



# Are we done yet?

Barriers to increasing CFL installations and program strategies for reducing them

Tami Rasmussen, KEMA

Rob Rubin, San Diego Gas & Electric Company

Anu Teja, Northwest Energy Efficiency Alliance

Presented by: Liz Hicks, KEMA

ECEEE 2007 Summer Study

4-9 June 2007

# Introduction and Background

- Residential energy efficiency lighting programs have been active in the United States for over 20 years
  - Typically promote compact fluorescent lamps (CFLs)
  - Various program delivery strategies including customer rebates, free installation of CFLs and rebates to manufacturers and retailers
- Progress has been made – but still, even in the most active regions of the country CFLs are installed in less than 10% of residential lamp sockets

# Introduction and Background

- Great energy savings potential remains
- Paper addresses the following issues:
  - What technical and market barriers exist to expanding CFL installations?
  - How should mature residential lighting programs address the remaining barriers?
  - What can emerging residential lighting programs learn from mature programs?

# California and the Pacific Northwest

- Paper focuses on two of the most active regions of the United States – California and the Pacific Northwest
  - California’s investor-owned utilities have sponsored residential lighting programs since 1980
  - In the Pacific Northwest\*, the Northwest Energy Efficiency Alliance (NEEA) has sponsored residential lighting initiatives in conjunction with the region’s utilities for over 10 years

\*The states of Washington, Oregon, Montana and Idaho



# California program history

- Sponsored by investor-owned utilities (San Diego Gas & Electric, Pacific Gas & Electric, Southern California Edison)
  - collectively serve 80%+ of electric utility customers in California
- Customer mail-in rebates and direct install (e.g., free installation of CFLs for low-income and multi-family residents) in the 1980s and early 1990s

# California program history

- “Market transformation” programs in the mid- to late- 1990s
  - focusing on salesperson training, upstream rebates to manufacturers and retailers, cooperative advertising
- Large-scale customer point-of-sale rebates since 2001 (in response to the California energy crisis)
  - Huge volume – 5 to 10 million CFLs rebated per year
  - Current rebate levels between \$1 and \$2

# Northwest program history

- NEEA is a regional body funded by Northwest electric utilities that coordinates with and leverages regional energy efficiency projects
- NEEA also offers several strategic market transformation initiatives, including residential lighting
  - retailer and manufacturer support, coordination with local utility and national ENERGY STAR and product quality initiatives
  - manufacturer buydown incentives (around 1 million per year)

## Relevant research studies

- The California Public Utilities Commission has sponsored program evaluations and market studies that address residential lighting:
  - 2004-2005 California Single-Family Rebate program evaluation (KEMA and Itron – in progress)
    - General population survey – 1,000 households (follow-up to similar surveys from prior evaluations since 1998)
  - 2005 California Statewide Residential Lighting and Appliance Efficiency Saturation Study (RLW 2005)
    - On-site inventory survey – 806 households (follow-up to similar survey in 2000)

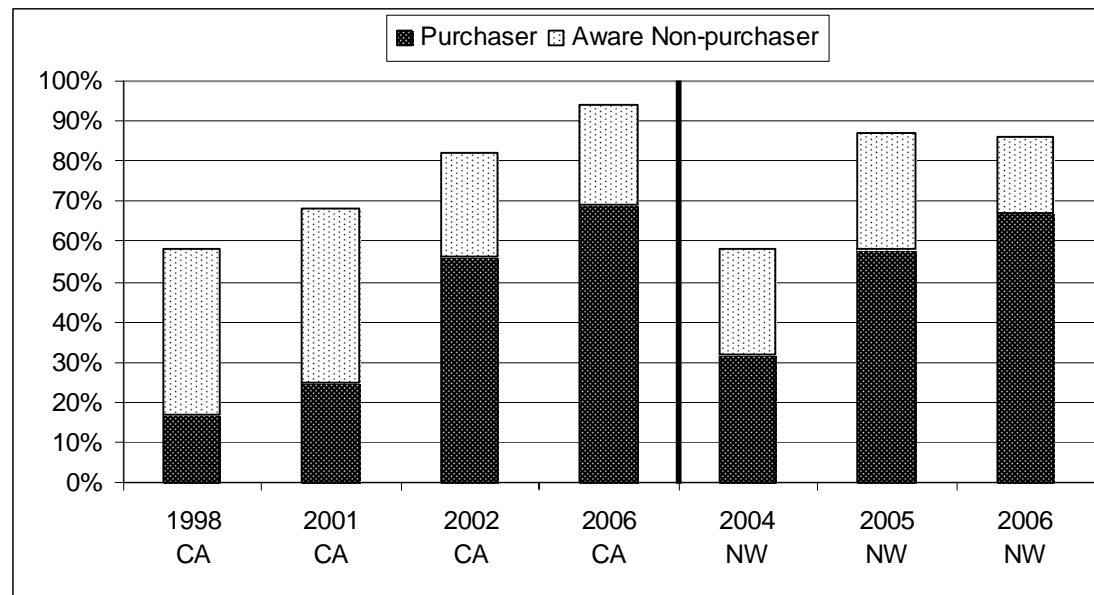
# Relevant research studies

- NEEA sponsors market research that addresses residential lighting:
  - Consumer Products Project Market Progress Evaluation Reports 1, 2 and 3 (KEMA 2005, 2006 and in progress)
    - General population survey – 667 households (follow-up to similar surveys from prior evaluations since 2004)

# Major market progress

- Rate of awareness and purchase of CFLs has increased substantially – with over 60% of households having bought a CFL

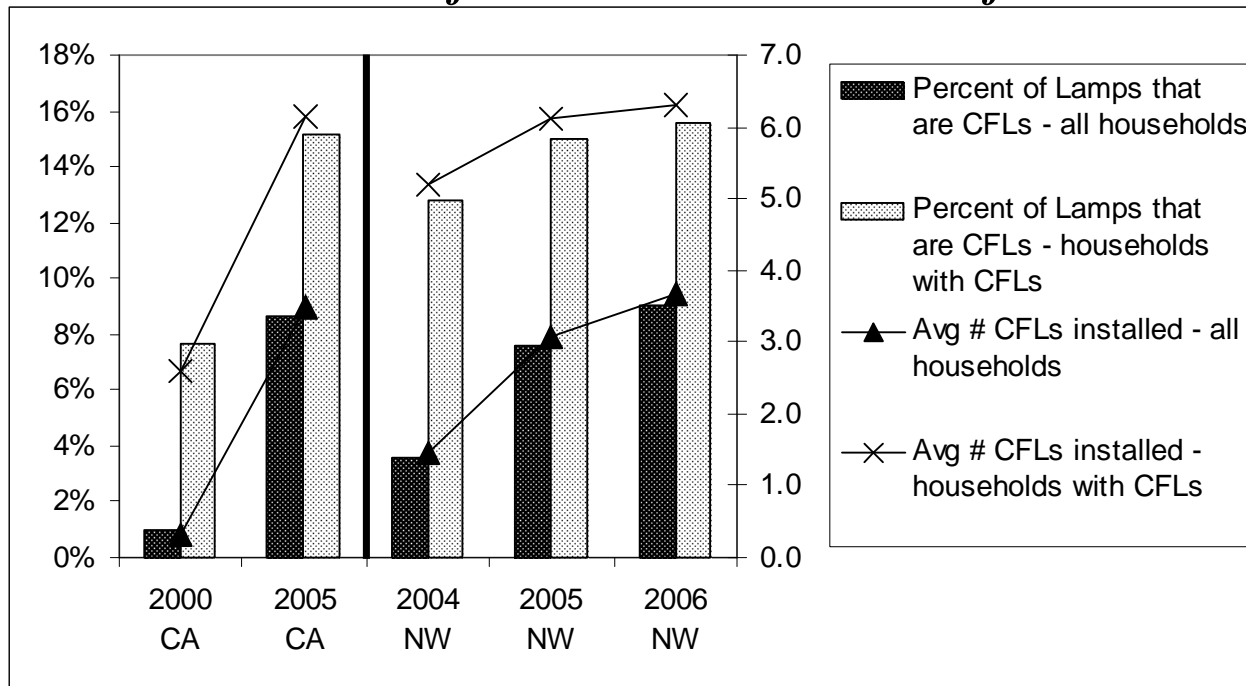
*Consumer Awareness and Purchases of CFLs in California and the Northwest from 1998 – 2006*



# Major market progress

- Fraction of residential lamp sockets that are CFLs (CFL saturation) has increased substantially

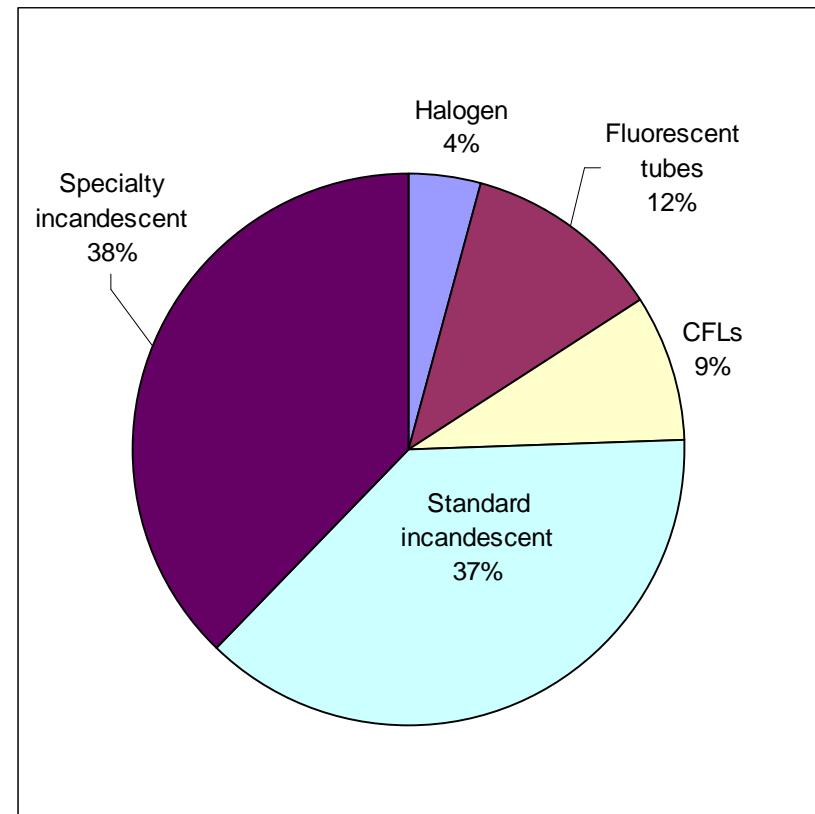
*CFL Saturation in California and the Northwest from 2000 to 2006*



# Technical barriers to installing more CFLs

*Distribution of Residential Lamp Sockets, California 2005*

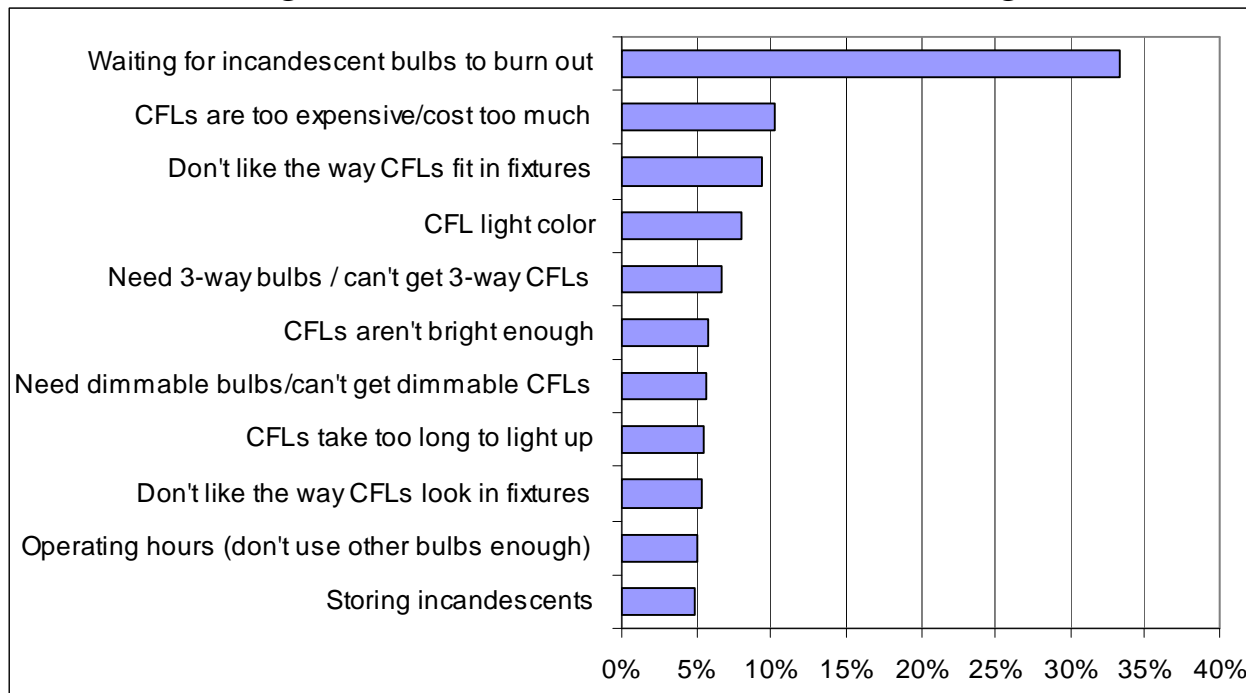
- Over one-third of the remaining lamp sockets that are not filled with CFLs are standard incandescent bulbs – readily available twister-style CFLs may be used
- Another one-third are specialty incandescent bulbs – requiring specialty CFLs



# Consumer barriers to installing more CFLs

- Households that already have CFLs are most often waiting for their incandescent bulbs to burn out

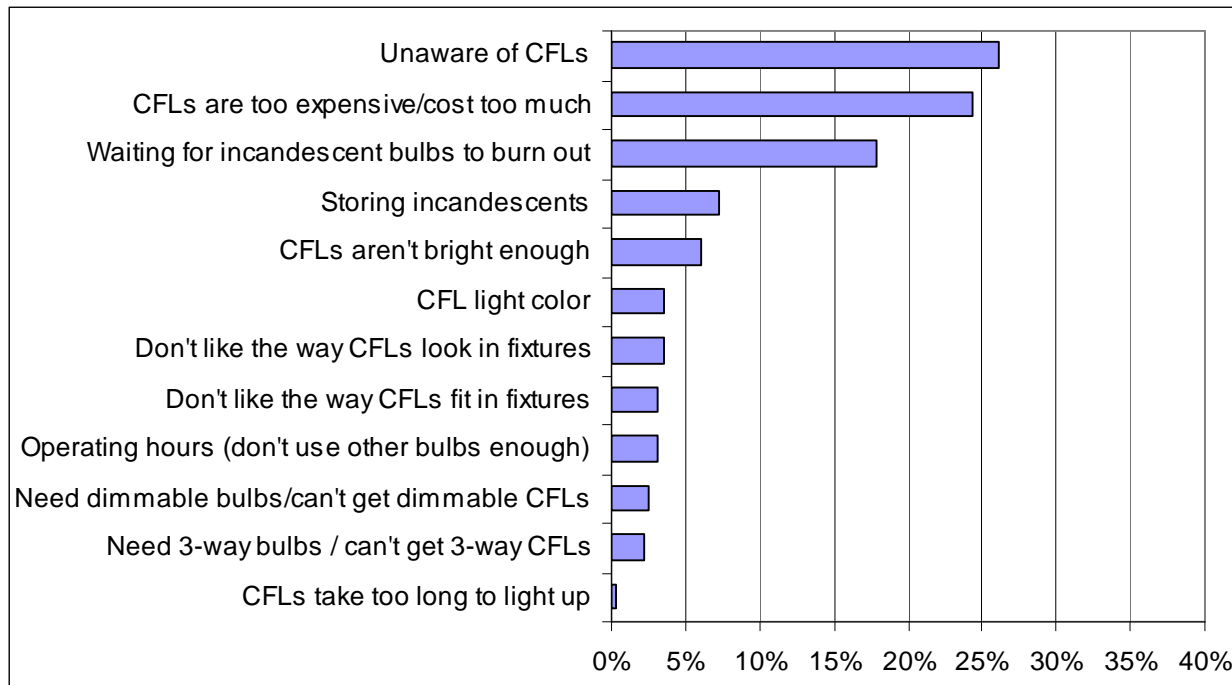
Main Factor Preventing Increased Saturation of CFLs Among Northwest CFL Households, 2006



# Consumer barriers to installing more CFLs

- Households that do *not* have CFLs installed are either unaware, say CFLs are too expensive or are waiting for incandescent bulbs to burn out

Main Factor Preventing Increased Saturation of CFLs Among Northwest Non -CFL Households, 2006



# Meeting the untapped CFL energy savings potential

- About half the remaining potential may be met with CFLs already on the market at low prices (around \$1 in some regions compared to around \$.50 for incandescent bulbs)
- The remaining potential requires specialty CFLs
  - Very expensive
  - Not widely available
  - Quality not tested
  - Lack of consumer awareness and education

# Remaining market barriers

- Waiting for incandescent bulbs to burn out
  - Most households have CFLs in storage, indicating they will actually install CFLs
  - Programs must take into account that not all CFLs that are bought in a given year are installed right away
  - Program messages may need to change from installing 1 or 2 CFLs in high-use fixtures to installing 5, 10 or more

# Remaining market barriers

- CFL performance issues
  - While satisfaction is high with CFLs currently in use, consumers may be more particular as they expand their installations
  - ENERGY STAR labeling program and independent quality testing bodies have been successful in addressing CFL quality for the basic models
  - Continue and expand these efforts, especially as specialty CFLs become more of a focus
  - Consumer education on appropriate CFL applications and selection criteria

# Remaining market barriers

- The need for specialty CFLs
  - Programs need to expand their focus to specialty CFLs
  - Learn from lessons in the twister CFL market – work through market channels, educate consumers on how to select the right CFL and which applications are appropriate, monitor and ensure product quality
  - Will probably take several years of market support

# Remaining market barriers

- CFL price
  - Even at \$1 or less, still a barrier for some households that will never be willing to pay more than incandescent bulbs
  - Promotions are not year-round and do not include all stores that sell CFLs
  - Some major retailers sell CFLs at low prices even after promotions – programs can stop promotions at those locations
  - Programs should consider expanding their reach to less traditional retailers and go year-round

# Lessons learned for emerging residential lighting programs

- Use market-based approaches in order to generate lasting change
- Focus on twister-style CFLs first as it is available in high volumes and the technology has been tried and tested
- Monitor and ensure product quality



End sheet

Thank you for your attention.