

## Computing Savings in California

### 2018 Requirements for Workstations, Mobile Workstations, Rack-Mounted Workstations, Small-Scale Servers and High Expandability Computers

California state-regulated small-scale servers, high expandability computers, mobile workstations and workstations manufactured on or after January 1, 2018 are required to comply with the performance, testing and marking requirements listed in Sections 1601 through 1609 of [California's Appliance Efficiency Regulations \(Title 20\)](#). Compliance also includes mandatory certification of the regulated products to the California Energy Commission (Energy Commission). Certified products will appear on the Energy Commission's Modernized Appliance Efficiency Database System ([MAEDbS](#)), a publicly-available database that lists all regulated products that are legally allowed to be sold or offered for sale in California.

#### Why?

According to a [2016 Energy Commission Staff Report](#), computers and monitors consume approximately three percent of residential energy use and about seven percent of commercial energy use in California. The Title 20 requirements will ensure that these computers are minimizing operating energy consumption without impacting performance.

More specifically, the efficient internal power supply requirement of **80 PLUS® Gold** equivalent will lead to energy savings by reducing AC to DC conversion losses. Additionally, the enhanced power factor correction will save energy in both the building wiring distribution and the utility infrastructure. Improving power factor reduces the resistive losses that occur when there is more electrical current in the building wires and utility infrastructure than is necessary. The standards also require having these computers and connected displays in sleep mode in order to reduce wasted energy when the devices are not in use. Energy-efficient Ethernet also facilitates lower energy consumption for connected devices.



#### Relevant Code Sections

##### California Appliance Efficiency Regulations, Title 20

- 1602 (a) and 1602(v) – Definitions
- 1604(v)(5) – Test Methods for Computers
- 1605.3(v)(6) – State Standards for Computers
- 1606 – Filing by Manufacturers; Listing of Appliances in Database
- 1607(b) – Marking of Appliances (Name, Model Number, and Date)

#### What's Covered

Small-scale servers, mobile workstations, rack-mounted workstations, workstations and high expandability desktop computers manufactured on or after January 1, 2018 are covered under the Title 20 regulations.

- Small-scale servers are designed primarily to be a storage host for other computers, providing network infrastructure services (e.g., archiving) and hosting data/media

- Workstations, rack-mounted workstations and mobile workstations are high-performance computing devices used for professional video editing, graphics, scientific/engineering or other applications that require significant computing power
- High expandability computers are found in both the commercial and residential sector, with expandability being a common feature for consumers interested in customization



Title 20 requirements for desktop computers, thin clients, mobile gaming systems, portable all-in-ones, notebook computers and computer monitors went into effect on July 1, 2019.



## Requirements

Title 20 Section 1605.3(v)(6) requires workstations, rack-mounted workstations, mobile workstations, small-scale servers and high expandability computers manufactured on or after January 1, 2018 to meet **all** of the four following criteria:

1. Be powered by an internal power supply that meets or exceeds the standards in Title 20, Table V-9 (see below) or an external power supply that meets efficiency level VI as described in the International Efficiency Marking Protocol for External Power Supplies Version 3.0 (IEMP) 2013;

Title 20, Section 1605.3(v) Table V-9				
115V Internal Power Supplies				
10% Load	20% Load	50% Load	100% Load	Power Factor Correction
-	87%	90%	87%	0.9 at 50% load
230V Internal Power Supplies				
10% Load	20% Load	50% Load	100% Load	Power Factor Correction
-	88%	92%	88%	0.9 at 50% load

2. Incorporate Energy-Efficient Ethernet functionality;
3. Transition connected displays into sleep mode within 15 minutes of user inactivity **and**
4. Transition the computer into either the computer sleep mode or computer off mode within 30 minutes of user inactivity. If the transition is to a computer sleep mode, that sleep mode shall either:
  - a. Be a computer sleep mode as described in ACPI as S3 or
  - b. Consume power less than or equal to  $10 + 0.03 * C$ , where C is the system memory capacity in gigabytes minus 32 gigabytes (see Table V-6 in Title 20 Section 1605.3(v))

*Small-scale servers and rack-mounted workstations are not required to comply with #4 above (see Title 20 Section 1605.3(v)(6)(A - D))*

## How to Comply with Title 20

Compliance entails:

- Meeting the applicable design or performance standards (efficiency standards)
- Testing regulated products using the required test methods
- Marking the regulated product in accordance with Title 20 Section 1607 **and**
- Certifying the product to the California Energy Commission

Even if a computer or monitor meets all performance, testing and marking requirements outlined in Title 20, it is illegal to sell or offer for sale a regulated product in California if the model is not certified to the Energy Commission and listed in the [MAEDbS](#).

Everyone in the sales chain – including manufacturers, distributors, retailers, contractors and importers – is responsible for ensuring regulated products are listed in the [MAEDbS](#). To learn more about the MAEDbS and how to use it, view the [Energy Code Ace Title 20 On-Demand Video Trainings](#).

# Frequently Asked Questions

**Q:** How is “high expandability” for high expandability computers determined?

**A:** Title 20 Section 1602(v) defines “high expandability computer” as a computer that meets any of the three conditions:

1	2	3
Manufactured on or after January 1, 2018	Manufactured before January 1, 2020	Manufactured on or after January 1, 2020
The expandability score is more than 690. The expandability score is a method for implementing an energy adder for desktop computers that correlates with the power supply sizing necessary for a unit to power the core system plus potential expansions through externally and internally available ports.	Has power supply of 600 watts or greater and either: i. First discrete graphics processing unit (GPU) with a frame buffer bandwidth of 400 gigabytes per second (GB/s) or greater <b>or</b> ii. a total of 8 gigabytes or more of system memory with a bandwidth of 432 GB/s or more and an integrated GPU	Has power supply of 600 watts or greater and either: i. First discrete GPU with a frame buffer bandwidth of 600 GB/s or greater <b>or</b> ii. a total of 8 gigabytes or more of system memory with a bandwidth of 632 GB/s or more and an integrated GPU

**Q:** How many models must be certified to the Energy Commission and listed in the MAEDbS?

**A:** Manufacturers or their designated third-party certifiers are required to submit data to the Energy Commission for the configuration of each basic model that has the greatest allowable energy consumption. As defined in Title 20 Section 1602, the “basic model” is a group of computer models that are made by a single manufacturer and that have the same power supply, motherboard, expandability score, and chassis. Chassis are considered the same if the energy use characteristics are not modified by variations in the chassis, such as a change in color.

**Q:** Are out-of-state retailers required to comply with Title 20 if they sell computers to someone in California via online or mail order sales?

**A:** Yes. Products sold online or by mail from out-of-state retailers to an end-user in California must meet Title 20 requirements since they are being offered for sale and sold into California. The product models must be listed in the MAEDbS to be legally sold or offered for sale in California.

**Q:** Are there marking requirements that manufacturers must comply with under Title 20?

**A:** Title 20 specifies marking requirements for manufacturers in Section 1607(b), which states that the following must be “permanently, legibly, and conspicuously displayed on an accessible place on each unit” of the regulated appliance:

1. Manufacturer’s name or brand name or trademark
2. Model number
3. Date of manufacture, including year and month or smaller increment

**Q:** If a manufacturer produces only a limited quantity of units, must these units be in compliance with Title 20?

**A:** If the manufacturer meets the criteria for a “small volume manufacturer,” then the products may not need to be tested, certified, marked or meet the performance or design standards in Title 20. However, these products must still meet the applicable power management requirements in Title 20 Section 1605.3(v)(6).

The definition of a small volume manufacturer can be found in Title 20 Section 1602(k). Small volume manufacturers must certify as such to the Energy Commission. If a small volume manufacturer produces more than 50 units of a basic model of a workstation, then those workstations must meet all of the requirements in Title 20, including testing, certification, marking and performance or design standards.

**Q:** What are the consequences of not obtaining ISV certification for workstations?

**A:** Title 20 Section 1606(e)(3) states that if a manufacturer of a computer fails to obtain two Independent Software Vendor (ISV) certifications within 60 days of certifying a computer model or loses ISV certifications such that the computer model no longer meets the definition of a workstation or mobile workstation, that manufacturer must either have the appliance deleted from the MAEDbS (as described in Section 1606(e)(2)) or must delete the model and then re-certify (as described in Section 1606(e)(1)) to comply as a different computer type.



## For More Information

### Title 20 Primary Documents

- Title 20 Appliance Efficiency Regulations:  
[tinyurl.com/Title20](http://tinyurl.com/Title20)

### California Energy Commission Information & Services

- Appliance Compliance Assistance Call Center (888) 838-1467 or outside California (916) 651-7100
- Questions may also be emailed to [Appliances@energy.ca.gov](mailto:Appliances@energy.ca.gov)
- California Appliance Efficiency Regulations Site:  
[energy.ca.gov/appliances](http://energy.ca.gov/appliances)
- Modernized Appliance Efficiency Database (MAEDbS):  
<https://cacertappliances.energy.ca.gov/Login.aspx>
- 2016 Appliance Efficiency Rulemaking, Staff Report: Final Analysis of Computers, Computer Monitors, and Signage Displays  
[efiling.energy.ca.gov/GetDocument.aspx?tn=213548&DocumentContentId=23311](http://efiling.energy.ca.gov/GetDocument.aspx?tn=213548&DocumentContentId=23311)
- Energy Efficiency Standards for Computers and Monitors - Frequently Asked Questions:  
[ww2.energy.ca.gov/appliances/documents/computers\\_and\\_displays\\_regulation\\_FAQ.html](http://ww2.energy.ca.gov/appliances/documents/computers_and_displays_regulation_FAQ.html)

### U.S. Department of Energy (DOE) Information & Services

- Appliance and Equipment Standards Program:  
[energy.gov/eere/buildings/appliance-and-equipment-standards-program](http://energy.gov/eere/buildings/appliance-and-equipment-standards-program)
  - External Power Supplies:  
[www1.eere.energy.gov/buildings/appliance\\_standards/standards.aspx?productid=1](http://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=1)
  - IEMP 2013 Fact Sheet:  
[www.regulations.gov/#!documentDetail;D=EERE-2008-BT-STD-0005-0218](http://www.regulations.gov/#!documentDetail;D=EERE-2008-BT-STD-0005-0218)

### Additional Resources

- Ecova Plug Load Solutions: 80 PLUS Power Supplies Certification:  
[plugloadsolutions.com/80PlusPowerSupplies.aspx](http://plugloadsolutions.com/80PlusPowerSupplies.aspx)
- Energy Code Ace:  
[EnergyCodeAce.com](http://EnergyCodeAce.com)
  - An online “one-stop-shop” providing free resources and training to help appliance and building industry professionals decode and comply with Title 20 and Title 24, Part 6. The site is administered by California’s investor-owned utilities.

Of special interest:

- Fact Sheets  
[energycodeace.com/content/resources-fact-sheets/](http://energycodeace.com/content/resources-fact-sheets/)
  - Title 20 Certification Overview, Process and FAQs
- Title 20 On-Demand Video Training:  
[energycodeace.com/content/title-20-training/](http://energycodeace.com/content/title-20-training/)

Please register with the site and select a Title 20 industry role for your profile in order to receive messages about additions to our Title 20 offerings!



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