

## Historic Warm White Street Lights in Washington

From the earliest days of street lighting in the city until very recently, street lights emitted a warm white light, easy on the eye and the night sky. This is our streetlight heritage, now threatened. From a technical standpoint, correlated color temperature (CCT) measures the amount of short wavelength light that a streetlight emits. CCT is expressed in Kelvins (K). Lights with lower Kelvin scores, such as warm-toned yellow-white gas lights, incandescent lights, sodium vapor lights, and LEDs at 2700 K or lower, produce much less short wavelength light than blue-white light, at 4000 K or higher. Blue-white light with its short wavelengths scatters within the human eye, causing glare and also scatters in the atmosphere, increasing sky-glow. The American Medical Association has concluded that streetlights at 4000 K are potentially harmful to human health.

From 1801 through 1848 street lights used whale oil. There were few lamps and little funds to operate them. Congress erected lamps on the Capitol grounds, sometimes lit only when Congress was in session. In 1842, Congress authorized lamps on Pennsylvania Avenue between the White House and the Capitol, and between 1847 and 1848 James Crutchett illuminated the Capitol and grounds using "solar gas" "produc[ing] a light like the solar rays of the sun adapted to the human eye."

In 1848 the Washington Gas Light Co. was formed, and Congress authorized laying gas pipe from the Capitol to 15th Street, NW to light the area using gas made from coal oil. Just before the Civil War, there were 800 public gas lamps. Frederick Law Olmsted had studied gas street lights for Central Park, and found that they fostered "a desirable place of popular resort at night." For the Capitol's landscaping, he designed granite and marble rostral lights with oversize bronze and glass lanterns. By 1881 there were 4,826 gas lamps in the city, covering most of Capitol Hill west of Lincoln Park. All streetlights used gas between 1848 and 1881.

In 1881 electric arc lighting was used for the first time for President Garfield's inauguration. A newspaper article noted "the contrast of the whiteness of the electric lights ... and the yellowness of the thousands of gas burners elsewhere produced a fine effect." Arc lamps were energy inefficient, produced an unsteady light, required lamp tenders to adjust them daily. As of 1893, there were 5,496 gas lamps, 700 kerosene lamps, and only 332 electric arc lamps. Arc lamps were not used after 1930.

In 1943, John Dos Passos wrote about the effect of Washington streetlights:

We walked southeast toward the Navy Yard. This was still the Washington I remembered: The shadowy streets choked with trees where all the life seemed to be going into vegetation, the street lights shaded and muffled with green leaves ...

In 1923, The Washington Globe lamp, designed by Henry Bacon, was selected as the city's official streetlight. In 1932, sodium vapor lamps (orange) and mercury vapor lamps (blue-green, corrected by a florescent wash) became available. In 1956, Mercury vapor lamps were first installed on a section of Massachusetts Avenue, NW, and by 1969 20,000 had been installed. After the 1968 riots, Mayor Washington directed a study of how streetlights could improve nighttime safety; and sodium vapor lights were selected. By the mid-1970s, 35,000 had been installed, including retrofitted Washington Globes.

There are approximately 70,000 street lights in the District of Columbia. DDOT plans to replace street lights with Light Emitting Diode (LED) lights at 4000 K. DDOT has already installed LED streetlights at 4000 K and 5000K. Residents of Rome are protesting the new "harsh white LEDs" on the "golden glow" of their revered historical structures. LEDs of 3000 K or less are better for human health and the night sky, and are already used in several major cities.

Sources:

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<b>Streetlight type</b>	<b>Color</b>	<b>CCT in Kelvins</b>
Whale oil/kerosene	?	1700-1850 (candle flame)
Gas (from coal oil)	Amber	1900-2200
Arc-light electric	Blue-white	Estimated @ 4000
Incandescent electric	Yellow-white	2400
Sodium vapor (high pressure)	Orange	2200
Mercury vapor	Blue-white	4200
LED amber	Warm white	2700
LED blue-white	Blue-white	4000 - 5000