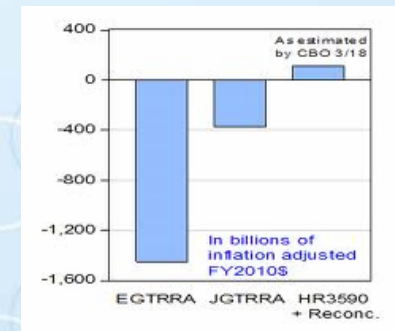


Scoring and Assessing Policy Proposals

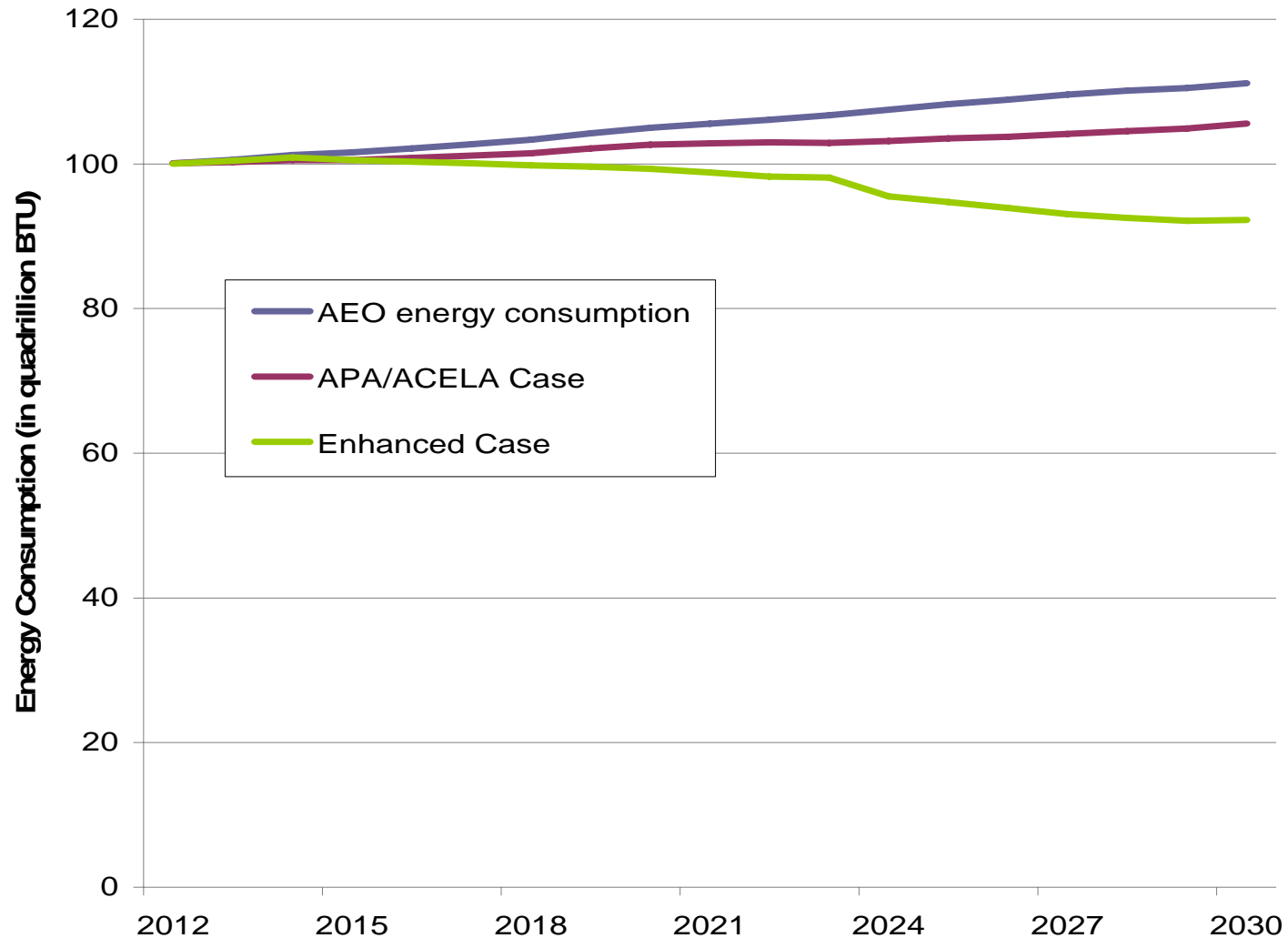
Steven Nadel, ACEEE
ACEEE Policy & Analysis Conference
December 2010



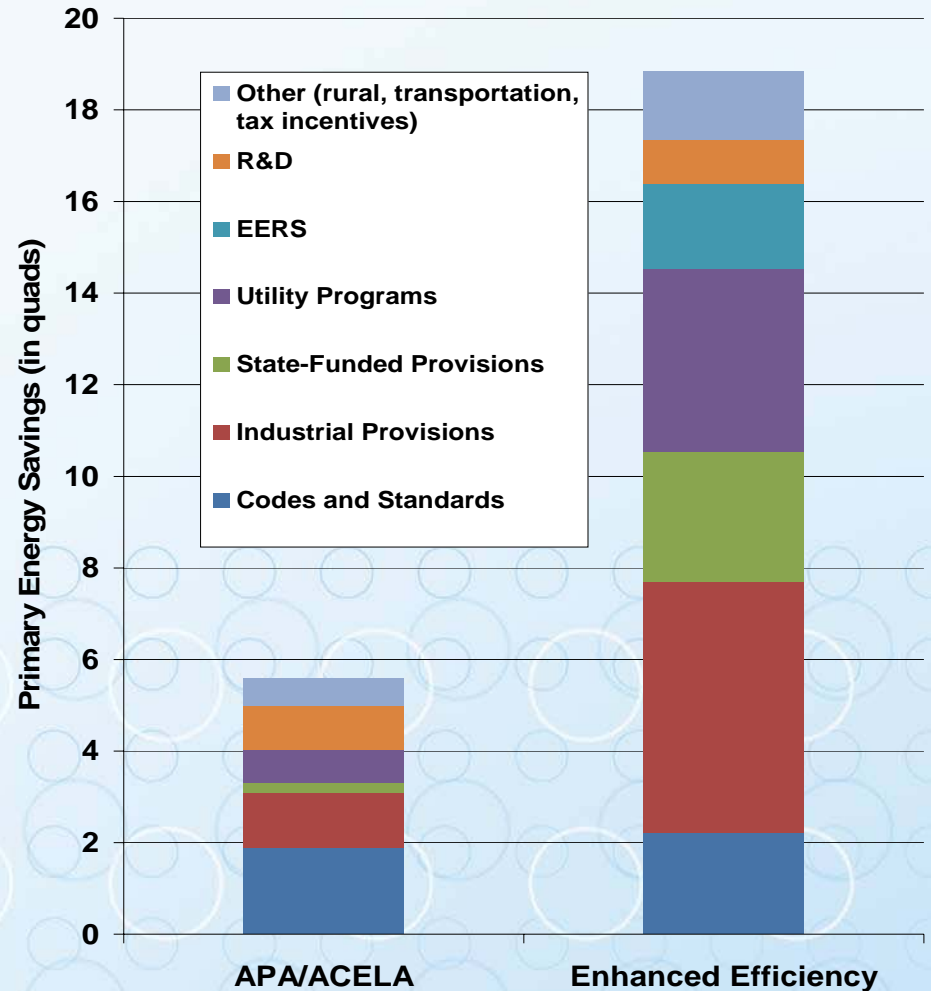
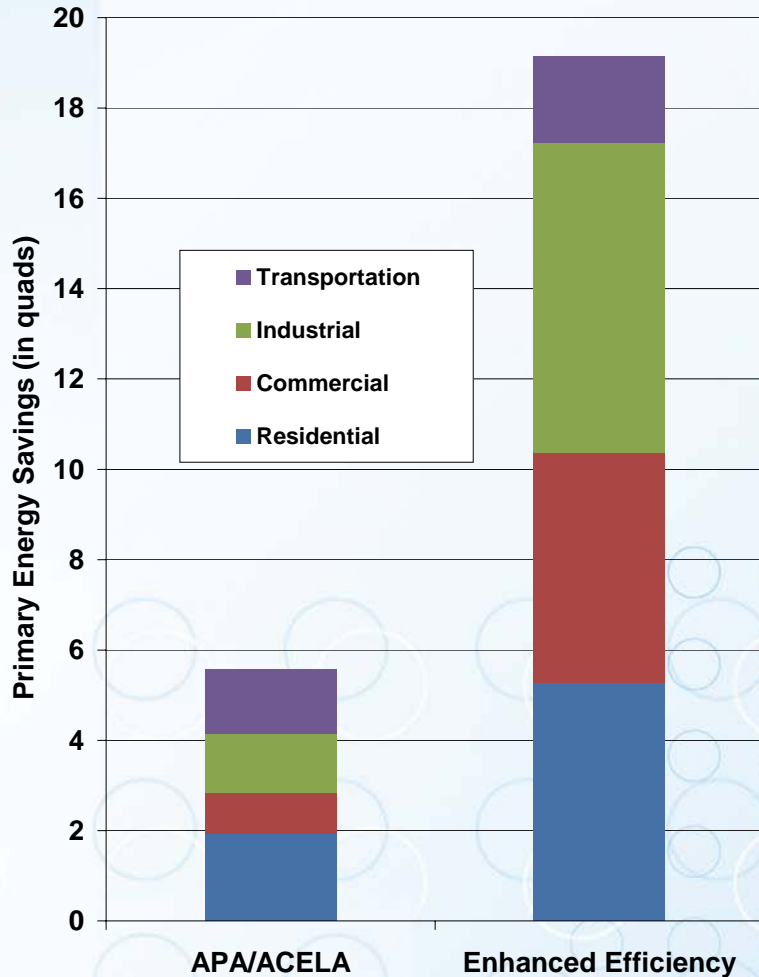
Scoring of Proposals

- Estimate costs
 - To federal government
 - Overall
- Estimate benefits
 - Energy savings
 - Peak demand impacts
 - Emissions impacts
 - Direct economic impacts
- Impact on economy
 - Jobs
 - GDP

Primary Energy Use in EIA Reference Case and Direct Savings from the APA+ACELA and Enhanced Cases

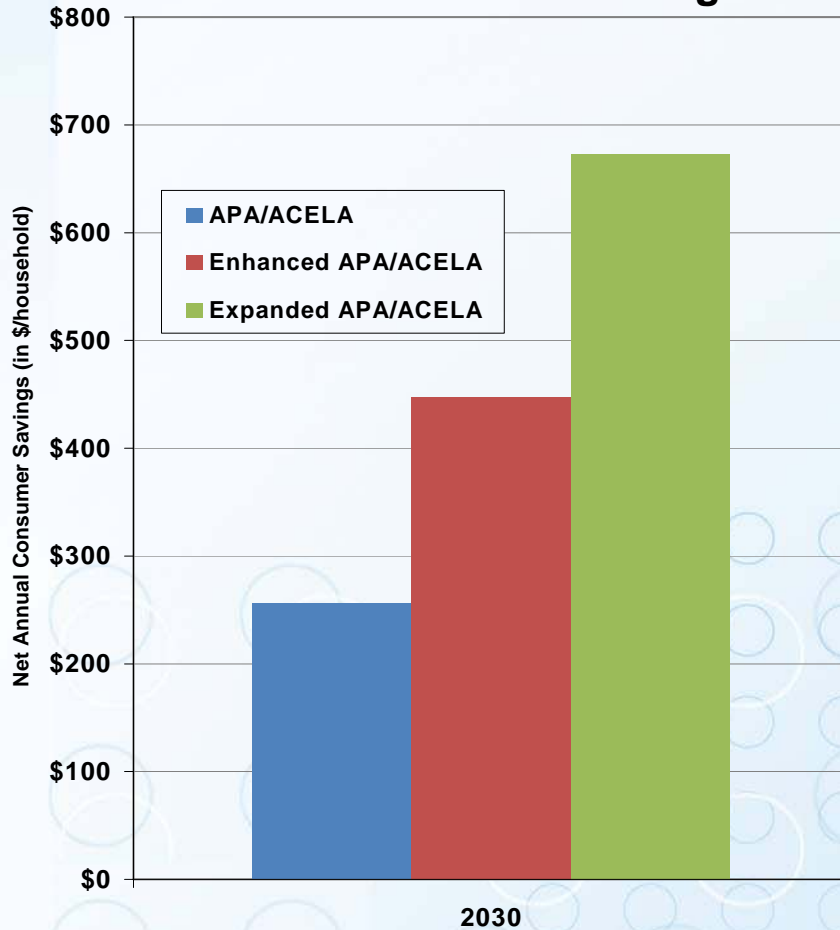


Proportion of Energy Savings from Major Energy Efficiency Provision Categories & End-Use Sector in APA+ACELA and with Enhanced Provisions in 2030

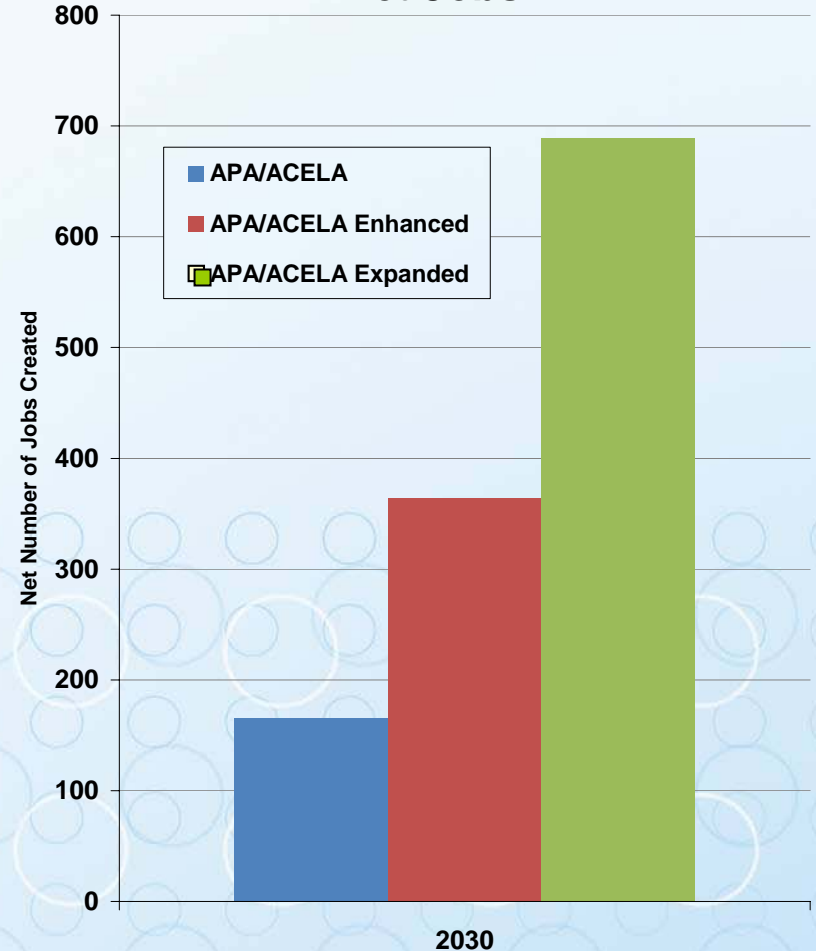


Net Annual Consumer Savings per Household and Net Jobs Created in 2030

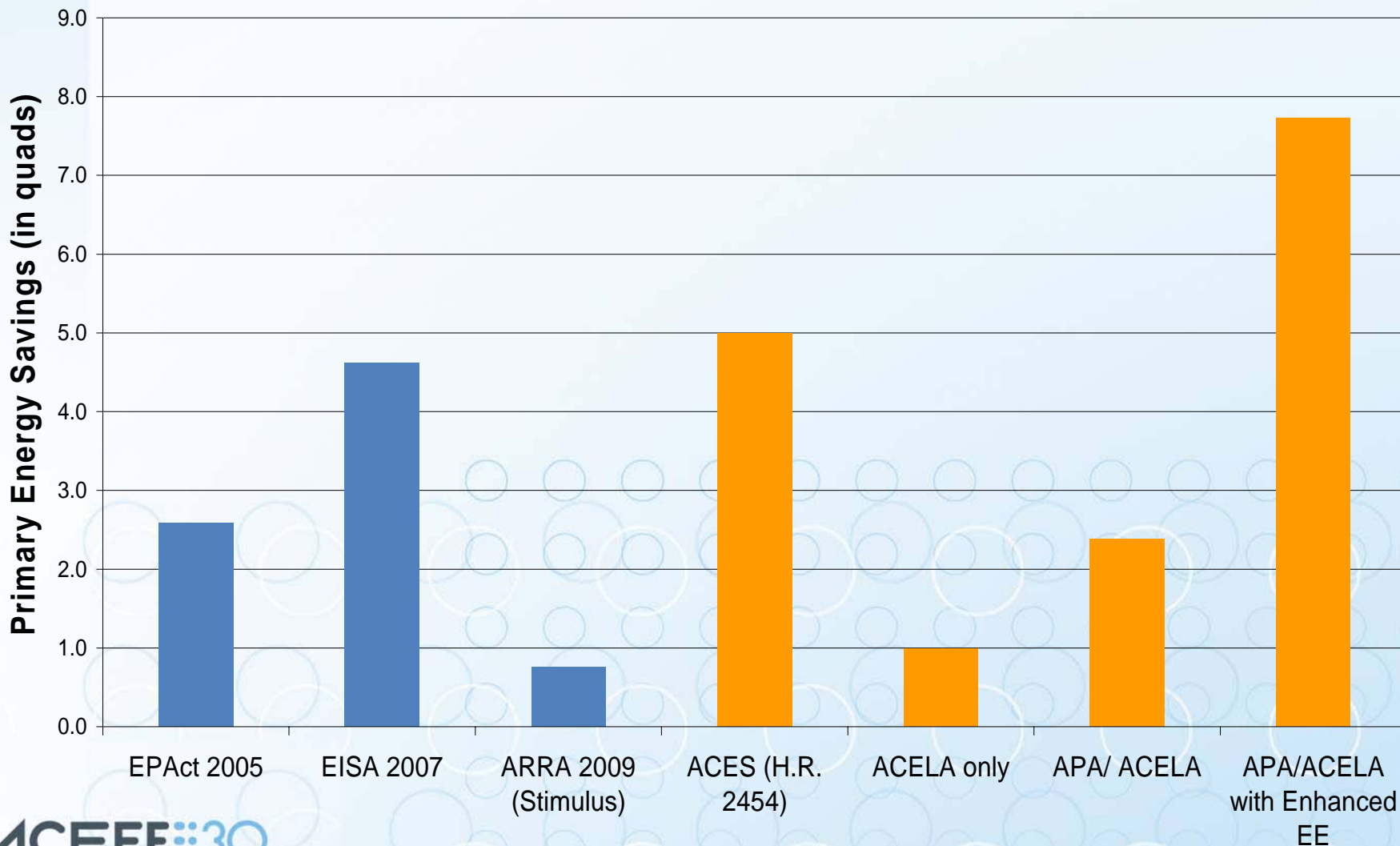
Per Household Savings



Net Jobs

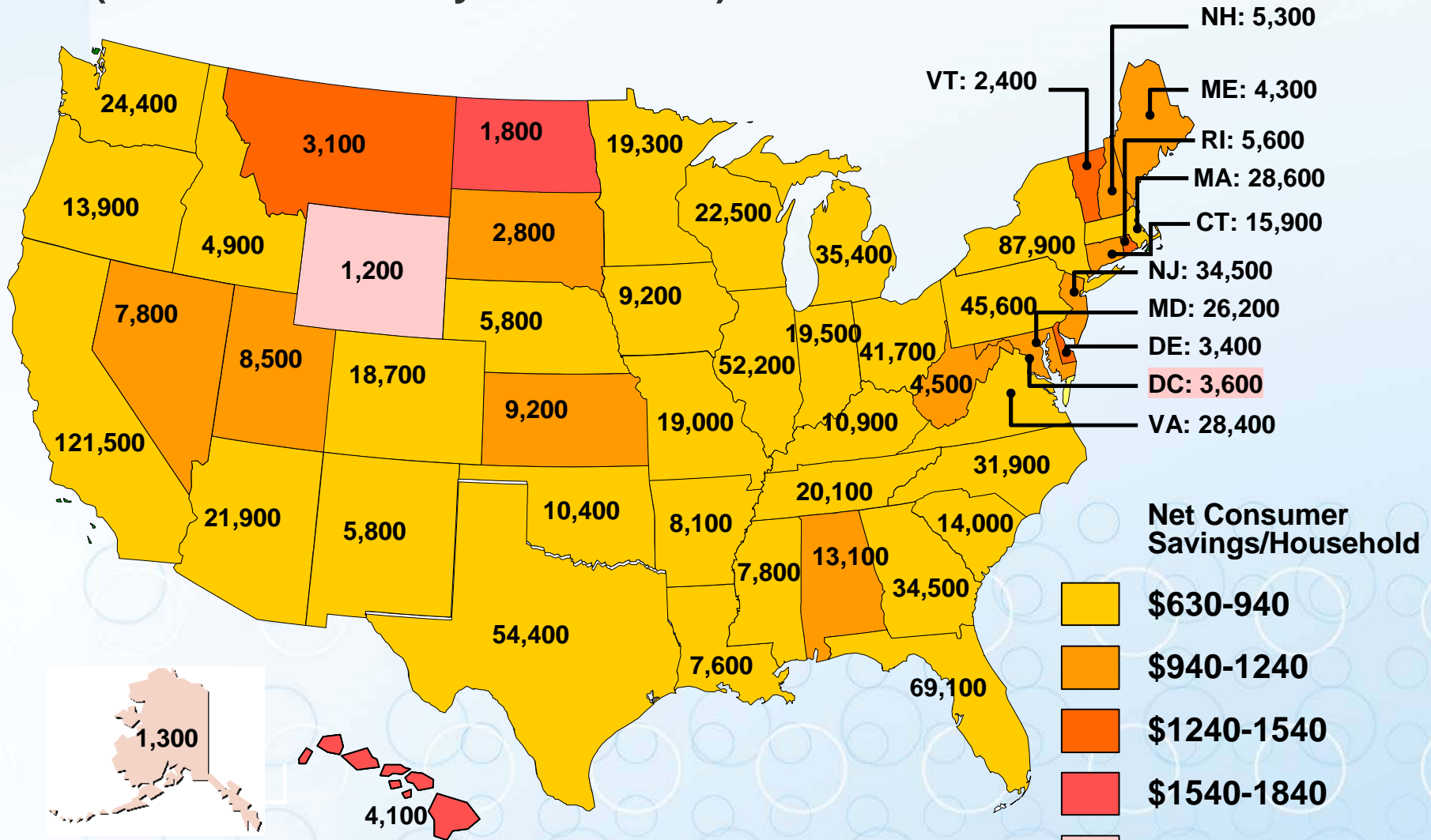


Potential Energy Savings in 2020 from Federal Energy Legislation 2005–2010



Jobs & Savings in Every State

(from ACEEE analysis of ACES)



Total Jobs: 1,035,500

ACEEE Analysis of Federal Bills

- Use EIA's most recent AEO as foundation, including energy prices; allowance revenues from EPA
- Provision by provision spreadsheet analysis estimating 2020 and 2030 energy savings
- Emissions and peak demand savings based on national average emissions and peak demand per kWh and therm
- Jobs and economic impacts based on multi-sector input-output analysis
- National level analysis, allocated to states

ACEEE Analysis



- Spreadsheet models
- Transparent -- document assumptions and make explicit
- Either a range or estimate mid-point of range
- Subject to substantial uncertainty
 - Round
 - Qualify

Sample – Energy Savings from Refrigerator Standards



13.8m sold/year (DOE est. for 2020)

X 527 kWh/year base case (DOE)

X 24% avg. savings (AHAM agreement)

X (1-16%) that will meet anyway (ACEEE est. considering Energy Star mkt. share)

X 15.5 years of sales affected 2014-2030

= 24.4 billion kWh saved in 2030

(slightly different from above due to rounding)

Thorny Issues



- How to score an authorization? Will Congress appropriate money?
 - Can do range from low to high
 - Midpoint tricky
- Extrapolating from limited field experience to the nation
- Assumptions about program quality – will they use best practices or not?

Use of Analyses



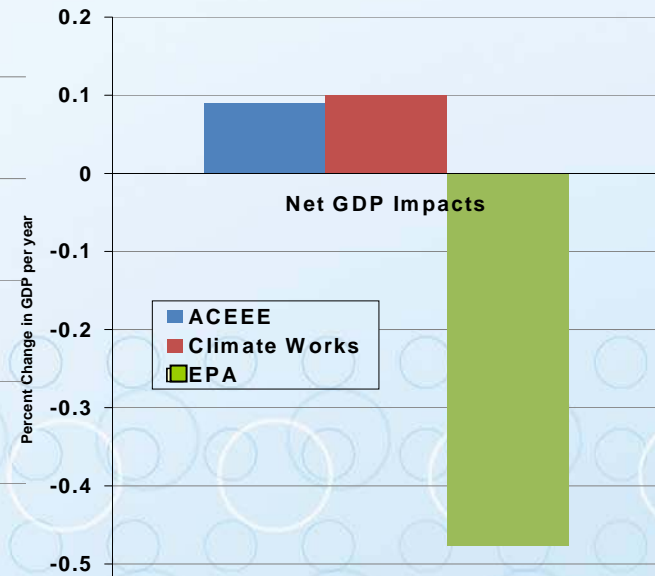
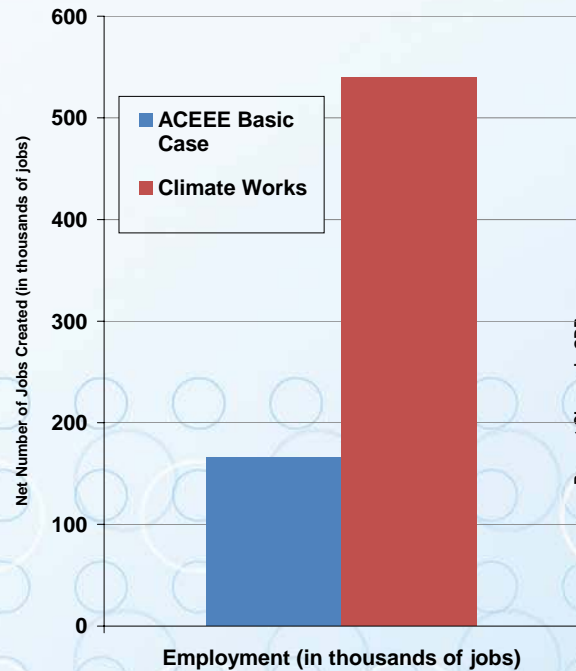
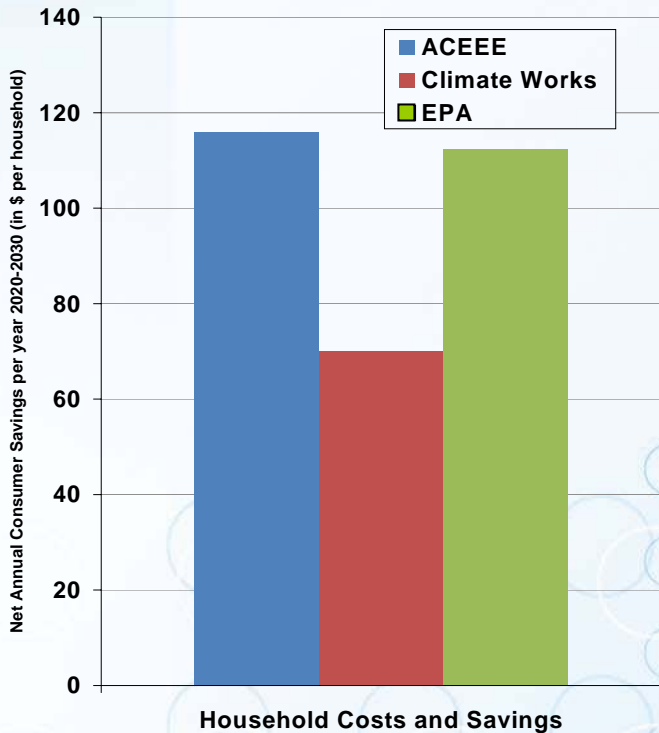
Provide information to policy-makers

- Want estimates of energy savings, jobs, power plants saved, economics, emissions reductions,
- What are the benefits?

Comparative analysis

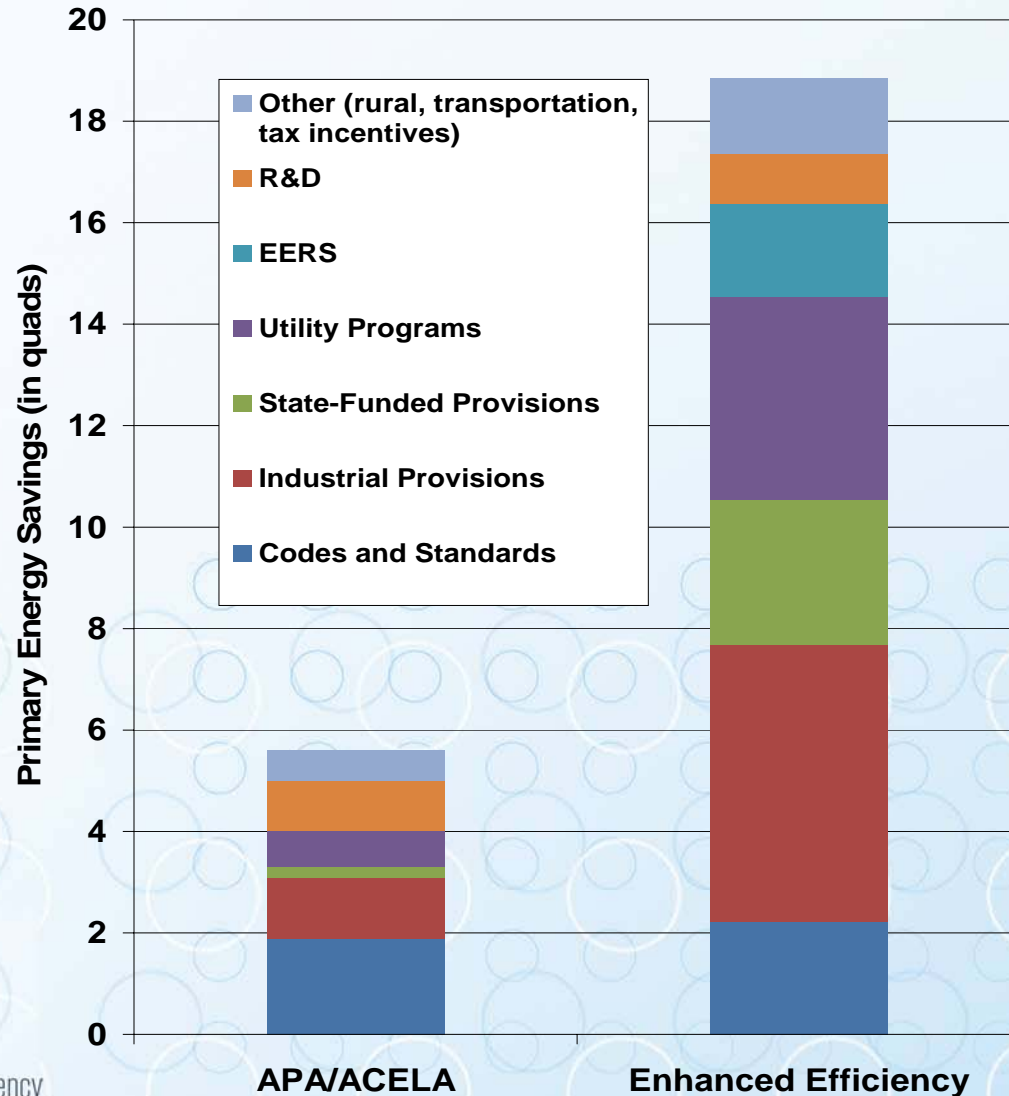
- What is most effective
- What is best use of limited money

Comparison of ACEEE, EPA and Climate Works Analyses of APA/ACELA



Note: these represent the averages in 2020 and 2030 from the studies mentioned above. Different studies present the results in different ways.

Proportion of Energy Savings from Major Energy Efficiency Provision Categories & End-Use Sector in APA+ACELA and with Enhanced Provisions in 2030



Relative Impacts of Different Efficiency Tax Incentives

Item	Federal \$/ Lifetime mBtu	Rank	Market transformation effect?
Increasing commercial building deduction	0.21	1	Large
CHP -- increase credit size and remove size cap	0.47	2	Small
New homes -- extend current credit	0.56	3	Large
New homes -- 50% whole home savings	0.75	4	Large
Advanced motors	0.79	5	Large
Windows -- \$25 per window for Energy Star	1.34	9	Medium
Replace CFC chillers	1.51	6	No
Whole house retrofits	2.33	7	Medium
Appliances	2.38	8	Large
AC and HP -- \$1000 incentive w duct sealing	2.39	12	Medium
Attic insulation	2.70	10	Low
Wall insulation	3.20	11	Low
AC and HP -- up to \$1500 incentive w duct seal	3.23	15	Medium
Furnaces -- \$1000 incentive w duct sealing	3.31	13	Medium
Attic insulation plus attic air sealing	3.60	16	Low
Furnaces -- up to \$1500 incentive w duct sealing	3.97	17	Medium
Water heaters -- \$500 incentive	4.49	14	Large
Water heaters -- \$750 incentive	4.99	19	Large
Fuel switching oil to natural gas	5.85	16	No
Water heaters -- up to \$1000 incentive	5.99	21	Large
Water heaters -- current incentive	5.99	21	Large
Windows -- current incentive	6.41	18	Medium
AC and HP -- current incentive	9.91	20	Medium
Furnaces -- current incentive	18.73	22	Medium

Improving Data Underlying Analysis

- Larger and more frequent RECS, CBECS, MECS
- Restoring transportation data surveys
- Better correlation between AEO, AER and consumption surveys
- Better data on avoided emissions, load shapes

The screenshot displays the EIA website interface. At the top, the EIA logo and the text "U.S. Energy Information Administration Independent Statistics and Analysis" are visible. Below this, a breadcrumb trail reads "Home > Households, Buildings & Industry". The main heading is "Households, Buildings, Industry & Vehicles end-use energy consumption data & analyses".

The page is organized into several columns:

- U.S. Data**:
 - Residential Energy Consumption**
 - Household Characteristics
 - Home Energy Use & Costs
 - Detailed Household Microdata
 - Commercial Energy Consumption**
 - Building Characteristics
 - Commercial Energy Use & Costs
 - Detailed Buildings Microdata
 - Manufacturing Energy Consumption**
 - Trend Data
 - Manufacturing Energy Use
 - Expenditures & Prices
 - Purposes for Energy Use
 - Fuel Switching
 - Vehicle Energy Consumption**
 - Vehicle Characteristics
 - Vehicle Stock
 - Fuel Consumption
- Program Information & Reports**
 - [Residential Energy Consumption Survey \(RECS\)](#)
 - [Commercial Buildings Energy Consumption Survey \(CBECS\)](#)
 - [Manufacturing Energy Consumption Survey \(MECS\)](#)
 - [Transportation Surveys \(RTECS\)](#)
 - [Energy Efficiency](#)
- Analyses**
 - [Lighting in Commercial Buildings 4/2006](#)
 - [Commercial Buildings Characteristics 7/13/05](#)
 - [Residential End-Use Electricity Consumption 5/24/05](#)
 - [Energy Use in Manufacturing 1998 to 2002 6/2006](#)
- Forecasts**
 - [Short-Term Energy Outlook](#)
 - [Annual Energy Outlook](#)
 - [International Energy Outlook](#)
- Energy Intensity**

On the right side, there are four small images: a house, a modern building, a highway with cars, and a sunset. Below these is a blue box titled "Use of Energy Explained" with a car icon. Further down is a "News & Recent Reports" section with a list of reports and a "Sign up for email updates" link. At the bottom right is a "References" box with links to "Energy Use Kid's Page", "Ask A Consumption Expert", "About the Staff", and "Survey Forms".

Conclusions

- Scoring policy proposals makes it easier for policy-makers to understand proposals, make decisions
- Both science and art
 - Subject to uncertainty
 - Make assumptions explicit
- Improved data would help

Contact Info

Steven Nadel

snadel@aceee.org

202-507-4000

www.aceee.org

