

**City of San José, California**

**COUNCIL POLICY**

<b>TITLE</b> Public Streetlights	<b>PAGE</b> 1 of 5	<b>POLICY NUMBER</b> 4-2
<b>EFFECTIVE DATE</b> February 13, 1980	<b>REVISED DATE</b> February 15, 2011	
<b>APPROVED BY COUNCIL ACTION</b> Council Action - 2/13/1980; 6/27/2006, Item 4.8(d), Res. No. 73313; 2/16/2008, Item 6.4, Res. No. 74739; 2/15/2011, Item 6.1(c), Res. No. 75733		

**PURPOSE**

The purpose of this policy is to help the City of San José (“City”) advance several of its *Green Vision* goals, in particular the goal to replace 100 percent of the City’s streetlights with smart, zero emission streetlights (lights powered exclusively by renewable energy) by 2022.

This policy, which replaces the existing Policy Number 4-2, accomplishes this by converting the City’s streetlights from sodium-vapor and metal halide lights to more energy-efficient, longer-lasting, and programmable lights. These new lights will reduce the City’s energy consumption and maintenance costs, improve the quality of light on the City’s streets and sidewalks, and will be constructed in a manner that minimizes or eliminates hazardous waste. The policy also strives to meet the astronomical research needs of the University of California Lick Observatory on Mt. Hamilton.

**BACKGROUND**

In February 1980, in an effort to reduce the City’s energy consumption and related expenses, the City Council adopted Policy Number 4-2. That policy converted San José’s then-mercury vapor and incandescent streetlights to sodium vapor lights. Since that time the City has principally employed sodium-based lamps to light its streets and sidewalks.

There are two types of sodium vapor lighting: low- and high-pressure. Initially, the City converted all its residential roadways and major arterials to low-pressure sodium. Minor arterials, except those within nine miles of Lick Observatory, and signalized intersections were converted to high-pressure sodium.

Low-pressure sodium (LPS) lights are more energy efficient than high-pressure sodium lights (HPS), but they cast an orange-yellow light with poor color rendition. It was initially thought that the orange-yellow light might create confusion with the yellow clearance phase of traffic signals. Research later disproved that supposition and in January 1982 the Council modified the City’s policy to expand the use of LPS throughout the City. The exception was in the Downtown Core.

Revitalization of Downtown San José has been a long-term priority of the City. Excellent lighting quality, and the pedestrian activity it supports, is essential to realizing that vision and capitalizing on investments made in the Downtown. As a result, the City Council modified Policy Number 4-2 to specify that HPS be used exclusively in the Core.

Color rendition and brightness are better with HPS than LPS. Those qualities made HPS more attractive to the City’s business community. However, Lick Observatory preferred

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LPS as it could more easily filter out the narrow range of wavelengths LPS casts into the sky. This is why the Council originally prohibited HPS within a nine-mile radius around the observatory. As the City's Downtown grew and the Arena was built the demand for more HPS lights increased. The City's revisions of Policy Number 4-2 over the next two decades sought to balance the competing needs of Lick Observatory and the business and neighborhood communities.

In September 2003, the Council authorized the expanded use of HPS streetlights from the Core to the Greater Downtown area. Metal halide lights, another light source with excellent color rendition, were also approved for pedestrian lighting in the Greater Downtown. The revision, which occurred with the adoption of the Downtown Street and Pedestrian Lighting Plan, stipulated that all pedestrian light fixtures include cut-off features that would direct the light downward to protect the night sky from excessive glow.

In June 2006, the Council modified its streetlighting policy in coordination with a General Plan amendment that expanded the areas where HPS were permitted. The revision specified that up to 300 HPS could be installed in designated neighborhood business districts and along General Plan designated Pedestrian Corridors in Strong Neighborhood Initiative Redevelopment Project Areas.

In 2007, the City made a more substantive change in course. It adopted the *San José Green Vision*, a comprehensive plan to reduce the carbon footprint of the City by more than half in 15 years. The "Green Mobility" portion of that plan includes the goal of replacing 100 percent of the City's streetlights with smart, zero emission lighting (lights powered exclusively by renewable energy) in fifteen years.

To help the City achieve this ambitious goal, the new policy is outcome - rather than technology-driven. This shift in focus will allow the City to continually improve its lighting system as the technology continues to advance. The policy outlines performance qualities new streetlights should meet: energy efficient, long-lasting, dimmable, programmable, and constructed with minimal hazardous materials. It also establishes an eighteen month transition period; provides for dimming of street and pedestrian lights within the framework of a Public Streetlight Design Guide; and provides that staff work with other interested parties to shift the City's streetlights to a metered electrical rate schedule (based on actual usage).

### **GUIDING PRINCIPLES**

It is the policy of the City of San José that all new or replaced streetlights on San José's public roadways should help the City achieve its *Green Vision* goals. This policy touches on four of the City's ten Green Vision goals. Those state that by 2022 the City will:

- **Goal No. Two: Reduce per capita energy use by 50 percent.**
- **Goal No. Three: Obtain 100 percent of the City's electrical power from clean, renewable resources.**
- **Goal No. Five: Divert 100 percent of the waste from our landfill.**
- **Goal No. Nine: Replace 100 percent of our streetlights with smart, zero emission lighting [powered exclusively with renewable energy].**

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**POLICY**

This policy seeks to achieve San José’s *Green Vision* goals, create a pleasing and attractive environment for nighttime activities, and protect the night sky by focusing on outcomes rather than means. It specifies performance characteristics new streetlights must meet: programmable, energy-efficient, long-lasting, constructed with low or minimal hazardous materials. It also stipulates strategies the City should implement that will allow the City to continually improve its lighting system as technology advances. As described below the policy includes an eighteen month transition period; provides for dimming of street and pedestrian lights within the framework of a Public Streetlight Design Guide; and provides that staff work with other interested parties to shift the City’s streetlights to a metered electrical rate schedule (based on actual usage).

The strategies and goals of the policy are further described below.

**1. Implementation strategies:**

**Adaptive Lighting**

This policy provides for the City to institute “adaptive lighting” – to make use of advanced monitoring and control systems to vary the amount and color of light shining on its streets and sidewalks depending upon the level of activity, time of day, and location of the street. The standards for adaptive lighting will be addressed by a Public Streetlight Design Guide. Staff in developing the Public Streetlight Design Guide should seek input from stakeholders within and outside the City, and outline a system for monitoring and regularly upgrading the plan.

**Metering**

New and replaced streetlights should have the capacity to be metered rather than billed on an un-metered rate. This will allow the City to pay for actual rather than estimated energy usage, rewarding its conservation efforts. Staff should work with PG&E and other appropriate governmental bodies to institute a cost-effective system to meter individual lights and ultimately the entire public streetlight system for billing purposes.

**2. Technical characteristics:**

**Functionality**

To maximize energy efficiency and minimize operational costs, new and replacement streetlights should be remotely controlled and monitored. The program should include sunrise/sunset and lunar cycle data for the City and should offer customized capability to turn the light on, off, dim, flash, respond to motion, or potentially change the color of the light. The lights should not be activated solely by photo cells (light sensors).

Programming could be accomplished manually prior to installation of the light, but preferably remotely through a low cost and effective means of communication. Remote programming would increase the City’s ability to control its lights, including, for example, flashing the light as an emergency beacon. All new lights should have metering and

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monitoring devices built in or integrated into the unit and have the capacity to report electrical consumption and malfunctions to the City and/or utility company.

**Energy Efficiency**

Staff should select and adhere to appropriate governmental energy efficiency certification standards in selecting new and replacement lights. That requirement along with others such as interoperability of the system components should be addressed by the Public Streetlight Design Guide and incorporated into the specifications developed for these new lighting systems.

**Dark Skies**

New and replacement streetlights should protect the night sky by offering the ability to be dimmed by at least 50 percent in late night hours.

All lighting should be designed to direct the light downward and outward with minimal light trespassing upward.

**Hazardous Waste**

New street and pedestrian lights should be constructed with materials that minimize, if not eliminate, hazardous waste.

**DEFINITION OF TERMS:**

**Zero Emission Lights**

Lights powered exclusively by renewable energy. The renewable energy could be supplied by PG&E, a renewable energy facility owned by the City, or renewable energy device attached to the streetlight, such as solar panels, or a combination of the above. The renewable energy could be supplied directly to the light, or through the utility through credits secured by providing PG&E with renewable energy during peak hours.

**Monochromatic Light**

Light consisting of one wavelength or a narrow range of wavelengths

**High Pressure Sodium (HPS)**

Both low- and high-pressure sodium lamps utilize sodium and a small amount of neon and argon gas. High-pressure lamps also contain mercury. Both sodium lamps must be disposed of as a hazardous waste. HPS lights typically last about 24,000 hours (approximately six years, nighttime use only).

**Low Pressure Sodium (LPS)**

LPS lamps have been considered one of the most energy efficient electrically powered light sources. But the colors of objects cannot easily be distinguished in this light. The lamps must be disposed as a hazardous waste. LPS lamps do not

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decline in lumen (light) output with age. However, their energy usage increases slightly (about 10 percent) towards their end of life, which is rated around 18,000 hours (approximately four years, nighttime use only). LPS lamps cannot be dimmed.

**Metal Halide (MH)**

The light cast by metal halide appears white. The life expectancy of MH luminaires expectancy is approximately 15,000–20,000 hours. The lamps contain mercury and must be disposed of as a hazardous waste.

**Photocell**

A light-sensing device used to turn lamps on and off in response to detected light levels.

**Adaptive Lighting**

Using modern controls to dim or shut off selected lights at particular times.

**Pedestrian Lights**

Pedestrian-scale, architecturally-pleasing light fixtures designed primarily to illuminate sidewalks and public places. These lights are typically mounted a few feet from the curb and may be oriented towards the sidewalk.

**Downtown Core**

The traditional downtown bounded by Julian Street to the north, highway 87 to the west, highway 280 to the south, and 4<sup>th</sup> Street to the east.

**Greater Downtown**

The boundary of the Greater Downtown include the areas around Diridon Station, north to Taylor Street, east to Seventh and south to Interstate 280, excluding San José State University.