

Achieving Energy Savings through Consumer Electronics DSM Programs

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Consortium for Energy Efficiency

**5th Annual
Southwest Regional Energy Efficiency Workshop**



**Working Together, Advancing
Efficiency**

Consortium for Energy Efficiency

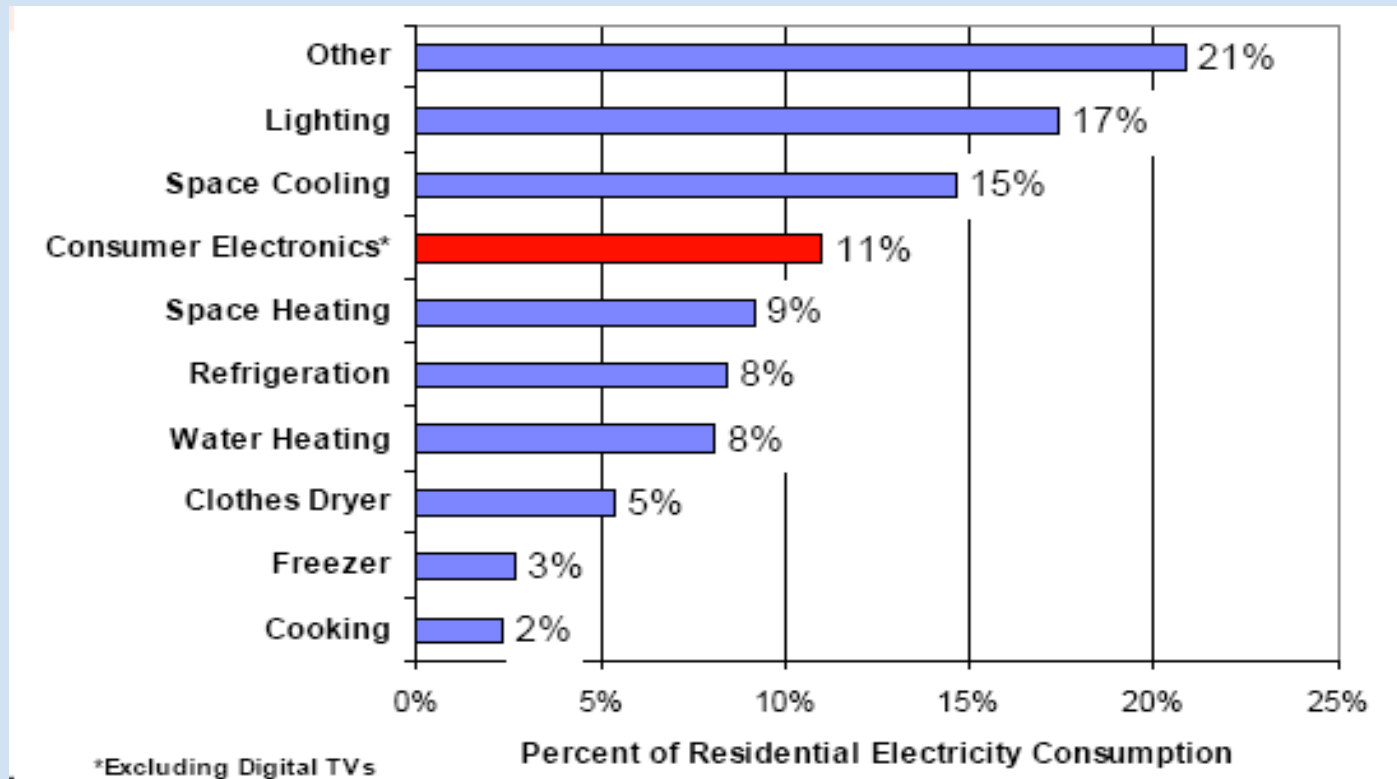
- Non-profit membership organization
- More than 100 members in U.S. and Canada
 - Efficiency program administrators, national research laboratories, state energy offices, advocacy organizations
- Staff of 23, budget \$2.7 million, located in Boston
- Last year, efficiency program industry budgeted over \$4.5 billion (\$3.9 electric) to bring energy efficiency to the public

Current CEE Program Committees

- **Residential**
 - HVAC
 - Whole House
 - Consumer Electronics
 - Lighting
 - Appliances
- **Commercial**
 - Lighting
 - HVAC
 - Data Centers and Servers
 - Kitchens
 - Whole Building Performance
 - Schools Program Roundtable
- **Industrial**
 - Motors and Motor Systems
 - Program Planning
 - Water/Wastewater
 - Transformers
- **Evaluation**
 - Behavior Interest Group
 - Evaluators Forum
 - National ENERGY STAR Survey
- **Gas**
 - Water Heaters
 - Commercial Boilers

Electronics: A Major End Use

U.S. Residential Electricity Consumption by End Use

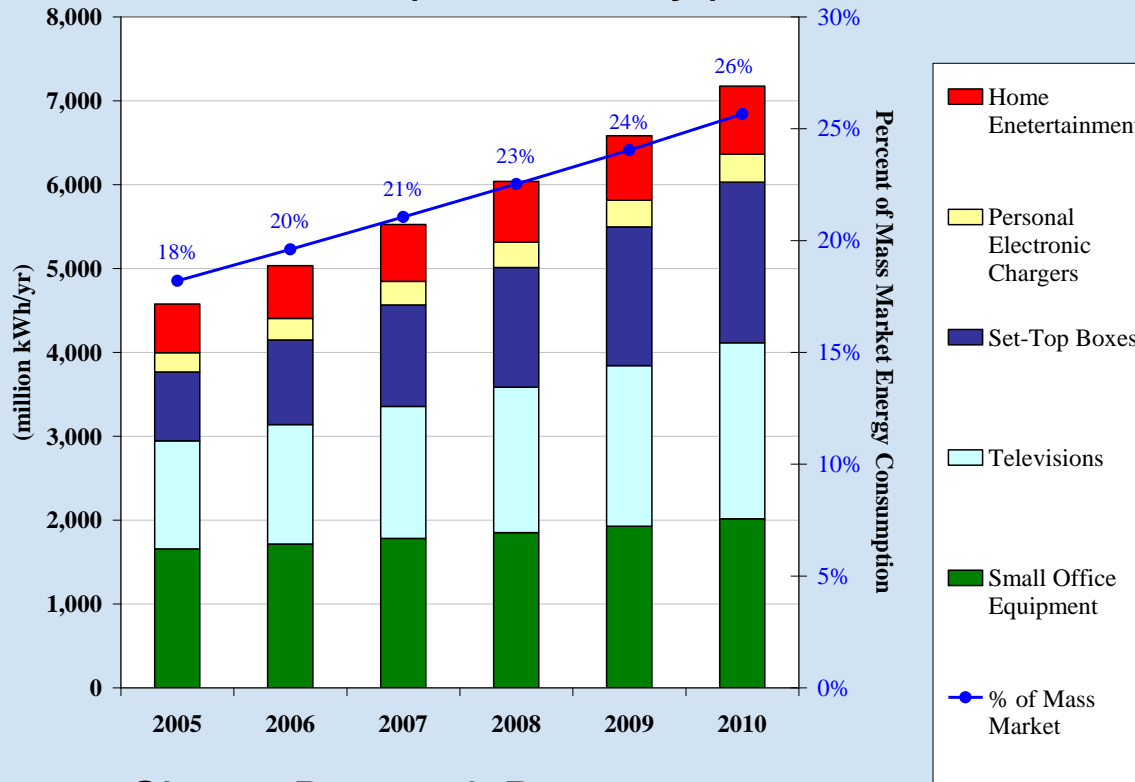


*Excluding Digital TVs

TIAX LLC 2007

And Growing

Forecasted Baseline AEC—Consumer Electronics in PG&E Mass Market Sector (million kWh/yr)



Chase, Ramos & Pope 2006

Additional Drivers for CE Programs

- Regulatory demands for increasing savings
- Declining savings opportunities from other products
- New ENERGY STAR specifications
 - Version 4.0 computers (July 2007)
 - TVs (Nov. 1, 2008)
 - Set-top boxes (Jan. 1, 2009)

CEE Consumer Electronics Initiative

- Framework for addressing existing and increasing electrical consumption by consumer electronics products
- Adopted by CEE Board June 2007
- Initiative focuses:
 - Working with ENERGY STAR®
 - Program guidelines
 - Industry outreach
 - Consumer education
- Implemented by Consumer Electronics Committee with support of CEE staff

ENERGY STAR®

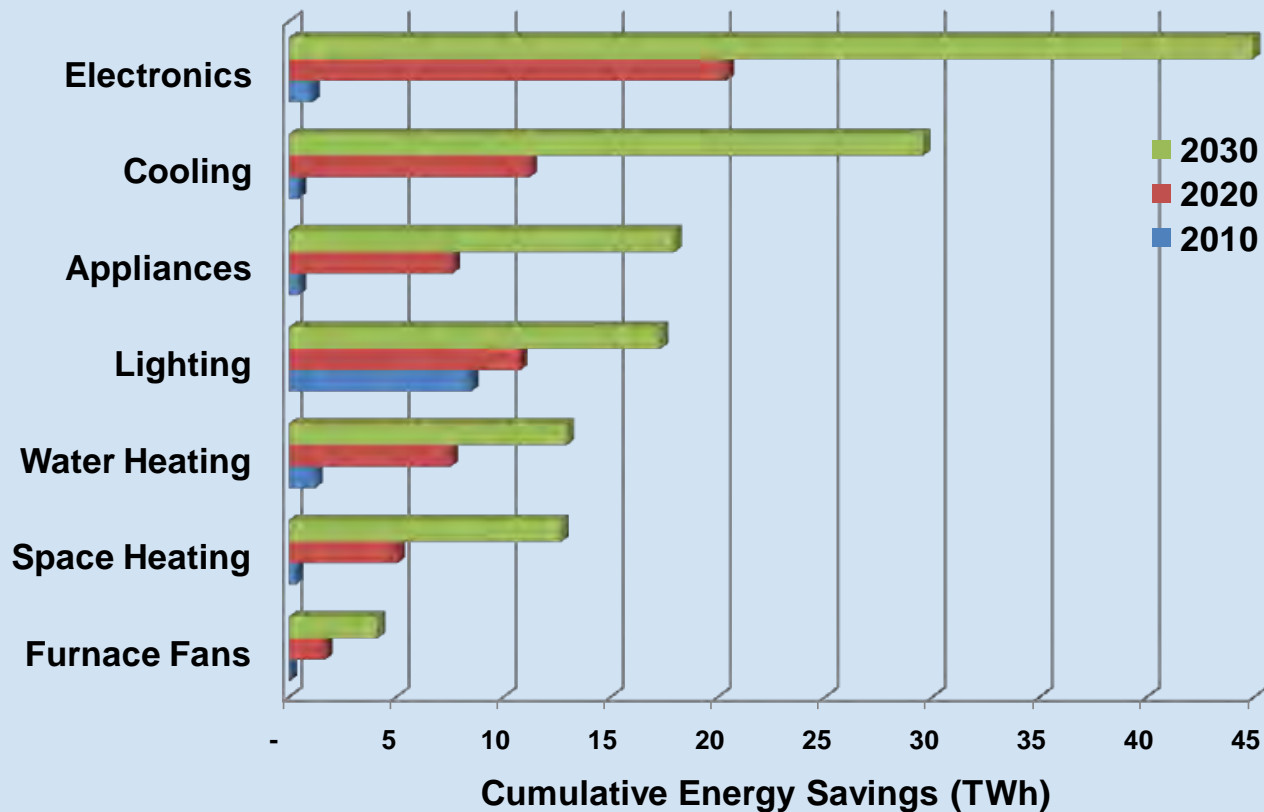
- Marketing platform for promoting efficient products
 - Incentives
 - Consumer education
- Specifications
 - Consensus comments
- Programs and promotions
 - Change the World, Start with ENERGY STAR
 - Low Carbon IT campaign



Consumer Electronics Program Guide

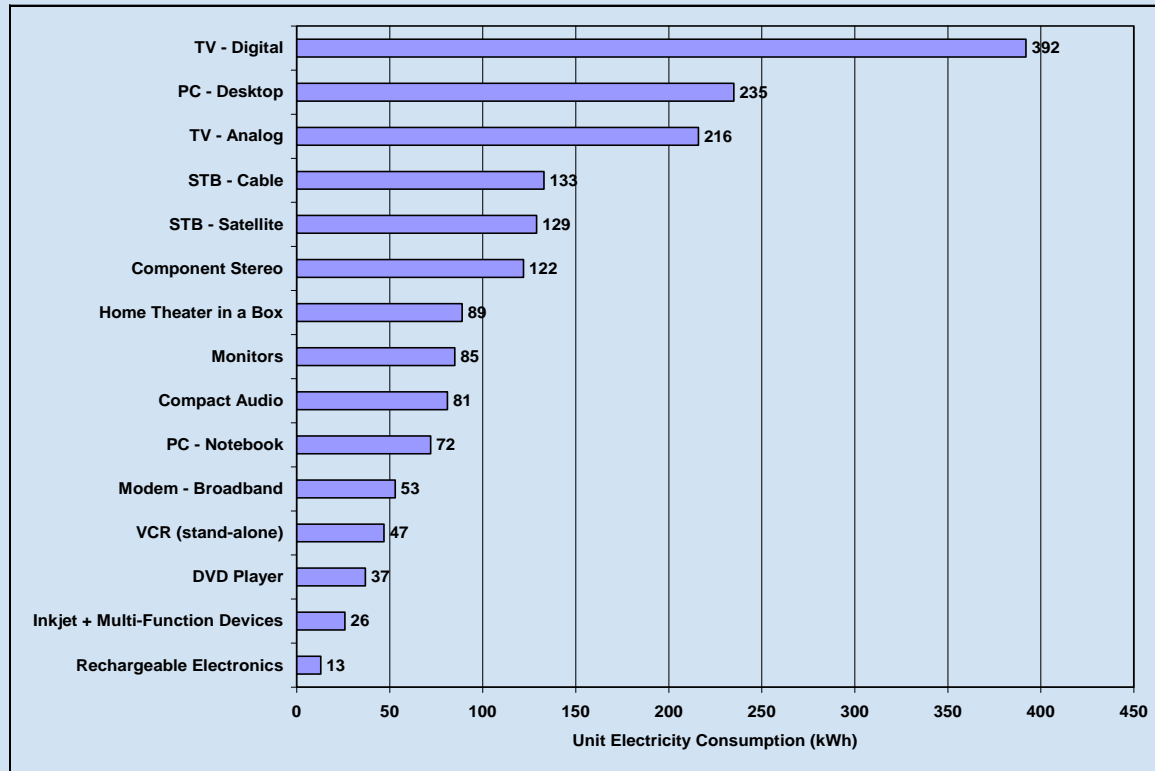
- Informational resource for energy efficiency program administrators and consumer electronics industry
- Developed over 9-month period by CEE Consumer Electronics Committee
- Draws heavily on experience developed in administering programs for other products
- Intended to be “living document”

Savings Opportunity--End Use



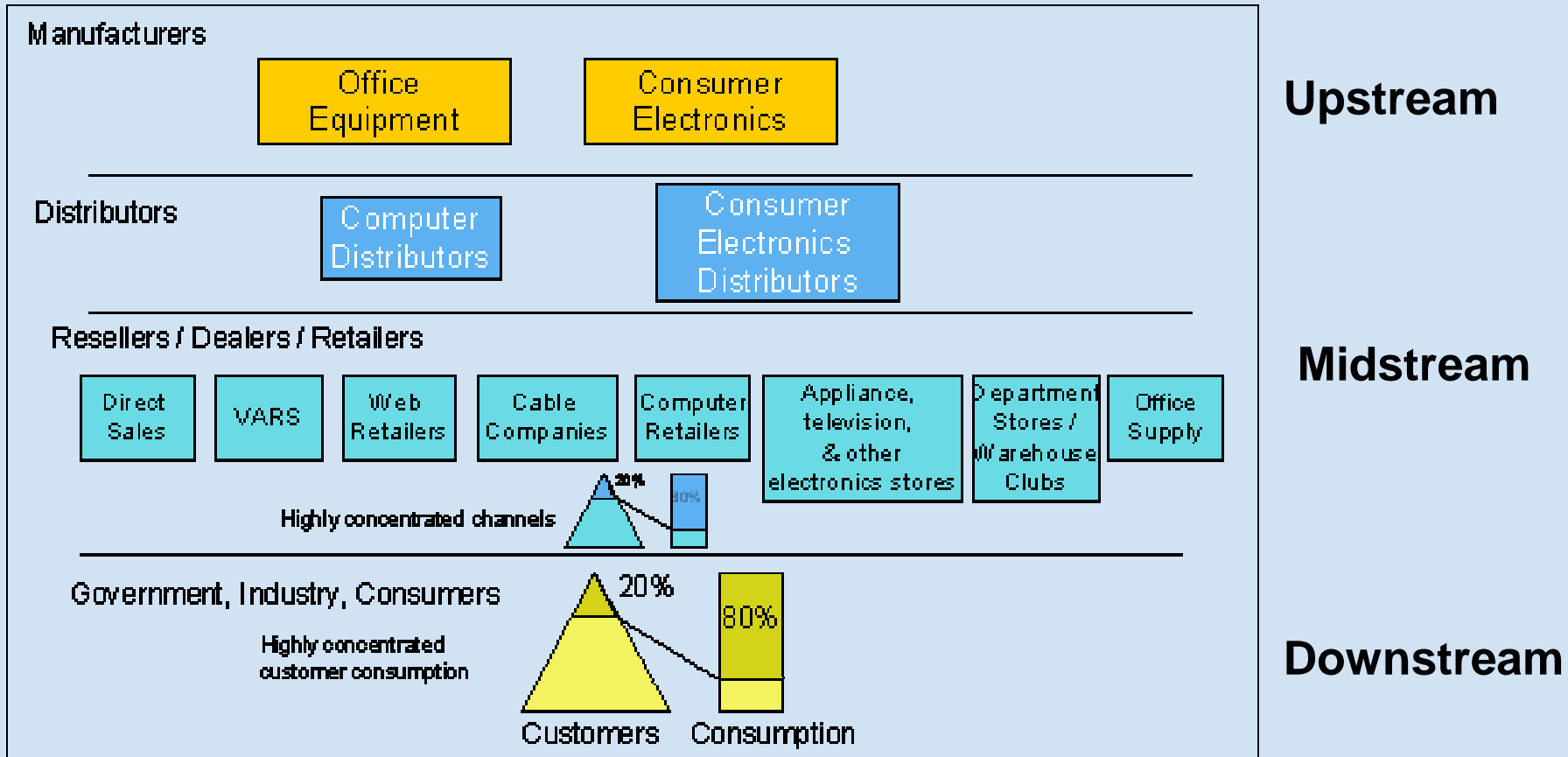
Electric Power Research Institute-Edison Electric Institute

Savings Opportunity--UEC



TIAX LLC for the U.S. Department of Energy 2008

Market Actors



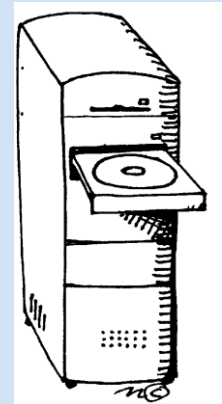
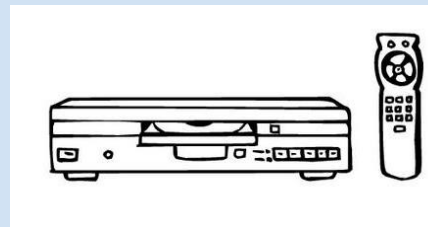
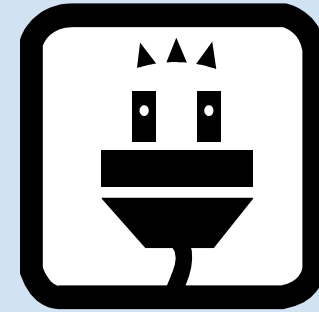
Pacific Gas and Electric Company



Working Together, Advancing Efficiency

Common Themes

- Consumer education
- Focus on product purchase and product use



Upstream Approaches

- Developing relationships with industry
- Co-branding/co-op marketing
- Incentives to manufacturers
 - To bring to market
 - Buydowns
 - Golden Carrot
- R&D

Midstream Approaches

- Transfer lessons learned
- Incentives
- Co-branding/co-op marketing
- Point of purchase information
- Spiffs
- Retail sales staff training
- Cable and satellite service providers

Downstream Approaches

- Leverage ENERGY STAR
- Consumer education
- Rebates
- Buy-back/turn-in programs
- Product labeling
- Collaboration
- Feb. '09 digital transition
- Bulk purchasers
 - E.g., Starwood Hotels announced it's buying 80,000 EE TVs from Philips, est. \$12 million lifetime savings

CEE Super-Efficient Specifications

- Facilitate increased market adoption of super-efficient products
 - Differentiate higher efficiency products
 - Provide consistency to CEE members, manufacturers, and retailers
- Address differing program needs for savings

CEE Television Specification

- Program interest in savings opportunity
 - Substantial differentiation between most and least efficient products
 - TVs consume almost 50 percent of U.S. residential electricity use by electronics products
 - 70 TWh of 147 TWh total
 - Digital transition
 - Est. 31 million TVs to be sold in 2008



CEE Television Specification

	Tier 1 (ENERGY STAR®)	Tier 2 (15 percent above ENERGY STAR®)
Screen Area	Maximum On Mode Power Consumption	Maximum On Mode Power Consumption
Non-High Definition TVs		
≤ 480 Native Vertical Resolution		
All screen areas	$P_{Max} = 0.120 * A + 25$	$P_{Max} = .102 * A + 21.25$
High Definition and Full High Definition TVs		
> 480 Native Vertical Resolution		
$A < 680 \text{ inch}^2$	$P_{Max} = 0.2 * A + 32$	$P_{Max} = .17 * A + 27.2$
$680 \text{ inch}^2 \leq A < 1045 \text{ inch}^2$	$P_{Max} = 0.24 * A + 27$	$P_{Max} = .204 * A + 22.95$
$A \geq 1045 \text{ inch}^2$	$P_{Max} = 0.156 * A + 151$	$P_{Max} = 0.1326 * A + 128.35$

- Effective November 1, 2008
- Incorporates all requirements of ENERGY STAR Version 3.0 TV spec
- Technology neutral

CEE Television Specification

- Next steps
 - CEE members evaluate use of specification in their programs
 - Save More with ENERGY STAR pilot in CA
 - Build up products list
 - Possible CEE Tier 3: TBD early 2009

Electronics Program Activity

- California utilities pilot program
- Interest in Canada and across U.S.
- Exploring role for CEE in supporting a national effort
 - Research
 - Marketing
 - Create and implement a national program model

Much Still to be Learned

- General industry information
- Shipment and sales data
- Consumer behavior (purchase and use)
- Most effective program approach

Next Steps

- Prepare 2009 Work Plan
- Advance collaboration with electronics industry and ENERGY STAR
- Continue specifications work
 - ENERGY STAR and explore other possible CEE specs
- Member program deployment
- Program summary

Resources

- CEE Consumer Electronics Initiative Description and Program Guide
<http://www.cee1.org/resid/rs-ce/rs-ce-main.php3>
- ENERGY STAR Consumer Electronics Workshop
http://www.energystar.gov/index.cfm?c=partners.pt_meetings
- *Energy Consumption by Consumer Electronics in U.S. Residences*. Final Report to the Consumer Electronics Association (TIAX LLC. 2007).
[http://www.ce.org/pdf/Energy%20Consumption%20by%20CE%20in%20U.S.%20Residences%20\(January%202007\).pdf](http://www.ce.org/pdf/Energy%20Consumption%20by%20CE%20in%20U.S.%20Residences%20(January%202007).pdf).
- *Residential Miscellaneous Electric Loads: Energy Consumption Characterization and Savings Potential in 2006 and Scenario-based Projections for 2020*. Final Report to the U.S. Department of Energy (TIAX LLC. 2008).
- *Consumer Electronics: Market Trends, Energy Consumption, and Program Recommendations 2005-2010*. Pacific Gas & Electric Emerging Technologies Program Application Assessment Report #0513 (Chase, A., R. Ramos, and T. Pope 2006). <http://www.etcc-ca.com/database/summary.php?id=370>

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