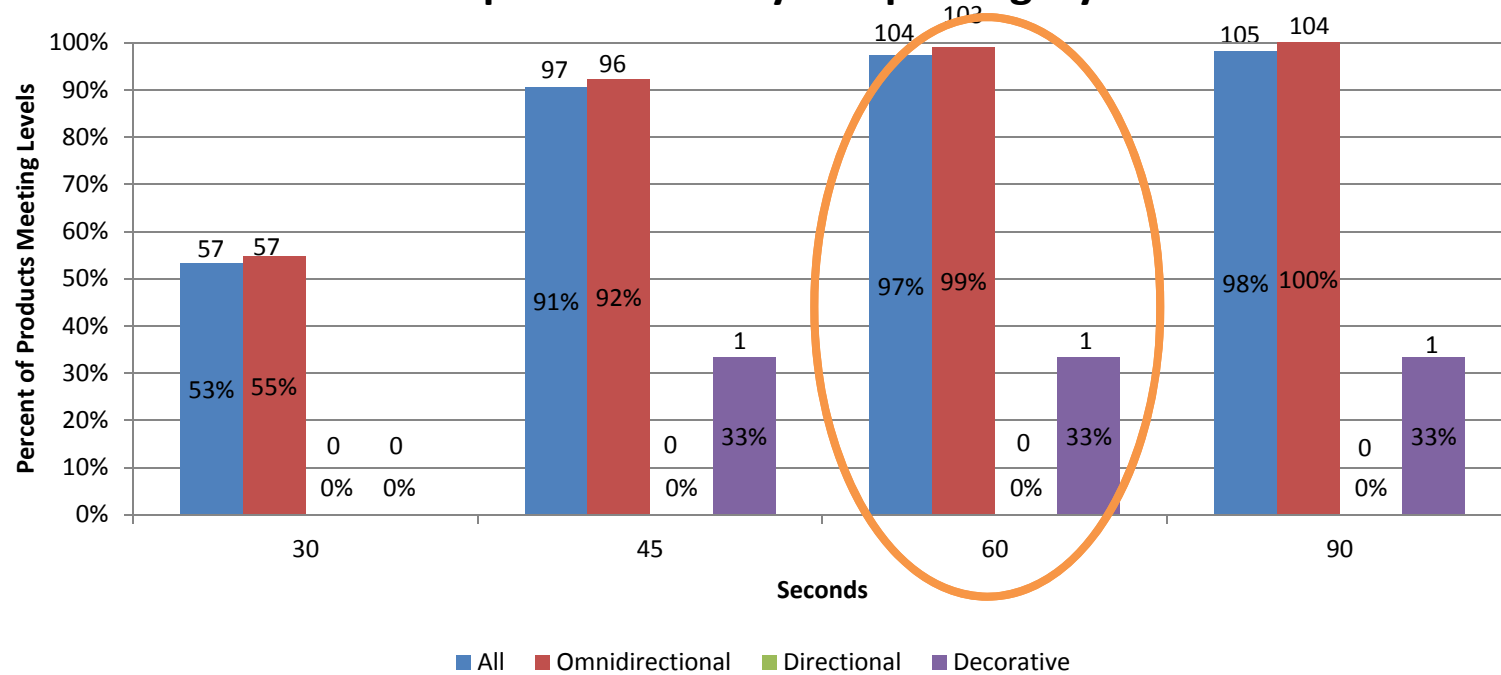


- V1.1: Covered CFLs must achieve 80% stabilized light output in  $\leq 120$  seconds and all other CFLs must achieve 80% stabilized light output in  $\leq 60$  seconds
- Proposed V2.0: Lamp must achieve 80% stabilized light output in  $\leq 60$  seconds



# Section 11.5: CFL Run-Up Time

## Run-Up Time for CFL Lamps Meeting V2.0 Efficacy Requirements – by Lamp Category

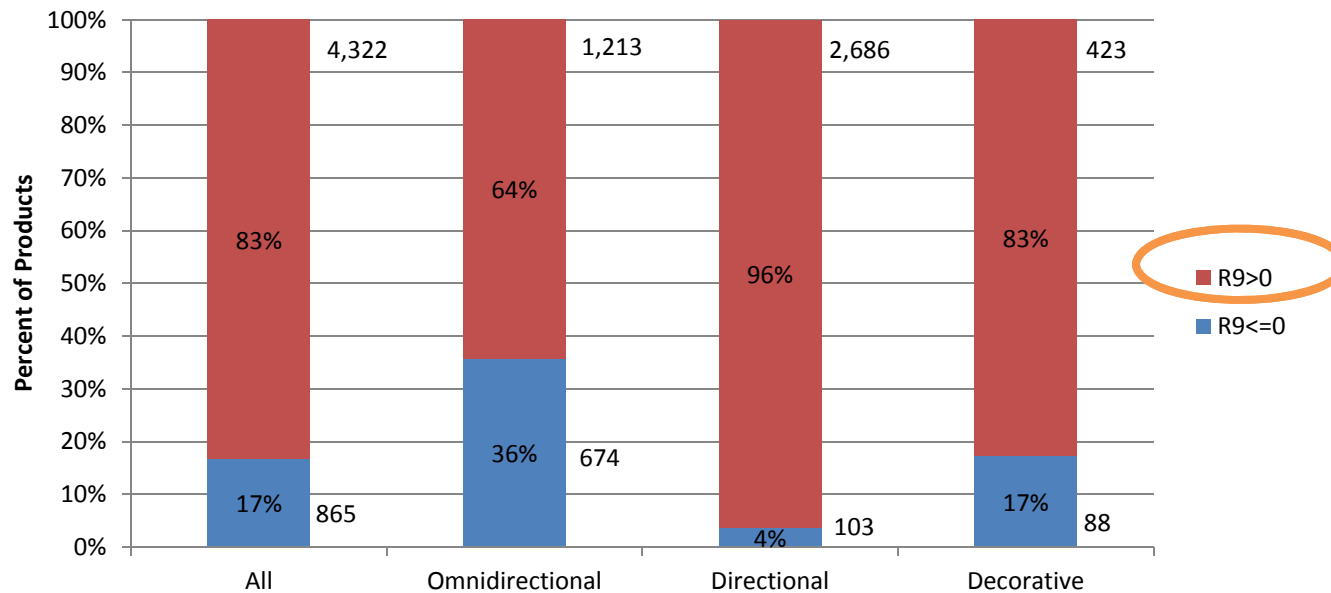


- V1.1: Covered CFLs must achieve 80% stabilized light output in  $\leq 120$  seconds and all other CFLs must achieve 80% stabilized light output in  $\leq 60$  seconds
- Proposed V2.0: Lamp must achieve 80% stabilized light output in  $\leq 60$  seconds.
  - 97% of lamps that meet the proposed efficacy levels have a run-up time of 60 seconds or less.



# Section 9.7: Color Rendering: All Lamps

## R9 of Lamps Meeting V1.1 Efficacy Requirements – by Lamp Category



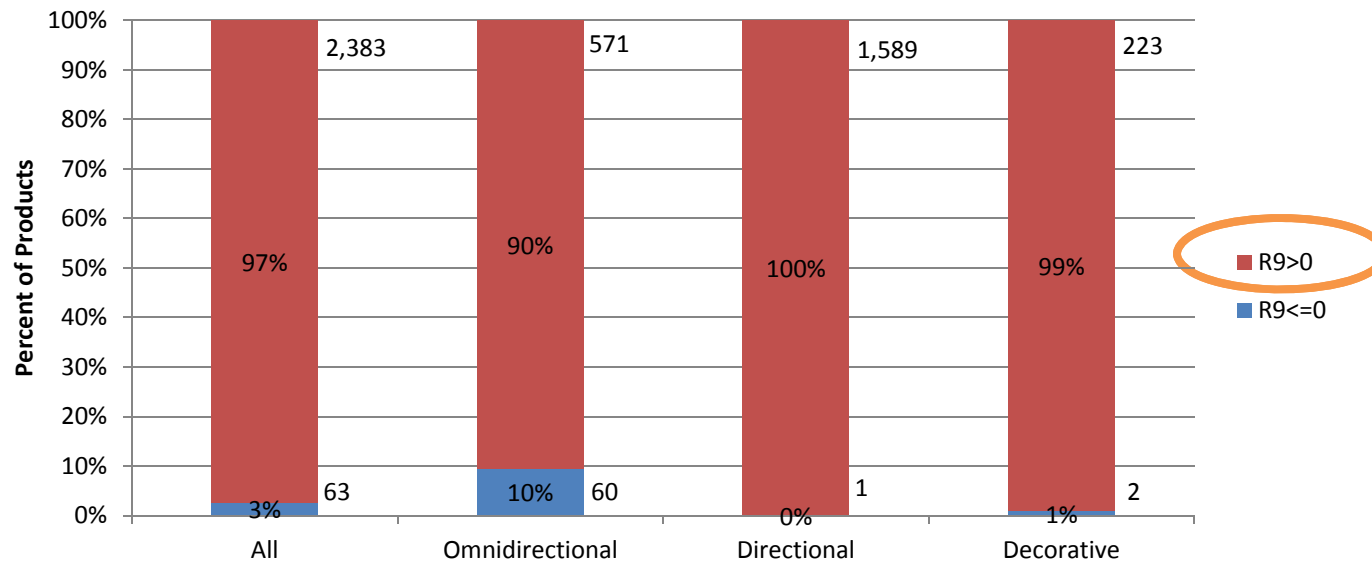
- V1.1: No  $R_g$  requirement for CFLs
- Proposed V2.0 requirement of  $R_g > 0$





# Section 9.7: Color Rendering: All Lamps

R9 of Lamps Meeting V2.0 Efficacy Requirements – by Lamp Category

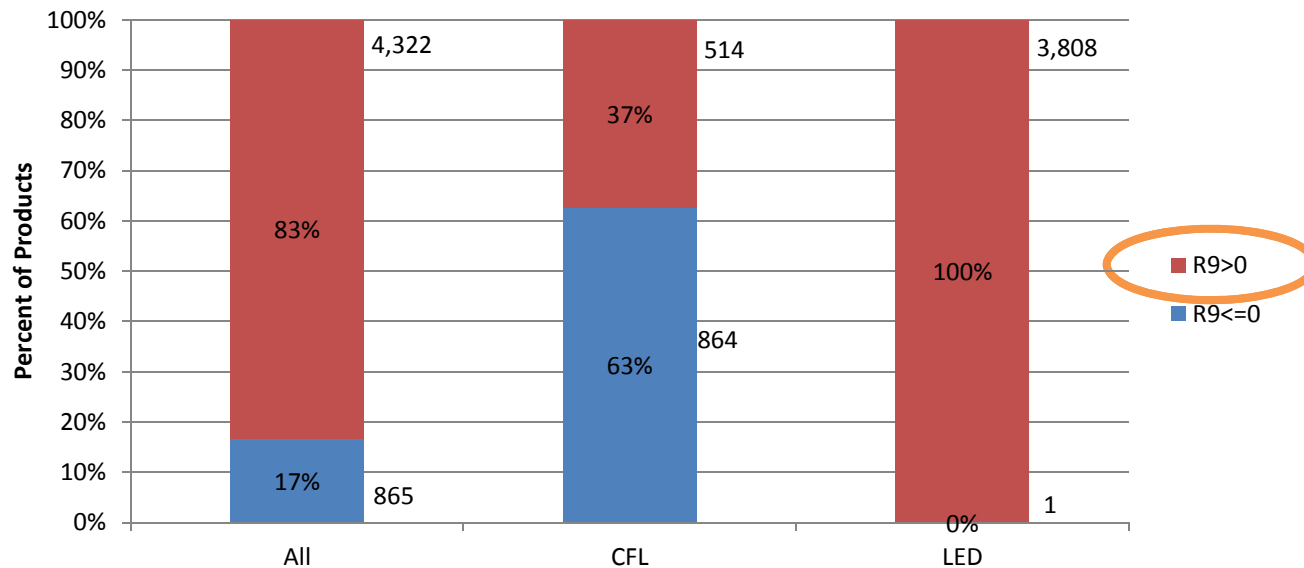


- V1.1: No  $R_g$  requirement for CFLs
- Proposed V2.0 requirement of  $R_g > 0$ 
  - 97% of lamps that meet the proposed efficacy requirements have  $R_g > 0$



# Section 9.7: Color Rendering: All Lamps

## R<sub>9</sub> of Lamps Meeting V1.1 Efficacy Requirements – by Technology

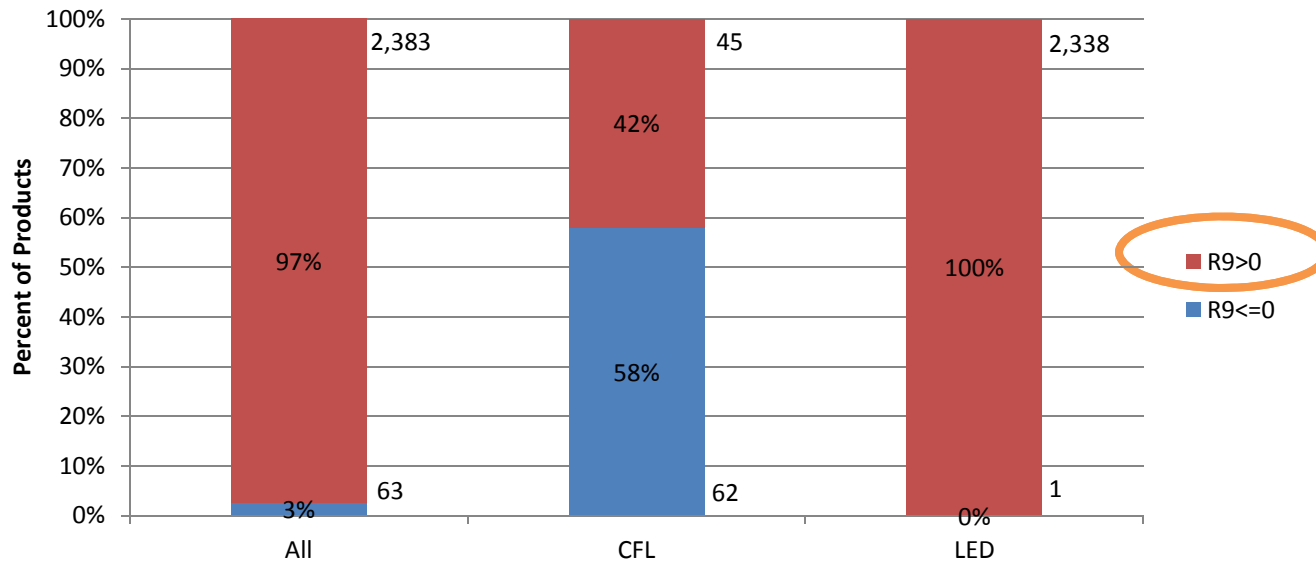


- V1.1: No R<sub>9</sub> requirement for CFLs
- Proposed V2.0 requirement of R<sub>9</sub> > 0



# Section 9.7: Color Rendering: All Lamps

**R9 of Lamps Meeting V2.0 Efficacy Requirements – by Technology**



- Proposed V2.0 requirement of  $R_g > 0$
- Currently, 82% of lamps on the ENERGY STAR Certified Lamps Product List have an  $R_g > 0$ 
  - 97% of lamps that meet the proposed efficacy requirements have  $R_g > 0$