DOCKETED

Docket Number:	14-AAER-02
Project Title:	Computer, Computer Monitors, and Electronic Displays
TN #:	204161
Document Title:	ITI/Technet Computer Display Presentation 1
Description:	Displays - Customer/Product Impact, Mark Hollenbeck HP
Filer:	System
Organization:	CEC/Harinder Singh
Submitter Role:	Commission Staff
Submission Date:	4/13/2015 4:16:39 PM
Docketed Date:	4/13/2015

Comment Received From: H.Singh
Submitted On: 4/13/2015
Docket Number: 14-AAER-02

ITI/Technet Computer Display presentation 1

Additional submitted attachment is included below.

California Energy Commission

Staff Workshop: Computers, Computer Monitors, and Signage Displays

Displays – Customer/Product Impact

Mark Hollenbeck

HP

April 15, 2015

Presentation Content

DISPLAYS:

- Serve Broad Range of Customers Use Profiles, Displays Families
- Impact CECs Proposed Display Energy Efficiency Regulations
- CEC On Mode Limits Impact ENERGY STAR® Qualified Displays
- CEC On Mode Limits Data Analysis
- Analysis CEC Proposed Sleep Mode Limit
- Enhanced Performance Displays
  Summary / Conclusions

Displays Serve Broad Range Customers (1)

Wide Range Display User Profiles		
Home Users	Business Users	Professionals

Span of Display User Profiles			
Mobile Display Users	Mainstream Home / Office	Professional Users Enhanced Perf.	Commercial Users (Signage)
				
				
Accessing internet, basic productivity activities – writing, using email, etc. (similar to value Notebook display)	Basic productivity, accessing internet, writing / using email, viewing / processing pictures, viewing video / movies, collaboration, etc.	High Level Professional Users perform activities listed on left plus creating and editing graphics, video, advanced engineering/ financial modeling, science, medicine, etc.	Commercially purchased products, for multiple people viewing content publically (e.g. Airports, Rail Stations, Sports Venues, etc.)

Impacts to Display Customers (1)

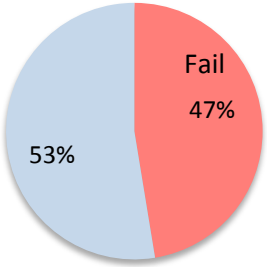
- Impact to customers who purchase "Enhanced Performance Displays" unknown (unclear if in or out of scope, limits, etc.)
  - Poses significant risk for customers with advanced display capability needs (scientific, medical, graphic and video design, etc.)
- CEC's proposed Display On Mode Limits impact a significant percentage of display models on market
  - Proposed On Mode limits exceeds exclusive ENERGY STAR Ver. 6.0 Program Requirements (within certain size ranges discussed below)
  - Many displays currently on market are noncompliant proposed On Mode limits
  - Impacts of CEC's proposed On mode limits is not proportional across range of display sizes
  - Smaller Displays (15" – 21.5" size range) impacted most by proposed On Mode limits at approximately 90% noncompliant
  - 23" Displays also impacted by proposed On Mode limits at approximately 50% noncompliant
  - Larger Displays (> 23" – 27" size range) have a greater number that are compliant at approximately 88%

Impacts to Display Customers (2)

- CEC's proposed Display Sleep Mode Limits may impact displays with added features / functionality
  - Many displays with added features will not meet CEC proposed 1.0 W Sleep Mode limit
  - Touch, pen stylus, USB 3.0 HUB, and USB power pass-through products , etc.
  - Unclear if these types of displays or added features / functionality are in or out of scope

CEC On Mode Impact
ENERGY STAR Qualified Displays

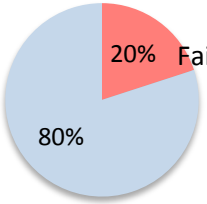
All Displays in ESTAR QPL



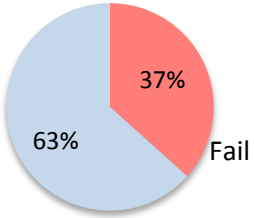
ENERGY STAR qualified Displays represent the top 25% most efficient displays.

Impact CEC's proposed On Mode limits is greater when all displays on market considered.

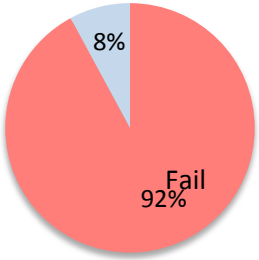
Impact to QPL – < 12"



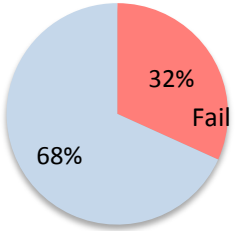
Impact to QPL - 12"≤d<17"



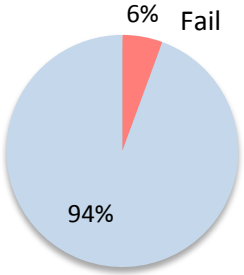
Impact to QPL - 17"≤d<23"



Impact to QPL- 23"≤d<25"



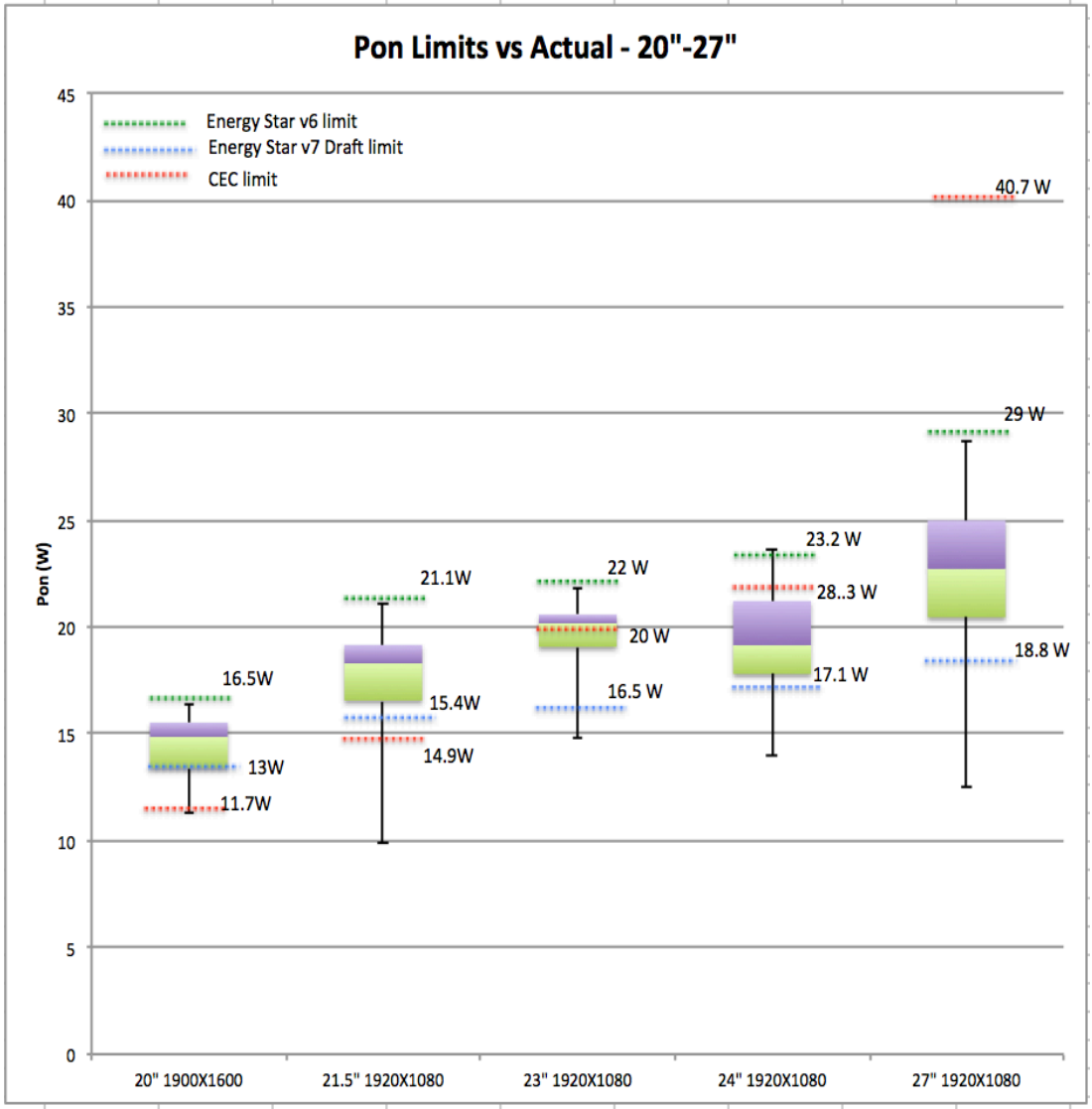
Impact to QPL - 25"≤d<61"



Data from Energy Star v6 QPL – Apr 13, 2015

CEC On Mode Limits Data Analysis

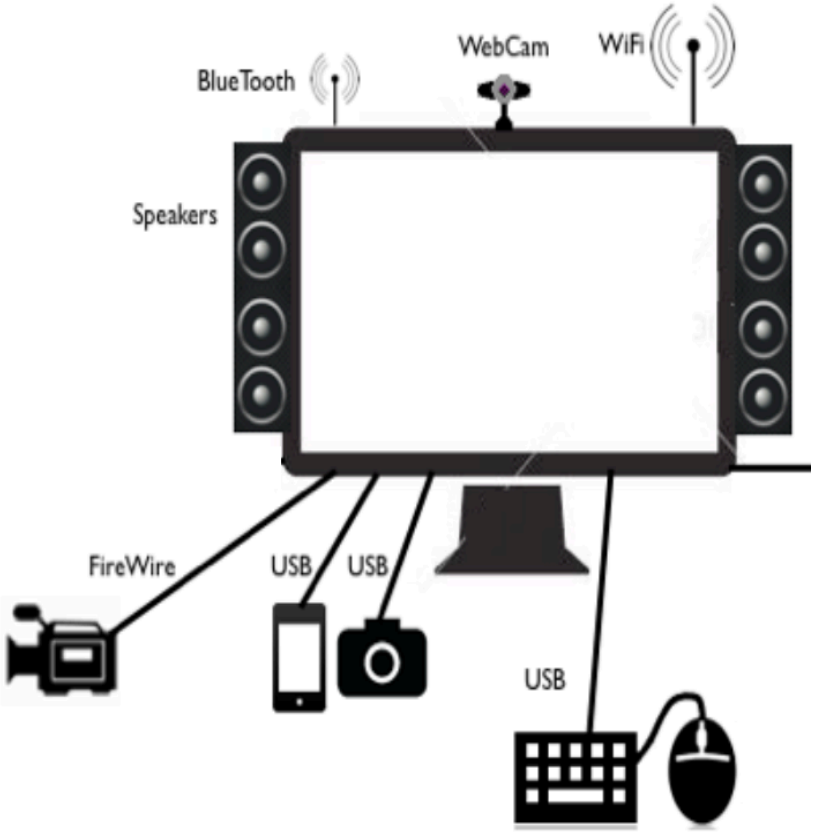
- Proposal is not aligned to Energy Star Displays and methodology adopted is unclear – Big impact to products
- Displays < 23” – Limits proposed are overly aggressive- Why?
  - More restrictive than Energy Star v6 and Energy Star v7 draft
  - More than 15W difference in limits between 20”-24”
- Displays > 23” – limits are more reasonable – Is CEC’s intention to have only large displays available in CA?



Data from Energy Star v6 QPL – Apr 13, 2015

Analysis CEC Proposed Sleep Mode Limit

- Some modern displays act like a docking station for notebooks with added bridging (USB, Thunderbolt) , network (Ethernet, wireless) connectivity.
- Other features include occupancy sensors, card readers etc.
- Additional features require additional power in Sleep Mode
- Additional Sleep Mode tolerance required for additional features (consistent with Energy Star v6.)

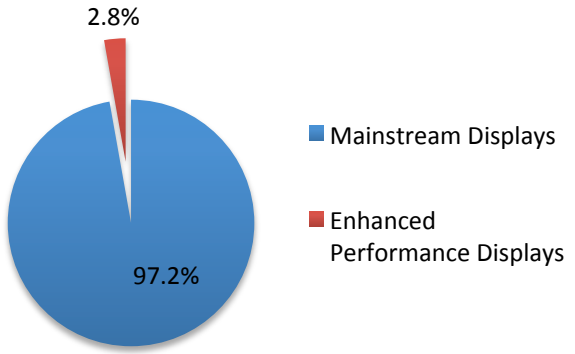


Enhanced Performance Displays

- Features: High resolution, better viewing angles, enhanced color range
- Low volume, high cost
- Customers- graphic arts, animation feature films, visual effects, medical, engineering CAD etc…
- Represents <3% of the models in the Energy Star v6 QPL.
- Consume higher power because of enhanced features. Energy Star provides a 30%-75% adder.
- Connectivity and Expansion often integrated

Price Range	Monitor Type
$50-$500	Mainstream
>$500	Professional/Enhanced performance displays

Enhanced Performance Displays Models Vs Standard Displays



Summary / Conclusions

- Industry does not have CEC's data / analysis underlying proposed Display requirements
  - Request CEC provide dataset to enable further evaluation / provide constructive inputs
  - CEC's dataset for small displays <17" is based on USB powered displays (not representative of Computer Displays)
- Limits proposed will eliminate approximately 90% of Computer Displays of 15" – 21.5" (representing 48% of the display market)
  - Unintended consequence of forcing customers to purchase displays >23"
- Limits proposed are more restrictive than Energy Star v6 and v7 draft on some display sizes
  - Significant impact for California's Consumer and Commercial Customers
- Allocate allowances for Sleep mode
- Recommend excluding enhanced performance displays. Low volume high value displays