

Clean Energy Communities Program

Technology Considerations

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Getting from Here to There

- Understanding What You have
- Conversion Design
- Controls or Not



Audit Purpose

- Verify the Inventory
- Collect Design Information



Cheat Sheet

| Wattage | Lamp types | Marking |
|---------|----------------|---------|
| 35 | HPS | 3 |
| 50 | HPS | 5 |
| 70 | HPS | 7 |
| 100 | HPS or MV | 10 |
| 150 | HPS or MH | 15 |
| 175 | MV | 17 |
| 200 | HPS or MH | 20 |
| 250 | HPS, MH or MV | 25 |
| 400 | HPS, MH, or MV | 40 |
| 1000 | HPS, MH, MV | 1X |

Yellow= HPS

Blue= Mercury Vapor

Red=Metal Halide

White = LED



LED Technology

Reduce energy Consumption 60%-70%

Improved Lighting and Safety

Improved Reliability

HID System average 18% service rate/year

LED System average .5% to .8% service rate/year

Future Applications-Control Technology



LED Technology-

- Color Temperature-AMA
- Color Rendering
- Distribution Pattern
- Wattage
- Dimming
- Internal Adjustability
- Photocell Receptacle
- Costs



Selecting the Right LED-Basic Decisions

- Lowest cost or greater flexibility
- Dimming
- Controls or not-now or later
- Color temperature
- Back light protection
- Level of design simplicity
 - Distribution Pattern
 - Locational light levels



Technology Recommendations

1. Design Light Consortium qualified lights <https://www.designlights.org/solid-state-lighting/qualification-requirements/product-eligibility/>
2. Lighting fixtures should include 7 pin photocell receptacles to allow for future SmartCities/IoT upgrades (must meet ANSI C136.41 standards)
3. Project must achieve a minimum of 55% kWh reduction



LED Replacement Wattages for Common Street Light Types/Wattages

Assumes an efficacy for the LEDs of at least 100 lumens per watt. The recently approved utility replacements for the 70-watt HPS (the most common fixture) range from 21-25 watts.

| Existing fixtures (watts) | Optimal LED replacement range (watts) |
|---------------------------|---------------------------------------|
| 50w HPS | 20-28w |
| 70w HPS | 20-28w |
| 70w MH | 20-28w |
| 100w HPS | 35-42w |
| 100w MH | 20-28w |
| 100w MV | 15-28w |
| 150w HPS | 48-54w |
| 175w MV | 20-28w |
| 175w MH | 48-54w |

| Existing fixtures (watts) | Optimal LED replacement range (watts) |
|---------------------------|---------------------------------------|
| 250w MV | 25-54w |
| 250w MH | 90-100w |
| 250w HPS | 85-100w |
| 400w MV | 35-80w |
| 400w MH | 90-120w |
| 400w HPS | 85-120w |
| 1000w HPS | 85-120w |
| 1000w MV | 85-100w |

