

Results of Invitation to Participate: Set-Top Boxes

2013 Appliance Efficiency Rulemaking
California Energy Commission

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Sub-Agenda

- ❑ Purpose
- ❑ Results
 - ❑ Responses received
 - ❑ Scope
 - ❑ Preemption
 - ❑ Installed base and shipments
 - ❑ Modes of Operation
 - ❑ Duty Cycle
 - ❑ Energy Consumption
 - ❑ Lifetime
 - ❑ Incremental cost of efficiency
- ❑ Next Steps



Purpose

- ❑ The Commission is gathering information to determine how to proceed with products listed in Phase 1 of the OIR.
- ❑ The Invitation to Participate (ITP) is an opportunity for stakeholders to inform the Commission's policy, direction, and process.
- ❑ ITP requests product, market, and other relevant information.
- ❑ During this session, we will discuss the results of the ITP for set-top boxes (STBs)



Information Requested

- ❑ Product Definition & Scope
- ❑ Existing Test Procedures
 - ❑ Across all modes
- ❑ Sources of Test Data
- ❑ Existing Standards & Standards in Development
- ❑ Product Lifetime
- ❑ Product Development Trends
 - ❑ Redesign Cycle
- ❑ Operations & Modes
- ❑ Energy-Saving Technologies & Features
- ❑ Costs
- ❑ Hardware
- ❑ Market Characteristics
- ❑ Market Competition



Responses

- Aggios
- California Investor-owned Utilities (IOUs)
- California and National Cable and Telecommunication Associations (CCTA & NCTA)
- Cisco
- Consumer Electronics Association (CEA)
- Direct TV/Dish
- Green Technology Leadership Group (GTLG)
- Natural Resources Defense Council (NRDC)
- Telecommunications Industry Association (TIA)
- TiVo
- Verizon



Scope

Existing Definitions for set-top boxes in:

ENERGY STAR

DOE NOPR

International Standards

Test procedures (CEA 2043, IEC 62087)

Industry responses to ITP state complexities in defining the scope

Discussion: None, stakeholders should use ITP feedback to determine what is and is not included in their proposals. A clear scope is one of the key characteristics of a good proposal.



Preemption

Many industry stakeholders included a discussion of federal preemption of California regulations.

Discussion: None, a preemption discussion requires a proposed regulation. Preemption is a factor we ask stakeholders to consider in the request for proposal stage of the process (discussed at the end of this presentation)



U.S. Shipment Information (pay-tv STB)

CEA study cites several estimates of installed base

Table 3-67: Other estimates of subscription STB installed base

Source	Subscribers [millions]			STBs per subscriber			STBs [millions]			Total
	Cable	Satellite	Telco	Cable	Satellite	Telco	Cable	Satellite	Telco	
CE Survey	63.1	36.5	6.6	1.4	2.0	2.2	85.8	73.3	14.2	173.3
SNL Kagan-raw	54.8	33.1	5.7	1.6	2.7	2.8	86.8	87.9	15.9	190.5
SNL Kagan-mod	54.8	33.1	5.7	1.6	2.3	2.8	86.8	76.1	15.9	178.8
NRDC	-	-	-	-	-	-	-	-	-	174.0
Others*	57.9	30.0	5.2	1.0	2.8	3.0	60.3	84.0	15.5	159.8

* Less accurate, built from less robust data sources.

DOE estimates 41.1 million STB shipments in 2012 in its NODA

Discussion:

- Are these estimates of installed base and shipments reasonable?
- Can they be scaled by ~12% to estimate California market share?



Modes of Operation

Alignment with test procedures: ENERGY STAR, proposed DOE, and draft CEA 2043:

- On
- Sleep
- Deep sleep <- ENERGY STAR only
- Off <- DOE estimates zero hours of usage in off-mode for STB in its test procedure NOPR

Discussion:

- Is off-mode relevant, does it describe a mode that exists?
- Will the lack of a deep sleep mode in CEA 2043 cause issues in implementing the industry VA commitments to that mode?
- Are there any missing important modes?



Duty Cycle of STBs

Several estimates of STB duty cycles were provided to the CEC in response to the ITP:

- DOE NODA/NOPR (same duty cycle in each)
- ENERGY STAR version 3.0
- NRDC 2010 field study
- CEA 2010 residential energy consumption report

Discussion:

- DOE and ENERGY STAR duty cycles assume auto-power down would decrease the on-mode time by 7 hours, is this accurate?
- Which duty cycle best represents average real world use for STB in the market today?
- Are there expected features or trends that may significantly change the duty cycle of STBs?



Energy Consumption of STBs

Many sources and estimates of STB energy and modal power consumption were received in response to the ITP:

- DOE NODA
- ENERGY STAR current qualified product list
- NRDC 2010 field study
- CEA 2010 residential energy consumption report

Discussion:

- CCTA/NCTA's comment directly challenges the NRDC data and assumptions. Were the assumptions accurate for 2010?
- Which dataset most accurately represents current energy consumption?



Lifetime of STBs

Many sources and estimates of STB energy and modal power consumption were received in response to the ITP:

- DOE NODA: 5.7 years
- IOUs: 5-7 years
- TiVo: 5+ years, models manufactured for ~2 years, likely longer for non-retail STBs
- DirectTV/Dish: 6-7 years

Discussion:

- Are there any subsets of STB with significantly longer or shorter lifetimes than average?
- The DOE NODA provides the most detailed estimate of STB lifetime in the ITP, should stakeholders rely on it for proposals?



Incremental Costs of improved efficiency

The DOE's NODA for STBs characterizes the incremental costs for several improvements to STB hardware:

- Improved chip power consumption and power scaling
- Improved efficiency hard-disk storage
- Improved efficiency power supply

Discussion:

- Industry suggested that costs to the entire network should be considered and that regulations may require changes to head-end equipment. Would the DOE improvements cause network infrastructure costs?
- DOE is not requesting public comment on its NODA, CEC therefore welcomes initial reactions to the costs it presents.



General Comment

Any other topics that stakeholders wish to discuss (if time allows)?



Next Steps

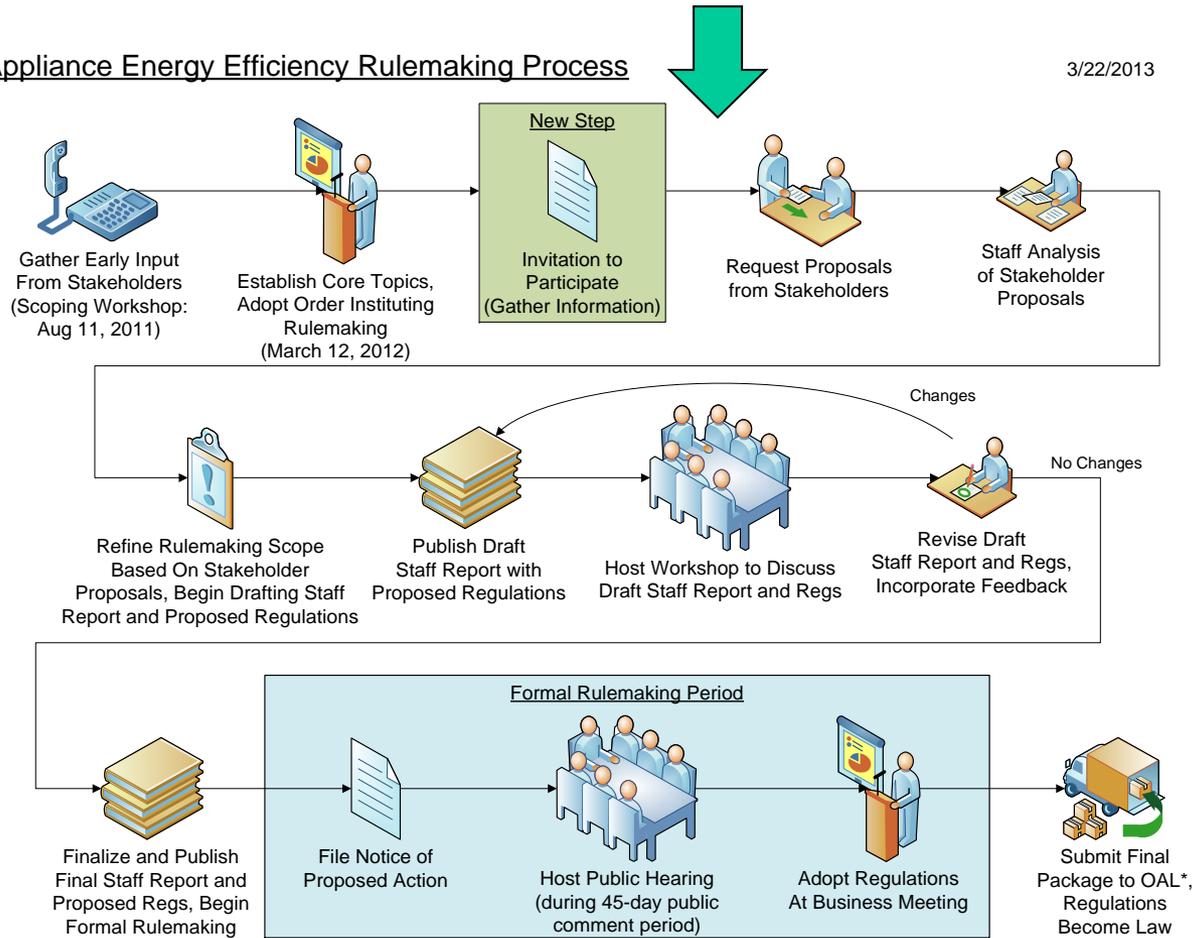
- ❑ Following the ITP workshops, the Commission will request proposals for new/updated efficiency standards or measures.
- ❑ Interested parties may submit proposals from **June 10 to July 25, 2013.**
- ❑ Proposal template and guidance is forthcoming.
- ❑ Commission staff are available to discuss questions and concerns at anytime during the proceeding.



Public Participation

Appliance Energy Efficiency Rulemaking Process

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Discussion & Comments

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Docket #12-AAER-2A

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