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ITI Comments on Phase 2 Pre-Rulemaking Low-Power Modes & Power Factor Roadmap

Additional submitted attachment is included below.

Phase 2 Pre-Rulemaking (Docket #17-AAER-12)

Appliance Efficiency Rulemaking

ITI Comments on the Phase II Pre-Rulemaking: Low-Power Modes & Power Factor Roadmap

June 15, 2017

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1. INTRODUCTION

As the global voice of the tech sector, ITI ("Industry") is pleased to provide comments on the California Energy Commission's (CEC) Phase II Pre-Rulemaking for Low-Power Modes & Power Factor Roadmap**.**

ITI's member companies vigorously compete to offer customers products that meet performance needs while maintaining the highest levels of energy efficiency. We are proud of our 20+ year partnership with the EPA on ENERGY STAR, and of our work with governments worldwide in improving energy efficiency, including, most recently, our collaboration with CEC on the historic energy standards rulemaking for computers and monitors.[1] ITI and CEC collaborated closely on the computers and monitors rulemaking, with industry actively contributing in data-driven discussions on product efficiency. To continue in that vein, we appreciate the opportunity to contribute to CEC's discussions on low-power mode and power factor with the key points below.

- There are many eco-label, regulatory and non-regulatory drivers for energy efficient designs, with ENERGY STAR program and private sector voluntary agreements being most notable and progressive. Multiple specification revisions demonstrate the progress achieved to date[2].
- Requiring power management features enabled as-shipped, (to ensure products enter a low power state after a period of inactivity), has been in practice for years for many edge device product categories- imaging equipment, PC's, displays, TV's, etc.
- Several programs mandate energy efficiency standards and thresholds at component and system level (including low power modes – LPM), power management, power supply and battery charging efficiency, annualized energy consumption, etc.
- The IT industry, in spite of continued innovation and energy efficiency improvements, remains heavily regulated. While there are incremental opportunities to improve, any new regulation on IT products will increase undue burden on the manufacturers, increase consumer cost, and potentially stifle innovation.
- These comments address CEC's general questions pertaining to low power modes and power factor, as outlined in CEC's May 11th Invitation to Participate presentation[3]. ITI will provide more detailed comments, should any specific road mapping proposal emerge as part of Phase 2 Pre-Rulemaking.

2. KEY POINTS

Scope/Definitions

[1] Energy Commission Adopts Energy Standards for Computers and Monitors
http://www.energy.ca.gov/releases/2016_releases/2016-12-14_Adopt_Energy_Stds_for_Computr_and_Monitors_NR.html

[2] Networked Devices: Industry Perspectives on Global EE Policy Framework, IEA/4E/SEAD/DECC Workshop, 20 January 2015

[3] http://docketpublic.energy.ca.gov/PublicDocuments/17-AAER-05/TN217523_20170510T135340_Invitation_to_Participate_Presentation.pdf

- CEC's phase 2 pre-rulemaking for low power modes and power factor should narrowly focus on products that are not already addressed by the US and International energy efficiency programs and regulations and focus on products with the greatest potential for improved energy efficiency. CEC should be cognizant that the state of California gets to benefit from any product improvements made as a result of product innovation and energy efficiency programs in the US or international jurisdictions, due to global applicability. Further CEC efforts on such programs may not be effective and will just add to the administrative burden without significant energy savings.
- Mobility products that operate primarily on battery power should not be included in Phase 2 pre-rulemaking (slates, tablets). As discussed during CEC's Computers rulemaking, these devices primarily operate on battery power, are already very energy efficient, are power managed (battery life being a key market driver), and are already highly regulated (Battery chargers and external power supplies)
- Devices such as networking equipment, whose primary function is to be active and available, may not be subject to low power mode, especially if it impacts their functionality.
- Power management approach is appropriate for many categories of edge devices, however it is not appropriate for networking equipment and network infrastructure equipment.
- While Industry disagrees with ErP Lot 26 "horizontal regulatory approach" (discussed below), the products that are subject to such a regulation should not be part of the CEC's phase 2 road mapping effort. Devices in scope of the EU Lot 26 regulation have already made the necessary improvements or have been deemed to be inappropriate for the intended use of the product according to the network standby regulation.

International Developments

Networked Devices Initiative:

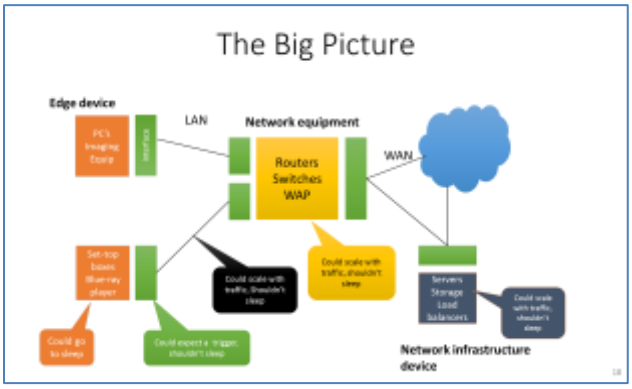
- The rapid growth of networked devices – the so called IoT effect (some estimates put 50 Billion internet connected devices by 2020) has taken a key focus at IEA/G20 level. The G20 Connected Device Alliance (CDA) was formed in 2016.
- CDA developed a set of voluntary CDA design & policy principles to serve as a guideline for networks and networked device designers, and to influence common language and harmonized framework for the government policy makers (see Appendix).
- Many of these devices will be sensors or similar with very low power and low duty cycle and often battery powered.
- Increasing number of domestic and office equipment will be internet connected. IoT in effect extends and multiplies the reach and impact of the positive effects of the ICT network.
- The ACEEE[4] labeled IoT enabled energy efficiency phenomenon as "intelligent efficiency" (IE). IE is a systems-based holistic approach to achieving energy savings, enabled by ICT and user access to real-time information.
- Industry advocates moving away from device and component centric approach (networked device power and savings potential) to more holistic system centric approach[5] (focus on

[4] ACEEE = American Council of Energy Efficient Economy

[5] Source: Laitner, McDonnell, Ehrhardt-Martinez (2014), The Energy Efficiency and Productivity Benefits of Smart Appliances and ICT-Enabled Networks: An Initial Assessment at: http://www.aceee.org/blog/2014/11/internet-everything-could-be-huge-boo

intelligent system efficiency including smart devices, with economy wide benefits and energy savings potential)

Industry approach to Network Standby Policy[6]



- Consider the network elements (networking devices, networked infrastructure devices, edge devices) in their entirety before considering efficiency requirements for each device class separately
- A horizontal energy regulatory approach is not workable, since the power and energy profiles and energy efficiency opportunities vary considerably between device classes. Horizontal approach leads to significant inefficiencies
    - Lot 26 (Horizontal approach) should not be a precedent
    - Power management (defaulting to low power mode) is appropriate approach for many edge devices, and NOT appropriate for networking equipment and network infrastructure equipment
    - Power management has been effectively implemented for many edge product categories where appropriate
- A vertical approach to regulating the power consumption of products where appropriate is preferred, and should identify product scope ensuring comprehensive studies (incl. effect on network):
    - Identify product category specific requirements that may include separate limits, performance / capability adjustments (allowances) etc.
    - Minimizes need for exemptions and avoids limits that are set too high, and maximizes efficiency savings
    - Vertical product standards approach when appropriate is more effective and can lead to greater energy savings potential.

Existing Standards & Test Procedures[7]

Industry has identified 3 types of standards and protocols:

[6] Networked Devices: Industry Perspectives on Global EE Policy Framework, IEA/4E/SEAD/DECC Workshop, 20 January 2015

[7] Ibid

- **Technology standards/protocols ensures interoperability**
  - Communication protocols
    - Ethernet 802,3az
    - Ethernet WoL
    - HDMI CEC
    - Docsis 1x1 mode…
    - …
  - Power management protocols
    - IETF EMAN
    - ETSI GAL
    - …
- **Energy efficiency measurement standards ensures consistent feasible measurements**
  - ETSI/ATIS/ITU-T for routers and switches
  - CENELEC/ETSI for lot 26
  - IEC62301 Ed 2
  - IEC 62623
  - DOE BCS test procedures
  - ……..
- **Standards which set targets/ energy requirements policy instruments**
  - BB CoC
  - Lot 26
  - ENERGY STAR
  - CEC MEPs
  - ……

Standards must be compatible and consistent with each other. Policy instruments must comprehend the technical boundaries of interoperability and measurement standards

3. CONCLUSION

- The IT industry, in spite of continued innovation and energy efficiency improvements remains heavily regulated.
- Industry advocates moving away from device centric approach to more holistic system centric approach, with the focus on intelligent system efficiency including smart devices
- For Networked standby approach, consider the network elements in their entirety before considering efficiency requirements for each device class separately
- Horizontal energy regulatory approach is not workable, and leads to significant inefficiencies. Lot 26 (Horizontal approach) should not be a precedent. Vertical approach is preferred and where appropriate should identify product scope ensuring comprehensive studies (incl. effect on network)
- Power management (defaulting to low power mode) is an appropriate approach for many edge devices, and already implemented for many edge product categories
- Industry as part of CDA developed a set of voluntary CDA design & policy principles to serve as a guideline for device designers, and the government policy makers.
- ITI looks forward to working with CEC and will provide detailed comments, should any specific road mapping proposal emerge as part of phase 2 Pre-Rulemaking.

Appendix

CDA DESIGN PRINCIPLES FOR ENERGY EFFICIENT CONNECTED DEVICES

1. Networked device design should follow standards-based communication and power management protocols to ensure compatibility and interoperability, and should take advantage of standards and protocols that actively support energy efficiency.
2. Networked devices should not impede the efficient operation of a network (for example by injecting bottlenecks or faults, or impeding power management activities in other devices).
3. Network-wide energy efficiency optimization should be a key development consideration. Network power management should coordinate with individual device power management techniques to achieve this.
4. Connection to a network should not impede a device from implementing its internal power management activities.
5. Networks should be designed such that legacy or incompatible devices do not prevent other networked devices on the network from effective power management activities.
6. Networks and networked devices should have the ability to scale power levels in response to the amount of the service (level of functionality) required by the system.
7. Edge devices without networking functionality should enter network standby, if not inappropriate[8], after a reasonable period of time when not being used. Edge devices with networking functionality should provide power management capabilities for each function consistent with that function's role in the network.[9]
8. Networking and networked infrastructure devices should, when work load allows, autonomously minimize power consumption.
9. Consumers should be informed about, and have control over, device power management, including any impacts on the energy consumption of the devise and of any dependent devices, and changes to the user experience.
10. The design and operation of networked devices should be compatible with, and promote the positive effects of using consumer electronics and information and communication technology (ICT) to enable energy to be used more efficiently, often referred to as "Intelligent Efficiency."

CDA POLICY PRINCIPLES FOR ENERGY EFFICIENT CONNECTED DEVICES

[8] Edge devices whose role is to complete a task, conduct no other service and can tolerate an extended resume sequence, should autonomously go into network standby.

[9] Power management consistent with its role in the network: e.g. an edge device with networking functionality such as a printer with an integrated access point controller may put edge device functionality (printer) into a network standby state while maintaining operation of networking functionality (access point).

1. Government and industry should seek harmonized policy approaches that benefit the global marketplace for consumer and commercial technology products and services, and that enhance the productivity and efficiencies achieved via networks.
2. Policy, including government procurement and best-practice sharing, should support continued device, network and intelligent efficiency innovation.
3. Energy efficiency requirements should be technology neutral. Policy should account for the different capabilities and performance of networked devices.
4. Policy should neither impede the functionality of networked devices or efficiency of the network nor impair device or network security.