Voluntary Agreement on SNE Energy Efficiency

An Agile Approach to Energy Efficiency

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Background: Two Years of the VA on Set-Top Box Energy Efficiency

Average Energy Consumption

Category	Percent Change in Weighted Average Energy Consumption 2012 Stock to 2014 Procurements
DVR	-33%
Non-DVR	-13%
Thin Client	-44%
DTA	+26%*

* Digital transport adapters (DTAs) added high-definition and advanced video processing capabilities. **100%** of DTAs purchased in 2014 met the Tier 1 (ENERGY STAR Version 3.0) requirements.

National Impact

- Over its first two years, the VA reduced national set-top box energy consumption by 4.2 TWh even as deployed stock increased.

  - Consumer savings of $504 million

  - CO_2 savings of 2.9 million metric tons

  - Annual consumption decreased by 8.75%

- When compared to national energy use projections without the Voluntary Agreement, avoided 8.7 TWh increase.

  - Consumer savings of $1 billion

  - CO_2 savings of 6 million metric tons

Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Small Network Equipment

- Modeled on Set-Top Box VA

- Expands coverage: residential Broadband Modems, Integrated Access Devices (IADs), Wireless Access Points, Routers, and Switches used for broadband Internet access services

- Expands coverage: top service providers, OEM and retail equipment manufacturers, NCTA, CEA

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Response to SNE Voluntary Agreement (June 2015)

- "As we all work to improve energy efficiency in consumer electronics, this is a significant step toward realizing valuable savings. Setting these early commitments for broadband equipment is a promising move to greater efficiencies, which is very important to CalPlug's efforts as more devices join the Internet of Things."

--G.P. Li, director of the California Plug Load Research Center

- "DOE appreciates industry's voluntary commitment to improving the energy efficiency of small network equipment, and looks forward to the progress they can make and verification of the impacts at the appropriate time."

--Dr. Kathleen Hogan, deputy assistant secretary for energy efficiency, U.S. Department of Energy

Scope of the SNE Voluntary Agreement

- Ramps from essentially zero ENERGY STAR products to energy efficiency standards in 90% of new (broadband provider) purchases and retail equipment manufacturers' sales in 2016 and beyond - earlier than any mandatory regulatory standard could take effect

- Allowances developed in a technical Working Group by industry experts (now working with CalPlug)

- Improves product efficiency by approximately 10% - 20% (depending on product)

Key Benefits of SNE Voluntary Agreement

- Broader coverage than Energy Star: over 90% of broadband households, approximately 80 million homes (compare to 9 devices in Energy Star SNE program)

- Locks in efficiencies before onslaught of increased broadband usage and Internet of Things

- Feature-based allowances cover current functionalities that EPA omitted (such as high-powered Wi-Fi, MoCA 2.0, DECT, USB 2.0, Internal Battery backup, Zigbee and other home networking)

Key Benefits of SNE Voluntary Agreement

- **New features process facilitates more rapid innovation**

  - more flexible approach is critical for rapidly-evolving technologies and devices used to deliver broadband Internet access service

- **Provides a roadmap for the energy-efficient consolidation of functionalities into Integrated Access Devices**

- **Industry-funded**

- **Voluntary Agreements becoming an international norm**

Allowances in SNE Voluntary Agreement

- Like ENERGY STAR SNE and European Broadband Code of Conduct, sets idle mode allowances associated with different functionalities

  - follows European BB-CoC more closely to account for new features

  - makes adjustments for U.S. market (e.g., use of MoCA, FCC authorization and use of high-powered Wi-Fi)

- VA and Allowances at http://www.ce.org/CorporateSite/media/environment/energy/Voluntary-Agreement-for-Ongoing-Improvement-to-the-Energy-Efficiency-of-Small-Network-Equipment.pdf

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Enhancing Features, Integrating Functions

Devices from NRDC Study	Power (W)	Devices Under SNE VA	Power (W)
Zoom DOCSIS 2 modem with Apple Airport Express access point	7.8 + 3.8	IAD with DOCSIS 3 24 x 8 and 802.11n Wi-Fi	10.6
Total	11.6		10.6
Features: DOCSIS 2 modem + 802.11a/b/g supports ~10 Mbps downstream		Features: DOCSIS 3 modem + 802.11n supports 100 Mbps downstream	
Standard Definition movie takes 30-90 minutes to download		Standard Definition movie takes 3-9 minutes to download Even faster as plant speeds increase	

Transparency & Governance in SNE Voluntary Agreement

- Public posting of energy consumption by each ISP and manufacturer

- Compliance testing performed using an ANSI test plan (ANSI/CEA 2049, approved February 2015)

- A public Annual Report by an Independent Administrator with model-specific and aggregate compliance data

- Independent audits: one random product from each participant verified in approved third party labs or under supervision of an accredited third-party observer

- Steering Committee manages the VA and engages in regular consultation with regulatory authorities and other stakeholders

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