CITY OF BEVERLY HILLS
STAFF REPORT

Meeting Date: July 7, 2009

To: Honorable Mayor & City Council

From: Ara Maloyan, Deputy City Engineer
Tristan Malabanan, Civil Engineer

Subject: Presentation of the Street Lighting Project – Phase III Commercial, Fixture Recommendations

Attachments:
1. Location Map
2. Handout with Staff Recommended Fixtures
3. LED fixture payback calculations

INTRODUCTION

This is the final phase of the City's Street Light Replacement Project, which involves the conversion of the original existing 5,000-volt series street lighting circuit system to a modern 240-volt multiple circuit system. The original series circuit configuration has been outdated for years, and has been costly and difficult to maintain.

This project involves the installation of new conduit, conductor wires, and new light fixtures on existing and new light poles in the commercial areas of the City (Olympic Boulevard, La Cienega Boulevard, Crescent Drive, Robertson Boulevard, Business Triangle – excluding streets upgraded as part of the Urban Design Project, S. Beverly Drive, and Wilshire Boulevard). The design is currently 90% complete and all that remains to complete the design is the selection of new light fixtures and poles. This presentation will illustrate different styles of light fixtures and poles together with staff's evaluation of each fixture and relay a recommendation on how to proceed.

DISCUSSION

Albert Grover & Associates started the design of this project in July of 2008. Fixture and pole design and selection are not part of their contract. Concurrently with the system design work being done, staff has been working with several prospective lighting suppliers on feasible light poles and light fixtures.

To date, several suppliers have submitted designs and renderings, product catalogs, and rough pricing. In October 2008, when basic designs were selected by staff, suppliers were asked to submit sample lighting fixtures for evaluation. Unfortunately, sample fixture deliveries from suppliers were not punctual. The first sample lighting fixture arrived November 2008 and the latest (sixteenth) sample was delivered on May 21, 2009.

On February 12, 2009, staff presented the project to the Public Works Commission (PWC). The presentation covered the project goals, basic light pole design for different areas, and light fixture samples received at that time (which did not include LED's). The PWC requested staff to research and investigate the potential use of LED's for this project.

Based on research, interviews with staff of other public agencies and municipalities, staff concluded at that time that there were no LED fixtures available for commercial street use. For this project, 250 and 400 watt metal halide (MH) fixtures were planned to be used for street lights and 100 watt MH fixtures for pedestrian lights. It was learned that the Cities of Anchorage, Los Angeles, Oakland, and San Francisco have conducted extensive LED testing for 100 and 150 watt high pressure sodium fixture replacements in residential areas. However, there were little to no equivalent LED products available at that time for 250 watt MH fixtures. This information was presented to the PWC on March 13, 2009. Since mid-March 2009, more products have reached the market that can satisfy the lighting requirements of a 250 watt MH fixture. Consequently, during the last 2 months staff has received, installed, and evaluated LED sample light fixtures from Beta LED.

In our continuing outreach efforts, besides the two presentations to the Public Works Commission, staff has presented the project to the Chamber of Commerce Government Affairs Committee on March 19, 2009, and the SoBev Merchants Association on April 20, 2009. There was also a recent community meeting open to the general public on May 21, 2009, to present the project with staff's latest findings and to solicit public comment. Advertisements for this community meeting were published in the Beverly Hills Weekly and the Beverly Hills Courier. Poster boards and flyers were also placed at City Hall and at the Beverly Hills Public Library and posted on the City's website. Several lighting sales representatives, IT staff, and three members of the Technology Committee were in attendance. Unfortunately, no one from the general public participated. After the project presentation, there were discussions regarding LED's, LED payback periods, and a potential for CCTV and fiber optic municipal area network expansion. Members of the Technical Committee planned to define potential expansion locations and work with staff to possibly incorporate additional conduit and pull box installations into this project for future use.

On June 11, 2009, staff made a final presentation with their light fixture recommendations to the Public Works Commission (PWC). After having discussions on the recommended fixtures, LED alternatives that were not recommended, and payback periods for LED fixtures, the PWC voted in favor of recommending the project as presented by staff. Staff's pole and light fixture recommendations amount to a total cost of $2,623,000 as detailed in the table on page 3 of this report.

Staff also met with the Technology Committee on the afternoon of June 11, 2009, to discuss their work plan and how some of it may be incorporated into this project. The Technology Committee's voiced a strong interest to install additional empty conduit project-wide and possibly some pull boxes at specific locations as part of this project. They also inquired how much the cost would be to upgrade from planned concrete poles to steel poles for Robertson Boulevard and Crescent Drive. Staff provided potential costs to the Technology Committee as follows:

A. Cost for additional conduit (project-wide): 69,667 LF x $3		$ 209,000.0
B. Cost of additional pull boxes (concrete repair & conduit sweeps included) $900x155 locations		$ 140,000
C. Cost to switch from new concrete poles to new steel poles:		
Pole upgrade:	$ 1,000	
Demo foundation and construct new	1,800	
Repair sidewalk:	200	
TOTAL INCREASE PER POLE:	$ 3,000	
Crescent Drive: 20 poles X $3,000		$ 60,000
Robertson Boulevard: 52 poles X $3,000		$ 156,000
Estimated Grand Total		$ 565,000

Since the Technology Committee's requests would add an estimated $565,000, which is not currently budgeted, staff has not made any additions to the current project scope. However, all of these items will be added to the bid documents as alternates in the hope that there will be sufficient funds to award them.

Based on staff's evaluations and research, input from the Public Works Commission, Chamber of Commerce, the SoBev Merchants Association, and residents, staff recommends the following installations for each street:

LOCATION	# OF POLES	DESCRIPTION OF RECOMMENDED POLES AND FIXTURES	APPROX. COST FOR POLES	APPROX. COST FOR FIXTURES	ADDED COST IF LED'S USED INSTEAD
Wilshire Blvd. - City limit to City limit	173	Fluted pole w/ US Architectural Lighting teardop fixture & decorative cast base (Photo 1)	$ 1,528,000	$172,000	N/A
Business Triangle *	69	Smooth tapered pole w/ an Aeris fixture (Photo 2)	$ 251,000	$ 49,000	$ 20,700
S. Beverly Drive - Wilshire Blvd. to Olympic Blvd.	37	Smooth tapered pole w/ an Aeris fixture & matching pedestrian fixture (Photo 3)	$ 232,000	$ 48,000	$ 11,100
Robertson Blvd. - City limit to City limit	52	Concrete pole w/ a G.E. cobra head (Photo 4) & Beta LEDway LED pedestrian fixture (Photo 5)	$ 151,000	$ 57,000	$ 36,400
Crescent Dr. - Santa Monica Blvd. N. to Wilshire Blvd.	20	Concrete pole w/ a G.E. cobra head (Photo 4)	$ 52,000	$ 8,000	$ 14,000
Olympic & La Cienega Blvds. - City limit to City limit	187	G.E. cobra head fixture on existing concrete pole (Photo 4)	N/A	$ 75,000	$ 130,900
TOTAL	538	TOTAL	$ 2,214,000	$409,000	$ 213,100
		Cost of recommended poles & fixtures	$ 2,623,000		

* Excludes streets that were upgraded as part of the Urban Design Project.

Please refer to the attached fixture handout for corresponding photos and staff reviews. All of staff's recommendations in the table above are metal halide fixtures with the exception of the Robertson Boulevard pedestrian fixtures, which are planned to utilize LED's. The cost for poles and fixtures as recommended by staff for this project is approximately $2.62M.

In the pursuit of possibly going "Green", staff researched and consulted with various companies and other public agencies regarding the use of LED light fixtures for this project. These are the potential benefits and costs of switching to LED's from metal halide fixtures:

- A comparable LED fixture will use about HALF the energy;
- Consuming half the energy would also result in HALF the carbon dioxide emissions;
- LED fixtures are approximately three times more expensive than the typical cobra head fixture, but are only 48% more expensive than the average cost of a decorative metal halide fixture;
- If LED fixtures are used instead of the proposed metal halide fixtures in all locations except for Wilshire Boulevard, this would add an additional $213,100 to the project giving a total project material cost of approximately $2.84M. (From staff's research, there are no LED fixtures that can match the legal lighting requirements for a 400 watts (W) metal halide fixture, which is what is needed for Wilshire Boulevard. There are also no LED teardrop fixtures as well.); and
- If only selected areas, such as the Business Triangle and S. Beverly Drive were to get LED street light fixtures, the added cost would be limited to approximately $31,800.
- When compared to a 250 W metal halide (MH) decorative fixture, the payback occurs midway through the 5th year of operation. When compared to a 250 W MH cobra head, the payback occurs early in the 8th year of operation. See Attachment 3 for the LED payback calculations.

LED fixtures are new products to the street lighting industry. Although LED manufacturers claim zero maintenance and about a 10 year life, this has not been proven in real world applications. After reviewing the potential costs and long payback periods, staff concluded that switching the entire project (except Wilshire Boulevard) to LED fixtures would not be prudent at this time.

Alternatively, if standard G.E. cobra head fixtures and concrete poles are used for the entire project, this would result in a reduction of $1,214,500, bringing the approximate total to $1.41M. This potential reduction would also include deleting the decorative cast aluminum base for Wilshire Boulevard.

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FISCAL IMPACT

The budget amount currently available in CIP No. 629 in FY 09/10 is $12,297,849. These funds are estimated to be expended as shown below:

Poles and Fixtures	$2,623,000
Construction Costs excluding Poles and Fixtures	$8,840,300
Engineer's Estimate	$11,463,300
Contingency (7%)	$826,700
Total	$12,290,000

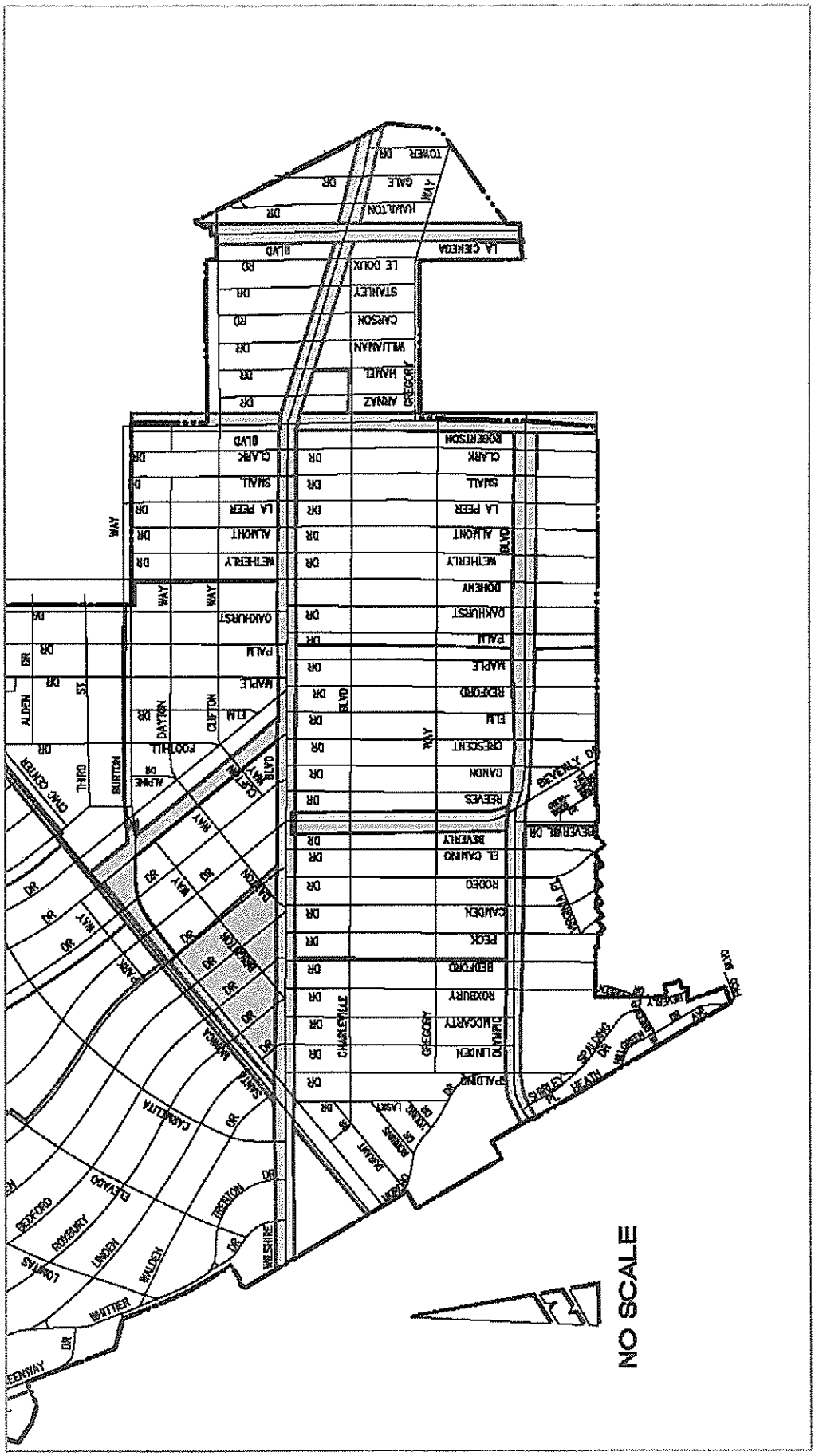
Technical Committee recommendations Approximately $565,000	Not funded

RECOMMENDATION

Staff respectfully requests direction from the City Council to proceed with the staff recommended poles and fixtures, complete the project design, and advertise for construction.

For David Gustavson
Approved By

LOCATION MAP



ATTACHMENT 1

CIP NO. 0629 STREET LIGHT REPLACEMENT PROJECT

Recommended Fixtures with
Staff Evaluations
July 7, 2009

US ARCHITECTURAL LIGHTING TEAR DROP FIXTURE

Staff recommended for Wilshire Boulevard.

TEST LOCATION: 510 N. Beverly Drive

STAFF REVIEW: Installation is of medium complexity. The ballast has easy access. Once installed, the electrical splice is located between the arm and the collet which may cause maintenance problems in the future.

Photo 1

AERIS

Staff recommended for the Triangle (Downtown) Area and South Beverly Drive.

TEST LOCATION: 1401 Park Way (on the N. Beverly Drive side)

STAFF REVIEW: Installation is of medium complexity. Easy access to the ballast with a notable safety feature for the access door. Average maintenance is expected. A terminal for connecting the wires would be a great improvement.

Photo 2

AERIS - PEDESTRIAN

Staff recommended for South Beverly Drive.

TEST LOCATION: 1401 Park Way (on the N. Beverly Drive side)

STAFF REVIEW: Installation is of medium complexity. Easy access to the ballast with a notable safety feature for the access door. A terminal for connecting the wires would be a great improvement.

Photo 3

SAMPLE G.E. COBRA HEAD FIXTURE

Staff recommended for Crescent Drive, Olympic, La Cienega, and Robertson Boulevards.

TEST LOCATION: 502 N. Beverly Dr.

STAFF REVIEW: Easy installation and low maintenance. This is a proven fixture and has performed very well for many years.

Photo 4

BETA LEDWAY– LED PEDESTRIAN

Staff recommended for Robertson Boulevard.

TEST LOCATION: 603 & 607 N. Beverly Drive

STAFF REVIEW: Installation is of medium complexity. The fixture appears to be very well designed. Since this is new technology in street lighting, maintenance is unknown. All or most LED manufacturers claim zero maintenance.

Photo 5

Why not choose the LEDway fixture?

- The payback period compared to a standard 250 watt metal halide cobra head is a little over 7 years.
- The payback period compared to a decorative 250 watt metal halide fixture is about 4.5 years.
- The color temperature is 6000 K, so the light appears a little bluish with a lot of perceived glare. The average metal halide fixture gives a warmer 4000 K light.
- Although BetaLED claims the fixtures will last 50,000 hours (about 12.5 years for our City), their standard warranty is only 5 years. If we require a 10 year warranty, it is unknown how much the added cost will extend the payback periods.

ALTERNATIVES

- Specify LED's for entire project, except for Wilshire Boulevard. This would increase the project costs by approximately $213,100.
- Specify LED's for specific areas such as the Business Triangle and South Beverly Drive. This would increase the project costs by approximately $31,800.
- Crescent Drive gateway concept – Since the lights adjacent to City Hall on Crescent will be removed as part of the parking structure project, a concept was proposed to have uniform decorative lights for the whole length of Crescent (Santa Monica to Wilshire) rather than just in front of City Hall. Costs may vary depending on the type of pole and fixture.

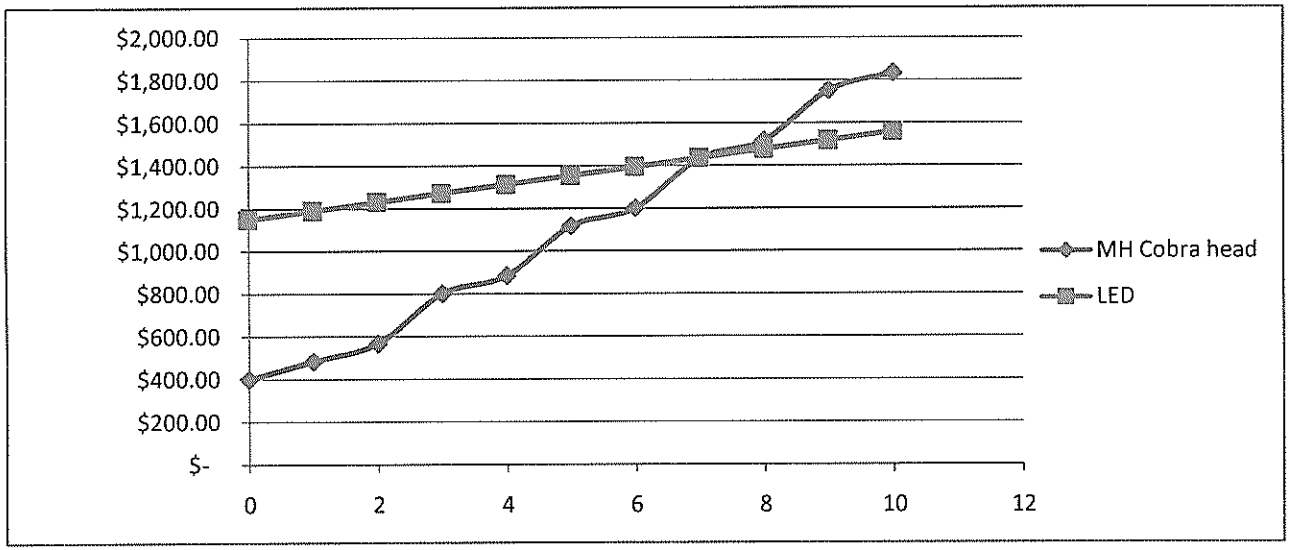
LED LIGHT FIXTURES VS. COBRA HEAD LIGHT FIXTURE (250 W)

Assumptions:

1) A 250 watt MH fixture uses 260 watts for the entire fixture.
2) Streets lights operate on average 11 hours a day.
3) Based on recent energy bills, the average cost of energy is $0.08 per kilowatt hour (kWh)

	250 W MH Cobra head (260 watts)	Beta LEDway (128 watts)
Kilowatts per year	1043.9	513.92
Cost per year	$ 83.51	$ 41.11
Purchase price	$ 400.00	$ 1,150.00
Cost to relamp each time at 3rd, 5th, 7th, and 9th year	$ 150.00	$ -

year	MH Cobra head	LED
0	$ 400.00	$ 1,150.00
1	$ 483.51	$ 1,191.11
2	$ 567.02	$ 1,232.23
3	$ 800.54	$ 1,273.34
4	$ 884.05	$ 1,314.45
5	$ 1,117.56	$ 1,355.57
6	$ 1,201.07	$ 1,396.68
7	$ 1,434.58	$ 1,437.80
8	$ 1,518.10	$ 1,478.91
9	$ 1,751.61	$ 1,520.02
10	$ 1,835.12	$ 1,561.14



ATTACHMENT 3

CBH - City Council Study Session 07/07/2009

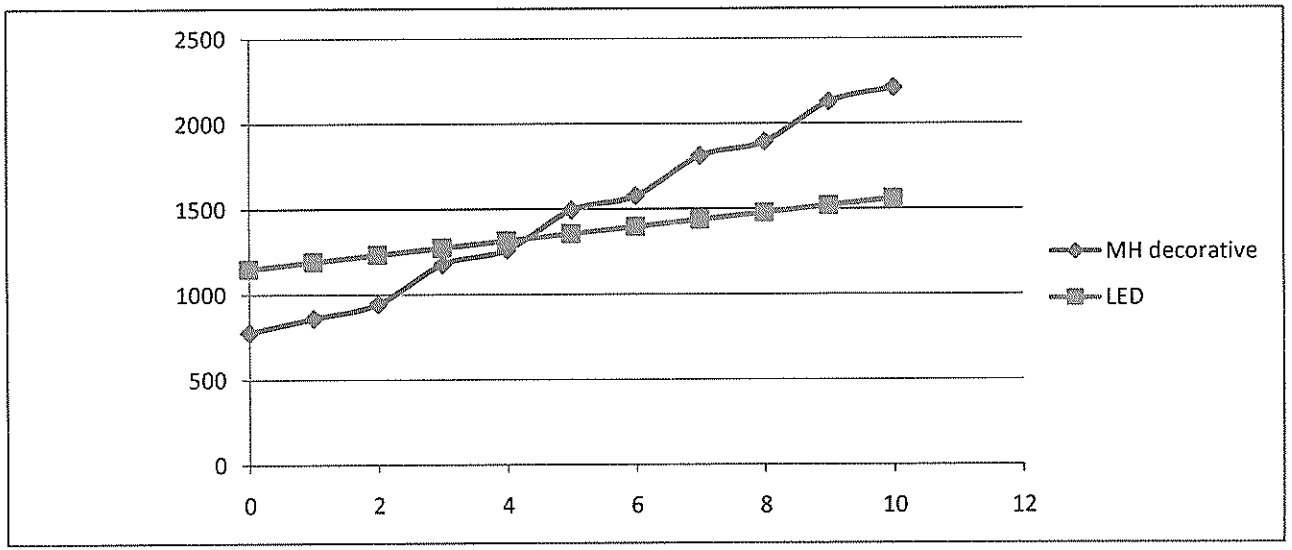
LED LIGHT FIXTURES VS. DECORATIVE METAL HALIDE LIGHT FIXTURES (250 W)

Assumptions:

1) A 250 watt MH fixture uses 260 watts for the entire fixture.
2) Streets lights operate on average 11 hours a day.
3) Based on recent energy bills, the average cost of energy is $0.08 per kilowatt hour (kWh)

	250 W MH Decorative fixture (260 watt)	Beta LEDway (128 W)
kilowatts per year	1043.9	513.92
Cost per year	$ 83.51	$ 41.11
Purchase price	$ 776.00	$ 1,150.00
Cost to relamp each time at 3rd, 5th, 7th, and 9th year	$ 150.00	$ -

year	MH decorative	LED
0	$ 776.00	$ 1,150.00
1	$ 859.51	$ 1,191.11
2	$ 943.02	$ 1,232.23
3	$ 1,176.54	$ 1,273.34
4	$ 1,260.05	$ 1,314.45
5	$ 1,493.56	$ 1,355.57
6	$ 1,577.07	$ 1,396.68
7	$ 1,810.58	$ 1,437.80
8	$ 1,894.10	$ 1,478.91
9	$ 2,127.61	$ 1,520.02
10	$ 2,211.12	$ 1,561.14



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