U.S. LED Lamp (Bulb) Imports Rise Amid Lighting Transition

Andrew David, Office of Industries, Andrew.David@usitc.gov

The transition from traditional incandescent to LED lamps (light bulbs and tubes)[1] drove substantial growth in U.S. LED lamp imports from China during 2014–19. There is extensive competition in the domestic market and large multinationals generally produce most of their LED lamps in China. The U.S. industry does produce LED lamps, but most domestic producers only manufacture linear tubes.

Increasing LED lamp demand

U.S. LED lamp demand rapidly increased after 2010. LED "A" shape lamps (standard shape bulbs) increased from less than 1 percent of U.S. "A" lamp shipments in the first quarter of 2011 to 75 percent in the second quarter of 2020. LED linear tubes increased from less than 1 percent of the linear tube market prior to 2014 to 31 percent in the second quarter of 2020.[2] The increase in LED lamp demand was driven by the increase in residential and commercial construction, declining prices, improvement in LED technology, phase out of certain traditional incandescent lamps, utility incentive programs, shifts in lamps stocked by retailers, long-term energy savings, and better attributes and performance compared with energy-efficient alternatives (e.g., higher efficiency, longer lifetimes, better lighting quality, and controllability).[3]

Rapid increase in U.S. imports of LED lamps

U.S. imports of LED lamps increased from less than 200 million units in 2014 to more than 800 million units in 2019, and largely displaced traditional incandescent and fluorescent lamps (figure 1). Though imports fell slightly from 2018 to 2019, they were up 14 percent by volume from January to October 2020 (figure 2). LED lamp imports, in value terms, peaked in 2018, and subsequently declined due to falling unit values. China was the main supplier of LED lamps, accounting for more than 95 percent of 2019 imports. LED lamps will likely continue to be the primary replacement lamp technology, but the extent to which imports continue to grow in the long-term depends on the level of investment in residential and commercial construction, the extent to which users have already upgraded to LED lamps (as they need to be replaced less frequently), and whether prices continue to decline.

Figure 1: U.S. imports, number of lamps, 2002–19

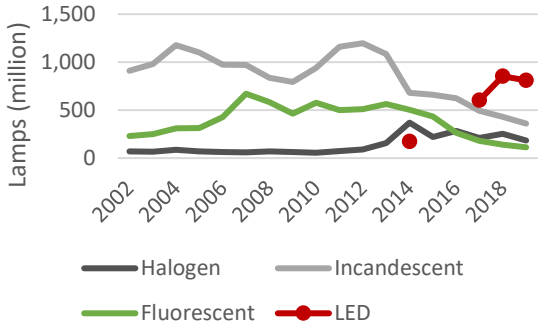
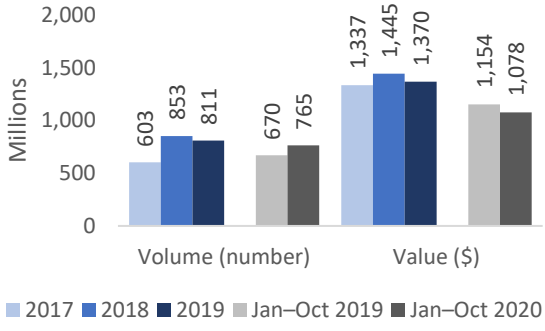


Figure 2: U.S. LED lamp imports, 2017–Oct 2020



Source/notes: USITC DataWeb/USDOC. Subheadings specific to LED lamps were added to the HTS in 2017. LED lamp data for 2014 are an estimate by USITC staff. Import data in this EBOT are general imports.

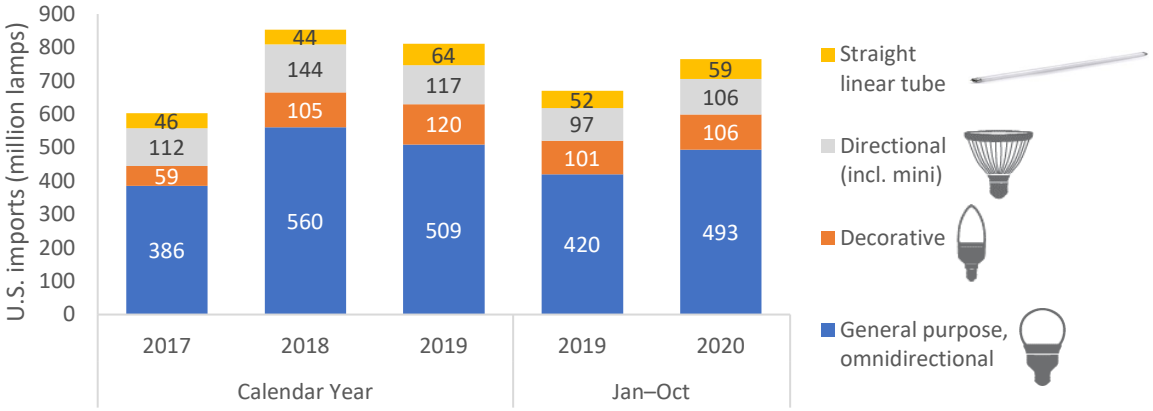
[1] Lamps are commonly referred to as light bulbs and linear tubes. Lamps do not include light fixtures, luminaires (light fixtures incorporating a lamp), or other goods sometimes referred to as lamps (e.g., desk lamps, table lamps). This EBOT focuses on lamps for general lighting applications. LED data include general purpose omnidirectional (shapes A, BT, P, PS, T), decorative l(B, BA, C, CA, DC, F, G, ST), directional (R, BR, PAR, MR11, MR16, MRX11), and straight linear tube lamps.

[2] NEMA, "LED A-line Lamp"; NEMA, "Second Quarter 2017"; NEMA, "Linear Fluorescent Lamp."

[3] Crist, Ry, "Energy-Efficient," CNET, Oct. 6, 2019; California Energy Commission Website; Chen, Yining, "Global LED," *LEDinside*, Aug. 16, 2018; USITC DataWeb/USDOC; Popovich, Nadja, "America's Light," *The New York Times*, Mar. 8, 2019; ENERGY STAR, *The Light Bulb*, Oct. 2017, 5–9; Census Bureau, Value of Construction Put in Place; Navigant Research, *Market Data*, 2017, 1.

General purpose omnidirectional LED lamps accounted for more than 60 percent of LED lamp imports, by volume, in 2019 and have been the largest driver of import growth. Imports of these lamps did decline 9 percent during 2018–19, but were up 17 percent in January-October 2020. Decorative, directional, and tube lamp imports also increased during 2017–19, though imports of directional lamps peaked in 2018.

Figure 3: U.S. LED lamp imports, by type, 2017–Oct 2020



Source: USITC DataWeb/USDOC; images from the U.S. Environmental Protection Agency and U.S. Department of Energy.

There is extensive competition in the U.S. LED lamp market. As of July 2020, there were more than 120 firms with Energy Star certified standard A19 LED lamps being sold under about 150 different brand names.[4] The leading lamp brands imported into the United States in 2019 included EcoSmart (Home Depot's private label), Feit Electric, GE Lighting, Philips Lighting/Signify, and Sylvania/LEDVANCE. While the leading suppliers continue to include familiar brand names, most production for these brands takes place in China, often via contract production. Further, most major U.S.- and Europe-based lamp businesses were sold to smaller companies or Chinese competitors in the last few years.[5]

U.S. LED lamp production impacted by imports

U.S. manufacturers most commonly make LED linear tube lamps, with at least ten domestic producers of these lamps.[6] LED linear tubes currently account for a relatively small share of the market, but forecasts indicate that there will be strong U.S. and global demand for these products over the next five years.[7] There is also domestic production of "A" shape lamps (including for major retailers by GE Lighting in Ohio) and directional lighting.[8] There were a number of other investments in domestic production of standard replacement lamps. However, most new LED lamp plants closed after a short period of time, as firms opted to manufacture or contract production to firms in foreign countries with lower production costs.[9]

---

[4] Energy Star, Certified Light Bulbs, Excel File.

[5] Tuggle, Zach, "GE Lamp Plant," *Bucyrus Telegraph-Forum*, May 28, 2020; Ideal Industries Website; American Industrial Partners Website; Signify Website; Halper, Mark, "Osram Completes," Mar. 3, 2017; Import Genius database.

[6] There is also U.S. production of non-LED lamps, such as fluorescent tubes. US LED Website; Independence LED Website; Lumerica Website; Titan LED Website; Patriot LED Website; Shine Retrofits Website; Keystone Website; GE Current Website; Green Lighting LED Website; Envirolux Website; i2Systems Website; Tamlite Website; Interlectric Website; Platt Website.

[7] USDOE, *Energy Savings*, Dec. 2019, 55; Elliott, Clay, "Lighting Market," USDOE, Jan. 30, 2020, 21; Navigant, "Navigant Research Report," Oct. 31, 2018.

[8] LEDTRONICS Website; Tuggle, Zach, "GE Lamp Plant," *Bucyrus Telegraph-Forum*, May 28, 2020.

[9] U.S. LED lamp exports fell from 7.1 million lamps ($54 million) in 2017 to 5.5 million ($40 million) in 2019. USITC DataWeb/ USDOC; DOE Website; Import Genius database; Brady, Jeff, "Lighting Industry's," NPR, Nov. 25, 2019; Lighting Science Group, Form 10-K, various years. Some plants making traditional incandescent, halogen, and fluorescent lamps also closed. *Dayton Daily News*, "GE to Close," Aug. 31, 2016; Helmore, Edward, "General Electric," Nov. 10, 2010; Truman, Cheryl, "Versailles," *Lexington Herald Leader*, Dec. 4, 2018; *Tribune Chronicle*, "GE Union," Apr. 2, 2013; WKYT, "GE to Close," WKYT, Aug. 11, 2016.