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CEC Title 20 Computers IOU-NRDC-ITI Definitions Proposal

Additional submitted attachment is included below.

Computers

Codes and Standards Enhancement (CASE) Initiative
For PY 2015: Title 20 Standards Development

Proposal of Definitions, Jointly Submitted with the Information Technology Industry Council and TechNet

September 28, 2015

PACIFIC GAS & ELECTRIC COMPANY

SOUTHERN CALIFORNIA EDISON

SAN DIEGO GAS AND ELECTRIC

SOUTHERN CALIFORNIA GAS COMPANY

NATURAL RESOURCES DEFENSE COUNCIL

1 Definitions Proposal

Starting in July 2015, the CASE team, representatives of the Information Technology Industry Council and Technet, and others have been engaged in technical discussions to explore in part areas of the Title 20 standard where the groups can come to an agreement and present a joint proposal to the CEC. At this time, we have achieved such agreement on many of the definitions that we jointly believe require inclusion in the regulation.

The following table therefore provides a joint proposal for computer definitions in support of the California Energy Commission computer rulemaking by Pacific Gas and Electric Company (PG&E), Southern California Edison (SCE), Southern California Gas (SCG), San Diego Gas & Electric (SDG&E), the Natural Resource Defenses Council, the Information Technology Industry Council (ITI) and TechNet. These stakeholders are continuing engagement regarding other definitions and related aspects of the rulemaking.

Table 1: Proposed Definitions for Computers – Comparison to ENERGY STAR

ENERGY STAR 6.1 Definition	IOU / NRDC / ITI Joint Proposed Definition Relative to ENERGY STAR
Computer: A device which performs logical operations and processes data. For the purposes of this specification, computers include both stationary and portable units, including Desktop Computers, Integrated Desktop Computers, Notebook Computers, Small-Scale Servers, Thin Clients, and Workstations. Although computers are capable of using input devices and displays, such devices are not required to be included with the computer upon shipment. Computers are composed of, at a minimum: a) A central processing unit (CPU) to perform operations. If no CPU is present, then the device must function as a client gateway to a server which acts as a computational CPU; b) User input devices such as a keyboard, mouse, or touchpad; and c) An Integrated Display screen and/or the ability to support an external display screen to output information	Same as ENERGY STAR 6.1 definition.

Desktop Computer: A computer whose main unit is designed to be located in a permanent location, often on a desk or on the floor. Desktop computers are not designed for portability and are designed for use with an external display, keyboard, and mouse. Desktop computers are intended for a broad range of home and office applications, including point of sale applications. **a) Integrated Desktop Computer:** A Desktop Computer in which the computing hardware and display are integrated into a single housing, and which is connected to ac mains power through a single cable. Integrated Desktop Computers come in one of two possible forms: (1) a system where the display and computer are physically combined into a single unit; or (2) a system packaged as a single system where the display is separate but is connected to the main chassis by a dc power cord and both the computer and display are powered from a single power supply. As a subset of Desktop Computers, Integrated Desktop Computers are typically designed to provide similar functionality as Desktop systems.	SAME AS ESTAR v6.1 EXCEPT FOR DEFINING AS TWO SEPARATE CATEGORIES INSTEAD OF IDT BEING A SUB-CATEGORY OF DT. **Desktop Computer:** A computer whose main unit is designed to be located in a permanent location, often on a desk or on the floor. Desktop computers are not designed for portability and are designed for use with an external display, keyboard, and mouse. Desktop computers are intended for a broad range of home and office applications, including point of sale applications. **Integrated Desktop Computer:** A computer in which the computing hardware and display are integrated into a single housing, and which is connected to ac mains power through a single cable. Integrated Desktop Computers come in one of two possible forms: (1) a system where the display and computer are physically combined into a single unit; or (2) a system packaged as a single system where the display is separate but is connected to the main chassis by a dc power cord and both the computer and display are powered from a single power supply. Integrated Desktop Computers are typically designed to provide similar functionality as Desktop systems.
Portable All-In-One Computer: A computing device designed for limited portability that meets all of the following criteria: a) Includes an integrated display with a diagonal size greater than or equal to 17.4 inches; b) Lacking keyboard integrated into the physical housing of the product in its as-shipped configuration; c) Includes and primarily relies on touchscreen input; (with optional keyboard); d) Includes wireless network connection (e.g. Wi-Fi, 3G, etc.); and e) Includes an internal battery, but is primarily powered by connection to the ac mains.	Same as ENERGY STAR 6.1 definition
Notebook Computer: A computer designed specifically for portability and to be operated for extended periods of time both with and without a direct connection to an ac mains power source. Notebook Computers include an Integrated Display, a non-detachable, mechanical keyboard (using physical, moveable keys), and pointing device. Note: Notebook computers are typically designed to provide similar functionality to Desktops, including operation of software similar in functionality as that used in Desktops. For purposes of this specification, Notebook Computers include models with touch-sensitive screens.	**Notebook Computer:** A computer designed specifically for portability and to be operated for extended periods of time both with and without a direct connection to an ac mains power source. Notebook Computers include an Integrated Display, a non-detachable, ~~mechanical~~ physical keyboard ~~(using physical, moveable keys)~~, and pointing device. Note: Notebook computers are typically designed to provide similar functionality to Desktops, including operation of software similar in functionality as that used in Desktops. For purposes of this regulation, Notebook Computers include models with touch-sensitive screens.

Workstation: A high-performance, single-user computer typically used for graphics, CAD, software development, financial and scientific applications among other compute intensive tasks. Workstations covered by this specification (a) are marketed as a workstation; (b) provide mean time between failures (MTBF) of at least 15,000 hours (based on either Bellcore TR-NWT 000332, issue 6, 12/97 or field collected data); and (c) support error-correcting code (ECC) and/or buffered memory. In addition, a workstation meets three or more of the following criteria: a) Provide supplemental power support for high-end graphics (e.g., PCI-E 6-pin 12V supplemental power feed); b) Wired for greater than x4 PCI-E on the motherboard in addition to the graphics slot(s) and/or PCI-X support; c) Do not provide support for Uniform Memory Access (UMA) graphics; d) Provide 5 or more PCI, PCI-E, or PCI-X slots; e) Provide multi-processor support for 2 or more processors (shall support physically separate processor packages/sockets, i.e., requirement cannot be met with support for a single multi- core processor); and/or f) Qualification by 2 or more Independent Software Vendor (ISV) product certifications; these certifications can be in process, but shall be completed within 3 months of qualification.	A Workstation is a high-performance, single/multi-user computer typically used for graphics, CAD, software development, financial and scientific applications among other compute intensive tasks. Workstations covered by this specification (a) do not support altering frequency or voltage beyond the CPU and GPU manufacturers' Operating Specifications; and (b) have system hardware that supports error-correcting code (ECC) that detects and corrects errors with dedicated circuitry on and across the CPU, interconnect and system memory. In addition, a workstation meets three or more of the following criteria: a) Support for one or more Graphic/Compute accelerators b) Wired for $\geq$ x4 PCI-E on the motherboard in addition to the graphic slot and/or PCI-X support c) Provide 5 or more logical expansion ports (Examples: PCI, PCI-Express, PCI-X, Thunderbolt, >USB3.1, or equivalent) d) Provide multi-processor support for 2 or more processors (shall support physically separate processor packages/sockets, i.e., requirement cannot be met with support for a single multi-core processor) e) Qualification by 2 or more Independent Software Vendor (ISV) product certifications; these certifications can be in process, but shall be completed within 3 months of qualification.
8) Thin Client: An independently-powered computer that relies on a connection to remote computing resources (e.g., computer server, remote workstation) to obtain primary functionality. Main computing functions (e.g., program execution, data storage, interaction with other Internet resources) are provided by the remote computing resources. Thin Clients covered by this specification are (1) limited to devices with no rotational storage media integral to the computer and (2) designed for use in a permanent location (e.g. on a desk) and not for portability. **a) Integrated Thin Client:** A Thin Client in which computing hardware and display are connected to ac mains power through a single cable. Integrated Thin Client computers come in one of two possible forms: (1) a system where the display and computer are physically combined into a single unit; or (2) a system packaged as a single system where the display is separate but is connected to the main chassis by a dc power cord and both the computer and display are powered from a single power supply. As a subset of Thin Clients, Integrated Thin Clients are typically designed to provide similar functionality as Thin Client systems. **b) Ultra-thin Client:** A computer with lesser local resources than a standard Thin Client that sends raw mouse and keyboard input to a remote computing resource and receives back raw video from the remote computing resource. Ultra-thin clients cannot interface with multiple devices simultaneously nor run windowed remote applications due to the lack of a user-discernible client operating system on the device (i.e., beneath firmware, user inaccessible).	**8) Thin Client:** An independently-powered computer that relies on a connection to remote computing resources (e.g., computer server, remote workstation) to obtain primary functionality. Main computing functions (e.g., program execution, data storage, interaction with other Internet resources) are provided by the remote computing resources. Thin Clients covered by this specification are (1) limited to devices with no rotational storage media integral to the computer and (2) designed for use in a permanent location (e.g. on a desk) and not for portability. **a) Integrated Thin Client:** A Thin Client in which computing hardware and display are connected to ac mains power through a single cable. Integrated Thin Client computers come in one of two possible forms: (1) a system where the display and computer are physically combined into a single unit; or (2) a system packaged as a single system where the display is separate but is connected to the main chassis by a dc power cord and both the computer and display are powered from a single power supply. As a subset of Thin Clients, Integrated Thin Clients are typically designed to provide similar functionality as Thin Client systems. **b) Ultra-thin Client:** A computer with lesser local resources than a standard Thin Client that sends raw mouse and keyboard input to a remote computing resource and receives back raw video from the remote computing resource. Ultra-thin clients cannot interface with multiple devices simultaneously nor run windowed remote applications due to the lack of a user-discernible client operating system on the device (i.e., beneath firmware, user inaccessible).

Small-scale Server: A computer that typically uses desktop components in a desktop form factor, but is designed primarily to be a storage host for other computers. Small-scale Servers are designed to perform functions such as providing network infrastructure services (e.g., archiving) and hosting data/media. These products are not designed to process information for other systems or run web servers as a primary function. A Small-scale Server has the following characteristics: a) Designed in a pedestal, tower, or other form factor similar to those of desktop computers such that all data processing, storage, and network interfacing is contained within one box/product; b) Designed to operate 24 hours/day, 7 days/week, with minimal unscheduled downtime (on the order of hours/year); c) Capable of operating in a simultaneous multi-user environment serving several users through networked client units; and d) Designed for an industry accepted operating system for home or low-end server applications (e.g., Windows Home Server, Mac OS X Server, Linux, UNIX, Solaris).	**Small-scale Server:** A computer that typically uses desktop components in a desktop form factor, but is designed primarily to be a storage host for other computers. Small-scale Servers are designed to perform functions such as providing network infrastructure services (e.g., archiving) and hosting data/media. These products are not designed to process information for other systems or run web servers as a primary function. A Small-scale Server has the following characteristics: a) Designed in a pedestal, tower, or other form factor similar to those of desktop computers such that all data processing, storage, and network interfacing is contained within one box/product; b) Designed to operate 24 hours/day, 7 days/week, with minimal unscheduled downtime ~~(on the order of hours/year)~~; c) Capable of operating in a simultaneous multi-user environment serving several users through networked client units; and d) Designed for an industry accepted operating system for home or low-end server applications (e.g., Windows Home Server, Mac OS X Server, Linux, UNIX, Solaris).
Slate/Tablet: A computing device designed for portability that meets all of the following criteria: a) Includes an integrated display with a diagonal size greater than 6.5 inches and less than 17.4 inches; b) Lacking an integrated, physical attached keyboard in its as-shipped configuration; c) Includes and primarily relies on touchscreen input; (with optional keyboard); d) Includes and primarily relies on a wireless network connection (e.g., Wi-Fi, 3G, etc.); and e) Includes and is primarily powered by an internal battery (with connection to the mains for battery charging, not primary powering of the device).	Same as ENERGY STAR 6.1 definition.

Computer Server: From ENERGY STAR Servers 2.0: A computer that provides services and manages networked resources for client devices (e.g., desktop computers, notebook computers, thin clients, wireless devices, PDAs, IP telephones, other computer servers, or other network devices). A computer server is sold through enterprise channels for use in data centers and office/corporate environments. A computer server is primarily accessed via network connections, versus directly-connected user input devices such as a keyboard or mouse. For purposes of this specification, a computer server must meet all of the following criteria: A.is marketed and sold as a Computer Server; B. is designed for and listed as supporting one or more computer server operating systems (OS) and/or hypervisors; C. is targeted to run user-installed applications typically, but not exclusively, enterprise in nature; D. provides support for error-correcting code (ECC) and/or buffered memory (including both buffered dual in-line memory modules (DIMMs) and buffered on board (BOB) configurations). E. is packaged and sold with one or more ac-dc or dc-dc power supplies; and F. is designed such that all processors have access to shared system memory and are visible to a single OS or hypervisor.	See ENERGY STAR Servers 2.0.
Mobile Thin Client: A computer meeting the definition of a Thin Client, designed specifically for portability, and also meeting the definition of a Notebook Computer. These products are considered to be Notebook Computers for the purposes of this specification.	**Mobile Thin Client:** A computer meeting the definition of a Thin Client, designed specifically for portability, and also meeting the definition of a Notebook Computer. ~~These products are considered to be Notebook Computers for the purposes of this specification.~~
Game console not defined in ENERGY STAR v6.1	**"Game Console"** - a computing device whose primary function is to play video games. Game consoles share many of the hardware architecture features and components found in general personal computers (e.g. central processing unit(s), system memory, video architecture, optical drives and/or hard drives or other forms of internal memory). In addition, game consoles have the following attributes: • Utilise either dedicated handheld or other interactive controllers designed to enable game playing (rather than the mouse and keyboard used by personal computers); and • Are equipped with audio visual outputs for use with external televisions as the primary display; and • Use dedicated console operating systems (rather than using a conventional PC operating system); and • May include other secondary features such as optical disk player, digital video and picture viewing, digital music playback, etc.; and • Are designed to be powered through connection to an alternating current (AC) main power source via either an internal or external power supply unit.