Updated National Lighting Usage Estimates Incorporating Two New Regional Metering Studies

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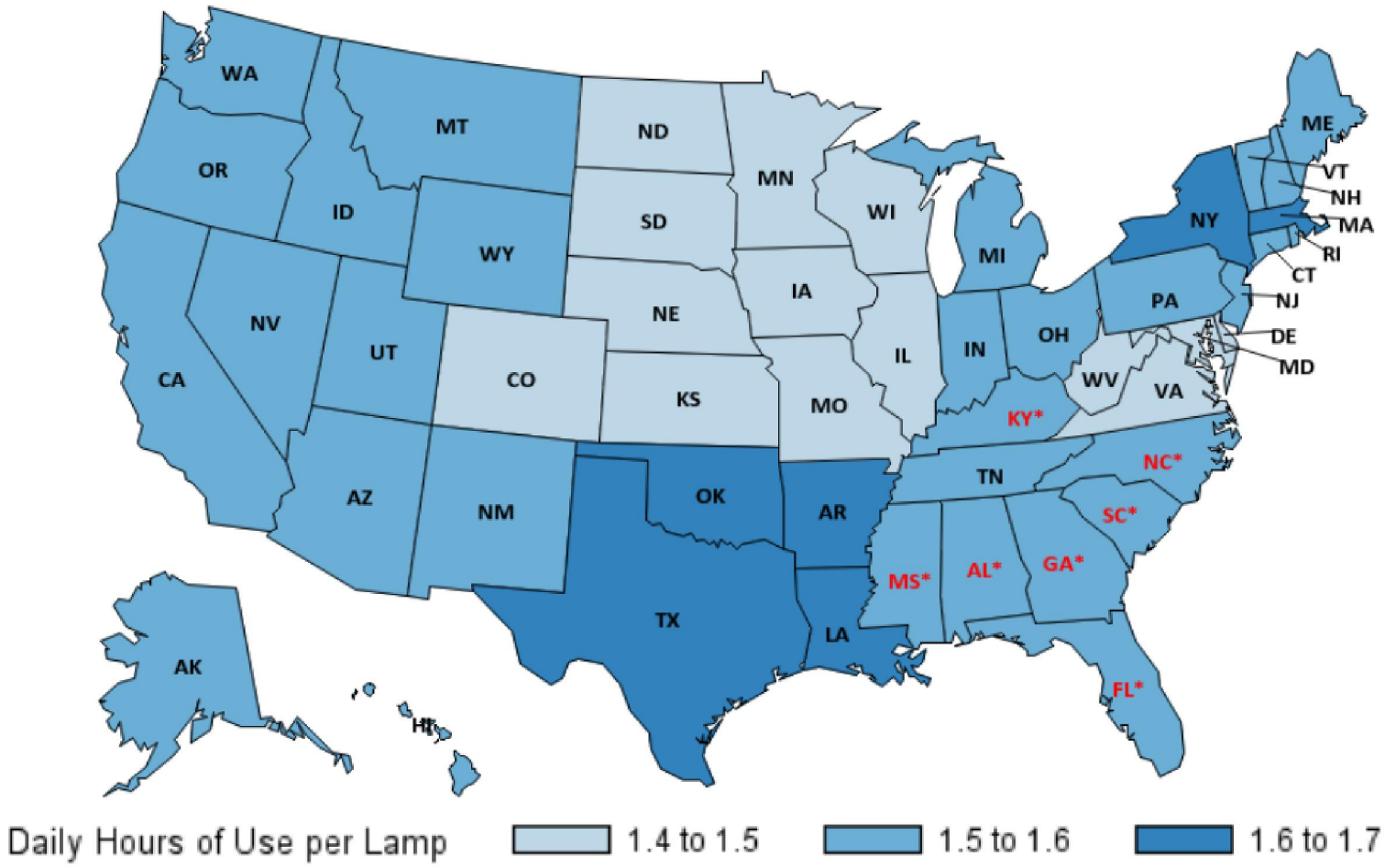
Background

- DOE Residential Lighting End-Use Consumption Study completed in 2012
  - Hours-of-use (HOU) estimated by region of the U.S. and by lamp and household characteristics
  - Estimates based on regional lighting studies with some regions of the U.S. not represented
- Study home page:
  - http://energy.gov/eere/ssl/residential-lighting-end-use-consumption

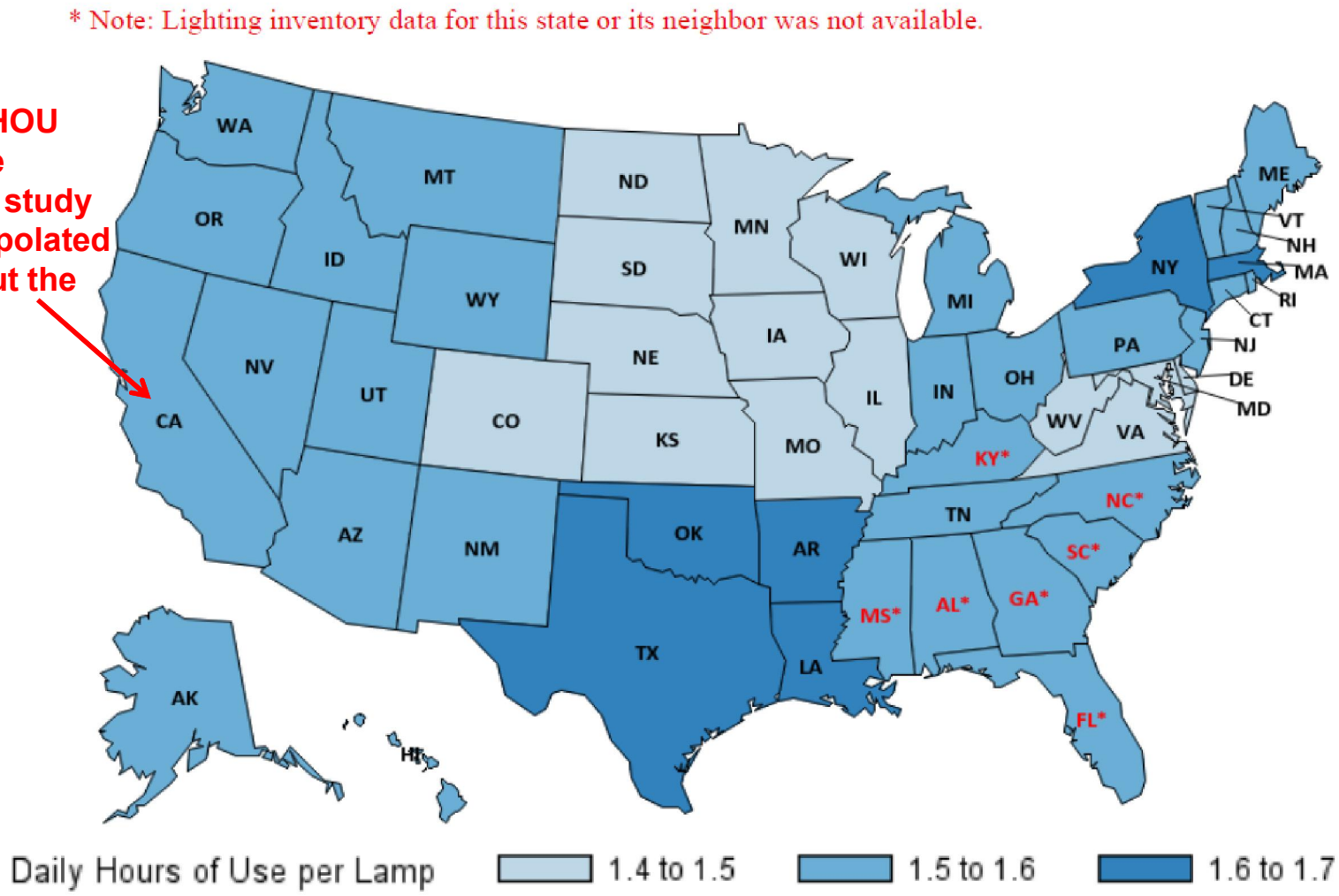
Results from the DOE Study

* Note: Lighting inventory data for this state or its neighbor was not available.

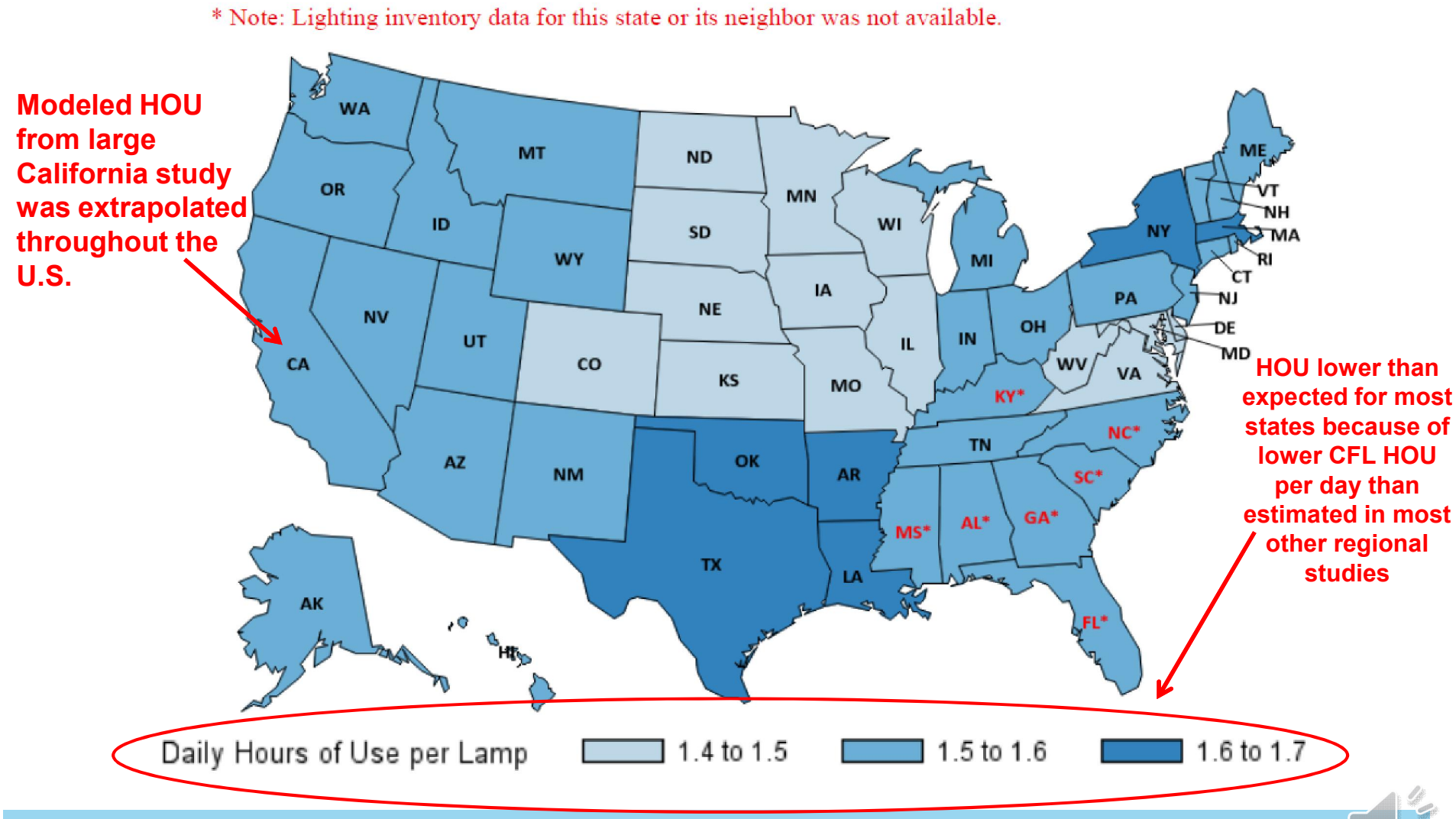


Results from the DOE Study – Lamp Usage Extrapolated from CA

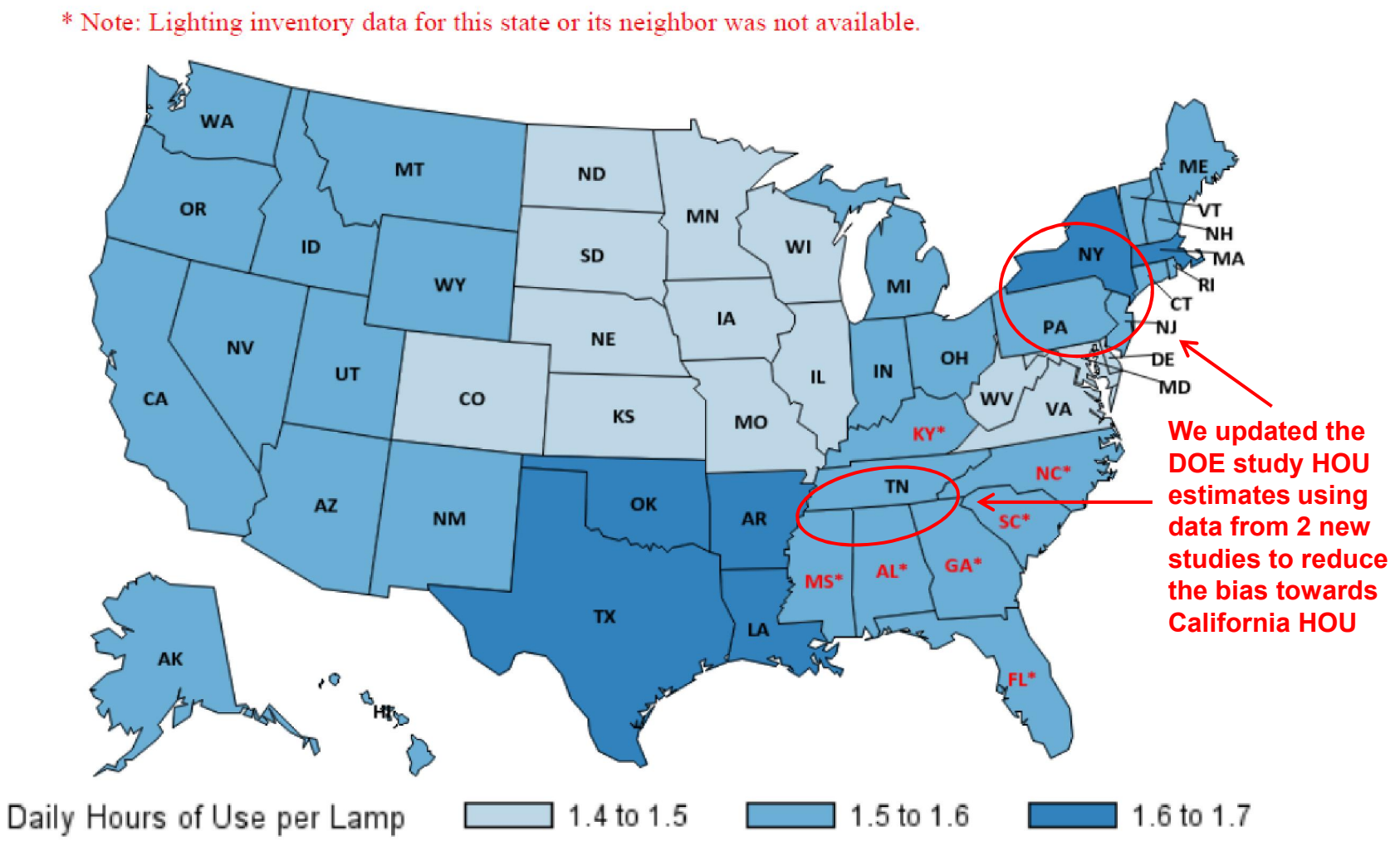
Modeled HOU from large California study was extrapolated throughout the U.S.



U.S. lighting estimates were low due to dependency on CA Study



Lamp usage from two new studies incorporated in new estimates



Methodology for incorporating data from the two new studies

- Re-fit the original HOU models with usage data from:
  - Original California Upstream Lighting Program Evaluation
  - Mid-Atlantic data collection funded through the original DOE study
  - 2013-2014 TVA residential lighting study
- Regression to predict average daily HOU by lamps types using inventory and household characteristics
  - Same predictor variables as original CPUC lighting study
- New usage estimates reflect an average of modeled usage from each of the three HOU data sources
  - CA, NY, NJ, PA, TN, GA, MS, AL estimates are not averages – they use model estimates are derived from the applicable regional study

New Hours of Use Estimates by Lamp Type – U.S. Overall

Lamp Type	DOE Study Estimates – Original (average daily HOU per lamp)	Updated Estimates (average daily HOU per lamp)
Compact Fluorescent	1.92	2.19
Incandescent	1.23	1.43
Other Lamp Types	1.51	1.76

Impact of higher usage estimates: Increased savings opportunities for more efficient lamps as can be assumed with original DOE Study estimates

State-level estimates by lamp type can be found in the paper

What's Next?

- Continue to identify data from regional lighting studies to incorporate
  - Expand lamp type categories to include LEDs
- Refine the regression modeling approach
- Identify long term funding

Disclaimer

The updated lighting usage estimates presented in this paper have not been published by the U.S. Department of Energy (DOE), and should be considered preliminary estimates produced by the author for this conference publication. If updated DOE estimates are published in the future, they may differ from those presented in this paper.

Thank You

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