Proposal for Standards – Channel Consumer Electronics

Appliance Efficiency Standards and Measures

for California Energy Commission's Invitation to Submit Proposals

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1 Executive summary

Technology continues to develop products which provide better performance and energy efficiency. The channel (small computer integrators) follow this trend, but at a different pace than the large original equipment manufacturers (OEM's). The impact of regulations on small businesses cannot be understated. An OEM has a team of employees and resources to monitor regulatory developments, concerns and requirements. Small businesses have fewer employees to participate in the decision making and compliance processes. As such, OEM influence in the regulatory scope is often weighted heavily against the channel. OEM's are able to purchase custom components which work seamlessly to maximize energy efficiency. The channel often purchases standard "off the shelf" components (at a price premium) which are not optimized for energy efficiency. However, the channel fosters unparalleled innovation and it's importance on local economies cannot be understated.

NASBA proposes the California Energy Commission harmonizes its regulations with Energy Star V 5.0, removing the need for third party laboratory certification and removing the Energy Star requirement for 80+ requirements. Third party laboratory certification is cost prohibitive for channel members and provides an unfair cost advantage to OEM's, which do little to contribute to the local economy in many small towns, as well as provide an unfair advantage in competing for local, state and education based IT bids. Product labeling and special packaging is likewise asked to be exempt due to the small volume of channel sales in many bids, making it price prohibitive to compete.

2 Product Description and Proposal Scope

2.1 Technical Description

We recommend using the Energy Star V. 5.0 technical descriptions for computers.

2.2 Technologies and Best Practices for Energy/Water Efficiency

As mentioned, the channel systems continue to provide measurable energy savings. Measured results show a decrease in power consumption as calculated by the Energy Star V 5.0 criteria known as Total Energy Consumption (TEC). Please see the table below for additional detail.

CA. PC Stock aging (Desktops)	DT average kWh TEC with Pwr Mgmt enabled (w/o high efficiency PSU)
1 year old	**130.5**
2 year old	**163.5**
3 year old	**186.1**
4 year old	**212.9**

5 year old	**243.5**
Av. DT UEC (kWh/yr)	**187.3**

2.3 Design Life

Typical design lifetime for enterprise models is estimated at 3-5 years. However, the channel is uniquely positioned to extend this lifetime with their local nature. The channel often provides local service, offering repair and upgrades in place of system replacement. The effects on the waste stream are logically less.

2.4 Manufacturing Cycle

The channel is at the forefront of high end desktop systems, providing customized solutions to the financial services, media production and gaming sectors. The channel offerings move with the available technology, improving on old/standard uses as well as developing new uses for existing and future technologies. It is difficult to estimate a manufacturing cycle, but quarterly changes and upgrades are not uncommon, with larger developments estimated at a yearly cycle.

2.5 Product Classes

Recommend in scope limited to desktop, notebook, and all in one (AIO) systems.

3 Unit Energy/Water Usage

3.1 Duty Cycle

Active, idle (short and long), sleep, on and connected standby. Recommending following Energy Star V 5.0 TEC calculation.

3.2 Efficiency Levels

See prior TEC recommendation

3.3 Energy and/or Water Consumption

See above energy consumption in section 2.2

4 Market Saturation and Sales

4.1 California Stock and Sales

Estimate channel sales at approximately 20% if total desktop and 10% of notebook shipments based on KEMA numbers:

Stock (million	Channel	Channel NB

units) DT

	DT	NB	Total
Residential	1.92	0.86	2.78
Commercial	2.76	1.24	4.00
Total	**4.68**	**2.10**	**6.78**

New Shipments: These are based on IOUs sources from ITP citing IDC data for the US PC shipments. CA. shipments are based on GDP ratio. Future PC shipment volumes are extrapolated based on IDC CAGR, as reported by IOUs. 20% estimated channel share for desktop and 10% for desktop systems

Million units		**2007**	**2008**	**2009**	**2010**	**2011**
CA	Desktop PC	6.8	6.3	5.6	5.7	5.3
	Notebook PC	3.0	3.4	4.3	4.7	4.3
	Total PC	**9.8**	**9.7**	**9.9**	**10.4**	**9.5**

4.1 Efficiency Options: Current Market and Future Market Adoption

Most of the above systems comply with Energy Star V 5.0 TEC requirements.

5 Statewide Energy Usage

Average channel desktop energy use:

CA. PC Stock aging (Desktops)	DT average kWh TEC with Pwr Mgmt enabled (w/o high efficiency PSU)
1 year old	**130.5**
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Av. DT UEC (kWh/yr)	**187.3**

Stock Energy Use (TWh/yr) - With Power Management

	DT Channel
Residential	**0.2**
Commercial	**0.3**
Total	**0.4**

Stock Energy Use (TWh/yr) - Without Power Management

	DT Channel
Residential	**0.6**
Commercial	**0.8**
Total	**1.3**

6 Proposal

6.1 Summary of proposal

Scope: Desktop, notebook, all in one systems. No 3rd party lab certification, no 80+ power supply requirements, TEC regulation, not component level regulation.

6.2 Implementation Plan

Recommend 2 year implementation plan from finalizing regulatory requirements.

6.3 Proposed Test Procedure(s)

Energy Star V 5.0 Test procedures for desktop, integrated desktop and notebook systems.

6.4 Proposed Regulatory Language

None

7 Technological Feasibility

Please see technological and economical feasibility analysis, below:

		Impact											
Standard DT BOM	Alternate BOM (NB or more Energy Efficient)	Performance	Original BOM Power	Alternative BOM Power	Power De	Energy Saving (TEC)	Original BOM Cost	Alternative BOM Cost	Cost Adder ($)	Per year cost	NPV 3 years	NPV 5 years	break even 5 years?
MB + Memory	Intel DH77EB	similar	16.18	8.05	8.13	28.49	74.99	109.99	$ 35.00	$ 4.27	$12.09	$19.57	No
	MSI Z77A-G41	similar	13.78	10.1	3.68	12.89	109.99	99.99	$ (10.00)	$ 1.93	$5.47	$8.86	less than 1
	Intel DQ77MK	Slighly up	16.15	9.88	6.27	21.97	209.99	212.81	$ 2.82	$ 3.30	$9.32	$15.09	less than 1
					0	0.00			$ -	$ -	$0.00	$0.00	
CPU +VR					0	0.00			$ -	$ -	$0.00	$0.00	
HDD/SSD	Western Digital WD1002E	same	4.25	3.4	0.85	2.98	69.99	78.99	$ 9.00	$ 0.45	$1.26	$2.05	no
1002FAEX Black	Western Digital WD1002E	less	5.6	3.4	2.2	7.71	89.99	78.99	$ (11.00)	$ 1.16	$3.27	$5.30	cheaper
1002EARX Green	Intel SSDSA2M160G2GC	smaller size, faster	3.4	0.14	3.26	11.42	78.99	199.99	$ 121.00	$ 1.71	$4.85	$7.85	no
ODD					0	0.00			$ -	$ -	$0.00	$0.00	
									$ -	$ -	$0.00	$0.00	
Graphics	Radeon HD 7750	similar	21	6.89	14.11	49.44	99.99	99.99	$ -	$ 7.42	$20.98	$33.96	same price
	GeForce GTX 650Ti	more	21	8.88	12.12	42.47	99.99	149.99	$ 50.00	$ 6.37	$18.02	$29.17	no
	GeForce GTX 660	similar	17.06	10.68	6.38	22.36	179	229.99	$ 50.99	$ 3.35	$9.49	$15.36	no
	Radeon HD 7850	similar	23.61	15.06	8.55	29.96	165.99	179.99	$ 14.00	$ 4.49	$12.71	$20.58	between3-5
	GeForce GTX 680	similar	32.92	19.27	13.65	47.83	389.99	459.99	$ 70.00	$ 7.17	$20.29	$32.86	no
	Radeon HD 7970 GHZ	similar	42.16	16.09	26.07	91.35	459.99	429.99	$ (30.00)	$ 13.70	$38.76	$62.75	cheaper
PSU Eff.	FSP AU-400 GOLD		28.63	26.98	1.65	5.78	50	69.99	$ 19.99	$ 0.87	$2.45	$3.97	no
	Antec EA-550 Platinum		28.63	27.05	1.58	5.54	50	89.99	$ 39.99	$ 0.83	$2.35	$3.80	no
	Antec EA-650 Platinum		28.63	29.11	-0.48	-1.68	50	119.99	$ 69.99	$ (0.25)	($0.71)	($1.16)	more power
					0	0.00			$ -				
Power Mgt					0	0.00			$ -				
OS /SW					0	0.00			$ -				
Others					0	0.00			$ -				
													years to br
Scenario 1						86.69			63.99	$ 13.00	$36.78	$59.55	more than 5
Scenario 2						66.75			18.99	$ 10.01	$28.32	$45.86	less than 3
Scenario 3						68.89			177.81	$ 10.33	$29.23	$47.32	more than 5

8 Economic Analysis

Please see above

8.1 Incremental First Costs

Above chart lists incremental costs. Incremental costs especially detrimental to channel competition from OEM's due to smaller component volume purchasing.

8.2 Incremental Operating Costs and Savings

Dependent on regulatory enforcement costs, power and recycling fees/costs.

8.3 Infrastructure Costs and Savings

None forcasted.

8.4 State or Local Government Costs and Savings

Unable to determine based on current data

8.5 Business Impacts

NASBA proposal limits negative channel impact, ensuring healthy competition and innovation by local channel businesses.

8.6 Lifecycle Cost and Net Benefit

This is difficult to compute without future system energy consumption and capabilities available.

9 Savings Potential

Unknown.

10 Acceptance Issues

We see very little user acceptance issues with the included proposal

11 Environmental and Societal Impacts

Reducing energy consumption has an effect to decrease CO2 output.

12 Federal Preemption or Other Regulatory or Legislative Considerations

No known duplication or preemption of federal or other regulatory or legislative considerations.

13 Methodology for Calculating Cost and Savings

Energy Star V 5.0 TEC methodology.

14 Bibliography and Other Research

[EPA] U.S. Environmental Protection Agency. ENERGY STAR Program Requirements. Product Specification for Computers. Version 6.0 final draft.

IDC Worldwide Quarterly PC Tracker and press release, May 2013, http://www.idc.com/getdoc.jsp?containerId=prUS24129913

IEC, Desktop and Notebook Computers – Measurement of Energy Consumption, IEC 62623 (2012)

APPENDIX: Cost Analysis Assumptions

The Energy Commission assumptions:

The cost of electricity: $0.15 per kWh

The cost of natural gas: $1 per therm

The cost of water: $0.0052 per gallon

Discount rate: 3%