Buildings Sector Working Group

AEO2014 Model Development

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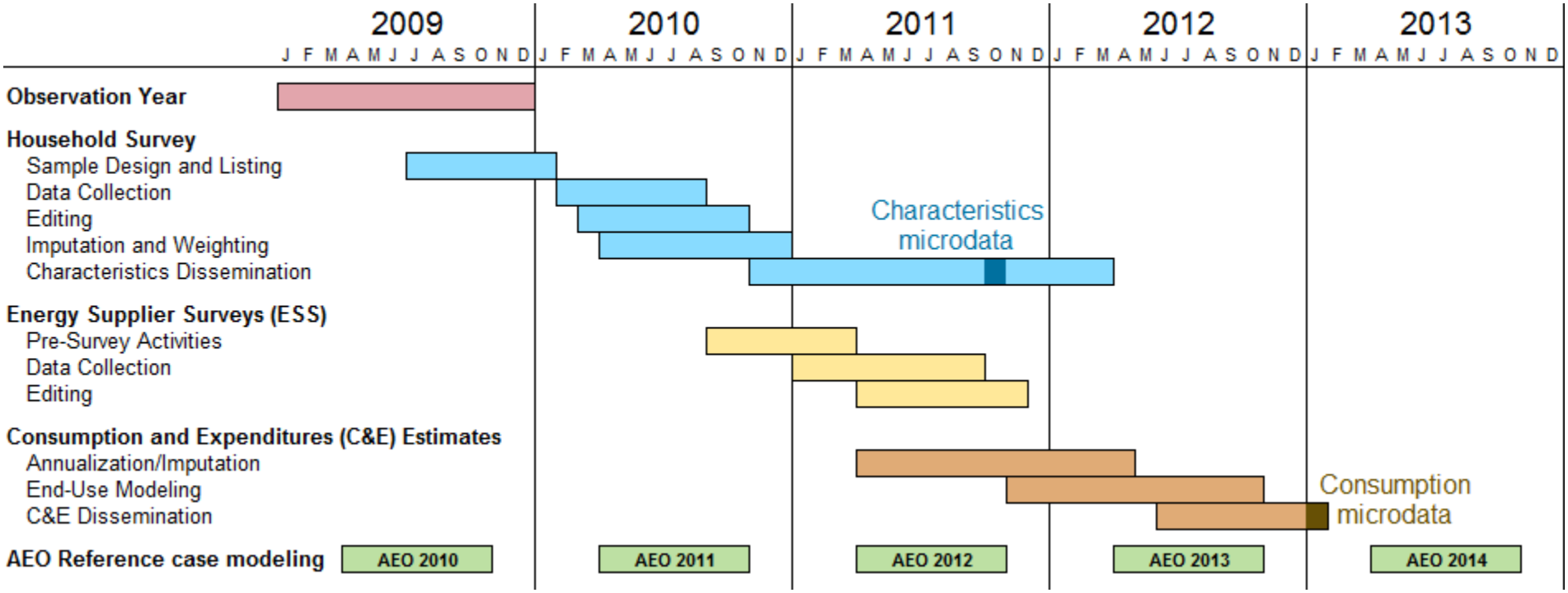
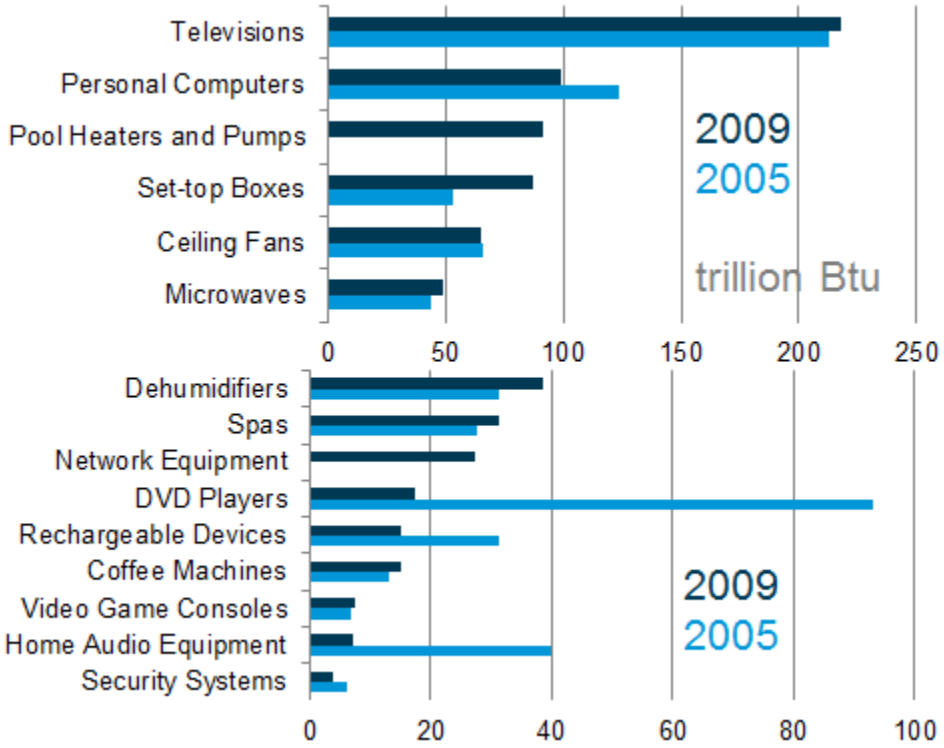
Overview

- Residential projects
  - RECS update
  - Lighting model
  - Equipment, shell subsidies
  - ENERGY STAR benchmarking
  - Housing stock formation and decay
- Commercial projects
  - Major end-use capacity factors
  - Hurdle rates
  - ENERGY STAR buildings
- Both sectors
  - Consumer behavior workshop
  - Comparisons to STEO
  - AER → MER
  - Usual annual updates
  - Miscellaneous end-use technology assumptions updates

RECS 2009 data in NEMS



Data comparison: 2005 vs 2009



- Not necessarily RECS 2005 and RECS 2009
  - Other sources used to inform some equipment stock and consumption figures
  - Generally RECS for major end uses, Navigant's MELs report for minor end uses
- Draft memo will be provided to working group participants
  - Installed base and annual energy consumption for several end uses
  - Comments welcome

Lighting submodule

- Streamlined code and input file structure
  - Flexible number of applications and application definitions, data driven
  - Plan to replace torchier lamps with outdoor lighting during data update
  - Developing User's Guide for new submodule
- Revisit lighting data for change in RECS year
  - Model base year data are 2009 instead of 2005 (RECS 2009)
  - *Residential Lighting End-Use Consumption Study: Estimation Framework and Initial Estimates*, EERE (DNV KEMA, PNNL), December 2012
  - *2010 U.S. Lighting Market Characterization*, EERE (Navigant), January 2012

Other residential updates

- Federal subsidies separated from equipment and shell costs
  - Input files and output database will separate costs and subsidies
- More use of ENERGY STAR data
  - Benchmarking equipment purchases
  - Benchmarking efficient housing shell adoption
- Revising housing stock formation and decay assumptions
- Likely adding a few more end uses (pool heaters and pumps, networking equipment) and eliminating one (external power supplies)
- Likely dropping residential coal consumption

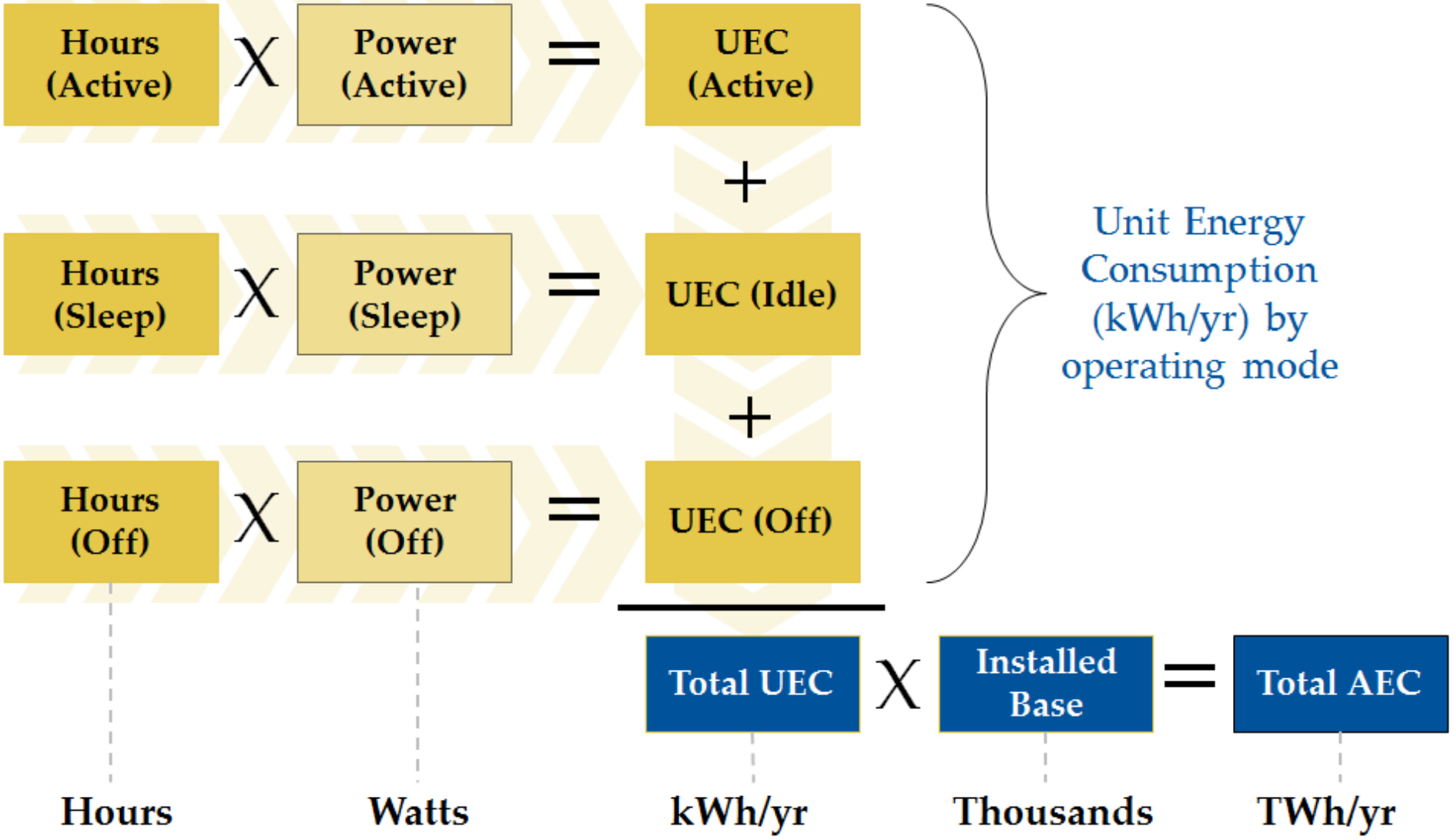
Commercial

- Major end-use capacity factors
  - Incorporate results from parametric analysis to determine annual usage of heating, cooling, ventilation, water heating, cooking, lighting, and refrigeration
- Hurdle rates
  - Update using latest Johnson Controls reports regarding commercial investment decisions
- ENERGY STAR buildings
  - Investigating impacts of ENERGY STAR qualified floorspace by building type

Both sectors

- Comparisons to STEO
  - Understanding differences and aligning assumptions to improve consistency between and accuracy of both modeling approaches
- AER → MER
  - Annual Energy Review being discontinued with focus shifting to the existing Monthly Energy Review which will include annual series
- Usual annual updates
  - weather data and projections
  - distributed generation capacity
  - interconnection limitations
- Miscellaneous end-use technology assumptions updates
  - Update to previous EIA and EERE/BTO contractor reports on projected annual energy consumption of a variety of electric end uses

Technology updates: miscellaneous electric loads


Hours (Active)
X
Power (Active)
=
UEC (Active)
+
Hours (Sleep)
X
Power (Sleep)
=
UEC (Idle)
+
Hours (Off)
X
Power (Off)
=
UEC (Off)
Unit Energy Consumption (kWh/yr) by operating mode
Total UEC
X
Installed Base
=
Total AEC
Hours
Watts
kWh/yr
Thousands
TWh/yr

For more information

U.S. Energy Information Administration home page | www.eia.gov

Short-Term Energy Outlook | www.eia.gov/steo

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

Today in Energy | www.eia.gov/todayinenergy