



{ Jenness Beach District
Streetlight Project



Town Of Rye

2012/2013 Municipal Energy Report

By
Michele Sopher
Co-chair, Rye Energy Committee
September 26, 2013



Town Of Rye

2011 Municipal Energy Report

Compiled by
Michele Sopher, Rye Energy Committee
May 17, 2012



JB Streetlights— Identified as a High Priority Energy Project

Reasons for Project

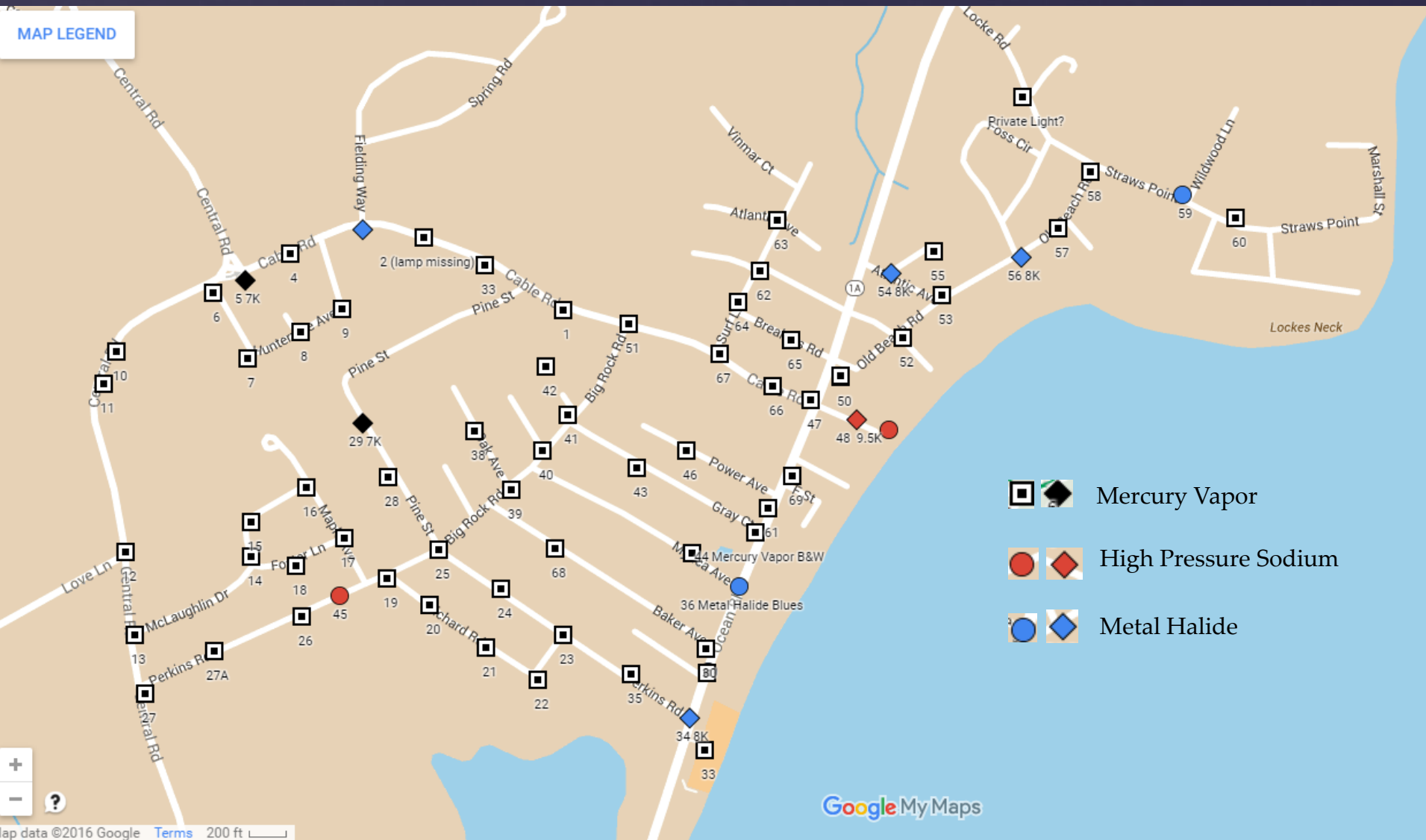


- High Density of Installed Lights
- High Electricity Cost: 2-3 times
- 85% Inefficient Type
- Mercury Vapor toxic waste
- Frequent Lamp Burnout
- Poor Light Quality
- Light Pollution - unshielded

A white-outlined cloud graphic is located to the right of the list, containing text.

Newer technology
superior - LED

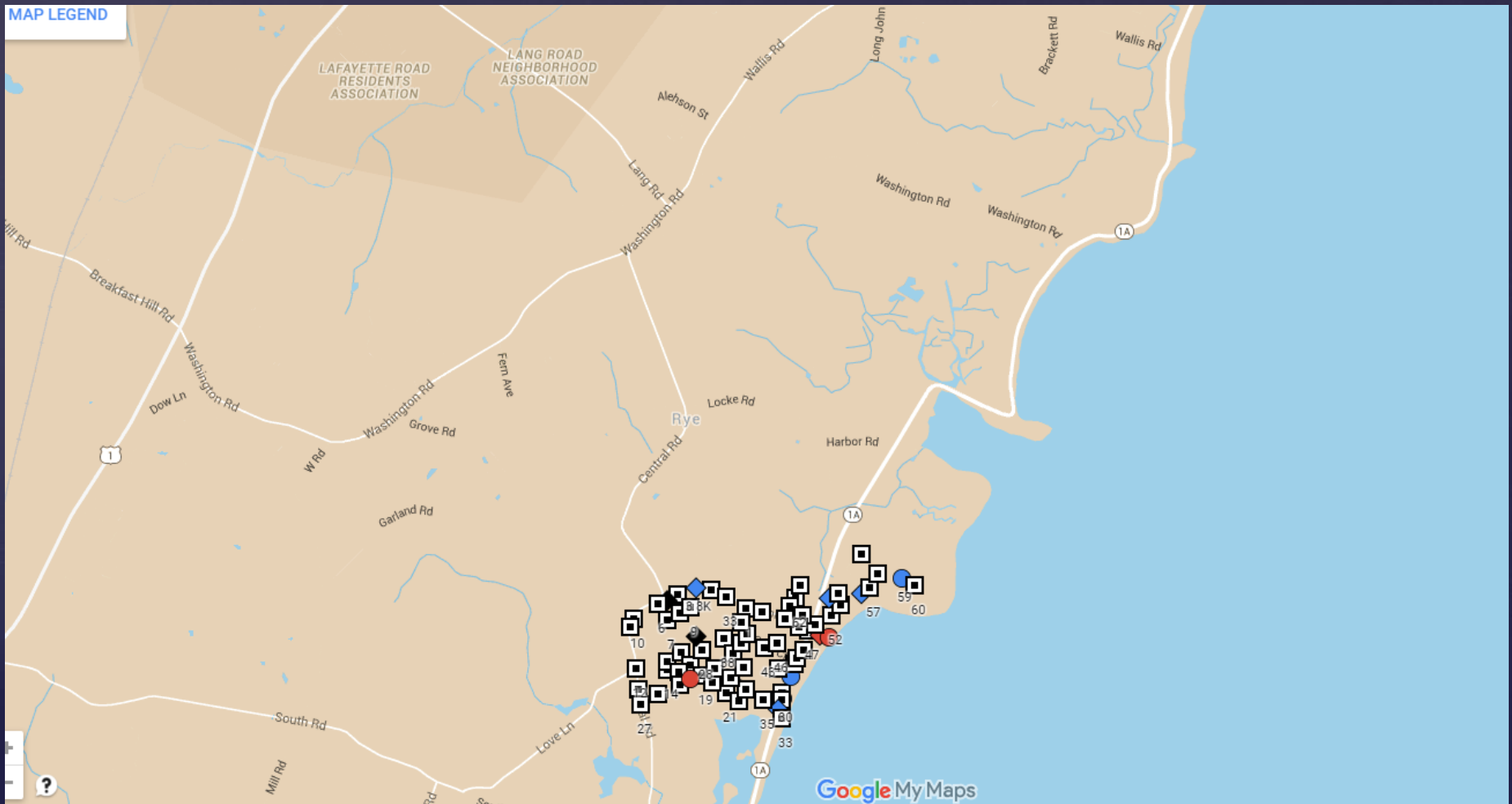
Jenness Beach Streetlights – GPS Mapping



Courtesy of Sam Winebaum

69 Streetlights in small area of Jenness Beach District

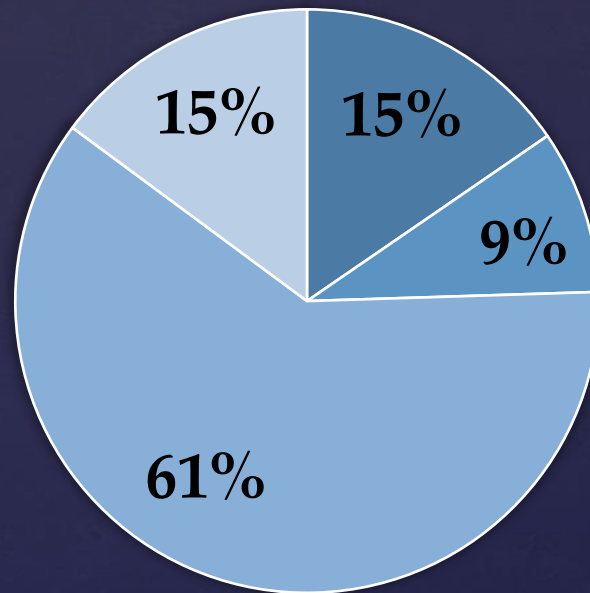
9 Streetlights in the rest of Rye + about 10 area lights



2012 Rye Outdoor Lighting Costs

- Area/Parking Lot Lights
- Rye Streetlights (9)
- Jenness Beach Streetlights (69)
- Rye Beach Post/Streetlights (68/3)

Total Cost:
\$24,902



{ Jenness Beach

- ⌘ Cost = \$16,500
- ⌘ 69 Streetlights
- ⌘ 3500-9600 lumens
- ⌘ OL Streetlight Rate
- ⌘ Narrow streets
- ⌘ Overhead power lines
- ⌘ Dense development
- ⌘ 1 Sidewalk

{ Rye Beach

- ⌘ Cost = \$3000
- ⌘ 68 Post lights + 10 SL
- ⌘ 800 lumens
- ⌘ Metered by Street
- ⌘ Wider streets
- ⌘ Underground power lines
- ⌘ Less densely developed
- ⌘ Lots of sidewalks

Streetlights not designed
for narrow streets

Beach Districts Comparison

- Annual Electricity Cost - \$16,500
 - 20% of JB budget
- Streetlights are “leased”
- Rate is based on:
 - type of fixture
 - wattage
 - hours on for each month
- OL vs. EOL Rate
- OL includes maintenance cost, EOL does not



Streetlighting Costs

Lamp Type	Lumens	Qty.	Watts	OL Cost Each
Mercury Vapor	3500	57	100	\$232
Mercury Vapor	7000	2	175	\$314
HPS	4000	2	50	\$222
HPS	9500	1	100	\$323
Metal Halide	5000	3	70	\$248
Metal Halide	8000	4	100	\$338

Current JB Streetlights

Type	Lumens	Watts	OL Rate	EOL Rate
Merc Vapor	3500	100	\$232	n/a
High Pressure Sodium	4000	50	\$222	\$133
LED	3300	30	n/a	\$76 *

- Maintenance cost not included

Annual Streetlight Costs

{ 50 Years Ago

- ❑ Low energy costs
- ❑ Utility encouraged streetlighting to balance their loads
- ❑ Tendency to overlight
 - Poor light quality
 - Cheap energy

{ Now

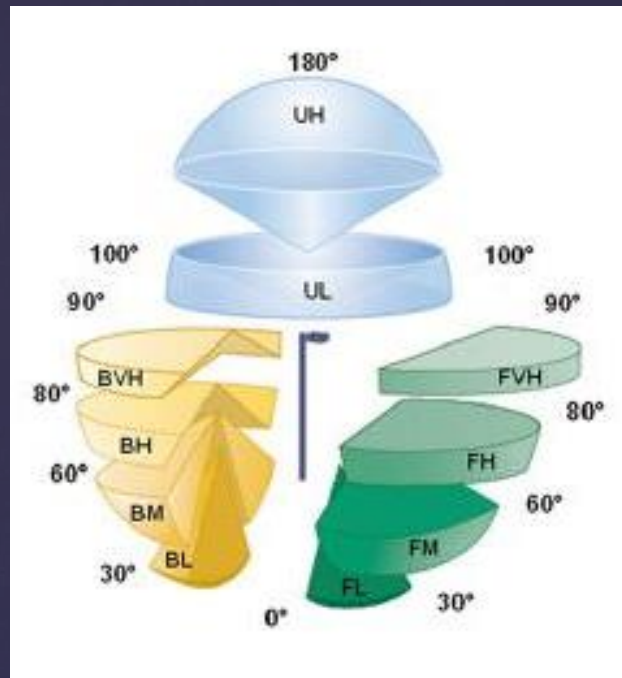
- ❑ High Cost of Electricity
- ❑ Recognize Value of Dark-Sky-Friendly Environment
- ❑ New LED technology
 - Reduced energy use
 - Reduced energy cost
 - Reduced light pollution
 - Improved visibility
 - Long life
 - Financial Incentives

History of Streetlighting

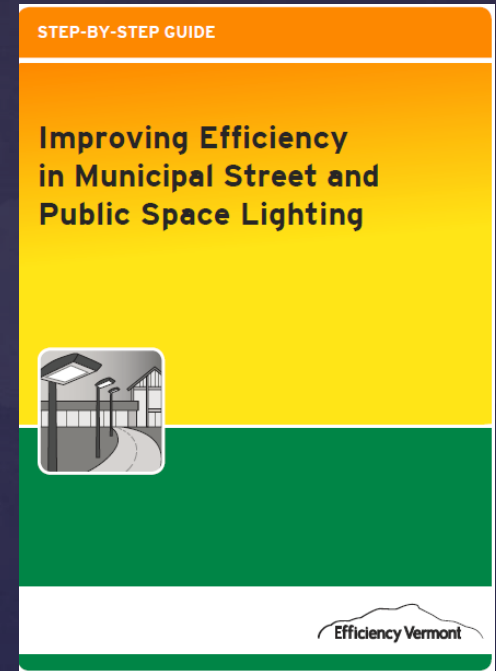
Illuminating
Engineering Society –
International Dark Sky
Assn.



JOINT IDA - IES
**MODEL
LIGHTING
ORDINANCE
(MLO)**



IES TM-15-11 B-U-G



Efficiency Vermont



RYE POLICE
DEPARTMENT



NHDOT Lighting Engineer

Standards/Engineering

10-Year Police Call / Motor Vehicle Accident Activity

69 MV Accidents
16% at night



- Security - misconceptions
- Pedestrian **Safety**
 - Crosswalks
 - Sidewalks
 - Walking to cars – Ocean Blvd.
- Traffic **Safety**
 - High Volume Streets – not in JB District
 - Intersections
 - Sharp curves in road
- Convenience
 - Parking Meters
- Lighting Zones – JB is **Z1** (single-family residential) and **Z2** (light commercial/mixed residential)

Criteria for Lighting

- 
- ⌘ Most densely developed area of Rye
 - ⌘ Narrow, non-standard roads
 - ⌘ No sidewalks, except Cable Rd.
 - ⌘ Significant pedestrian traffic in the evening
 - ⌘ Social & Health Benefits
 - ⌘ Reduced energy & emissions, if replacing MV trip
 - ⌘ “That’s why we moved here.” — Heidi DiPietro, Richard Rd.

Other JB Considerations

- Cree, Inc. 30-watt LED luminaires
- 10-year warranty
- Good B-U-G Rating – B1-U0-G1
- Low wattage = low electricity cost - \$76 per year
- Good price
- Eligible for Eversource \$100 incentive/light
- Made in the USA



Selected Streetlights

- & Astronomical Light Pollution
- & Ecological Light Pollution
- & Electricity Cost
- & Carbon Footprint

Why Remove Lights?

Milky Way no longer visible to 80% in North America



Satellite image of southern New Hampshire showing nighttime lights in 2010.

From <http://www.blue-marble.de/nightlights/2010>

**REPUBLICAN NATIONAL CONVENTION**
CLEVELAND**LIVE COVERAGE
TONIGHT**

Doctors issue warning about LED streetlights

THE CONVERSATION

By Richard G. "Bugs" Stevens, The Conversation

⌚ Updated 2:00 PM ET, Tue June 21, 2016



Top stories



Manziel: It can't

Millennials: First
earn less than t

Today's Mortga

AMA – “Cool it & Dim it”

Normal Circadian Rhythms

24-hr cycle –sunlight/darkness

- ⌘ Sleep/wake Cycles
- ⌘ Hunger
- ⌘ Activity
- ⌘ Hormone Production
- ⌘ Body Temperature
- ⌘ Other cellular & physiological functions



Disruption Can Lead to

- ⌘ Poor Sleep
- ⌘ Obesity
- ⌘ Diabetes
- ⌘ Mood Disorders
- ⌘ Cancer

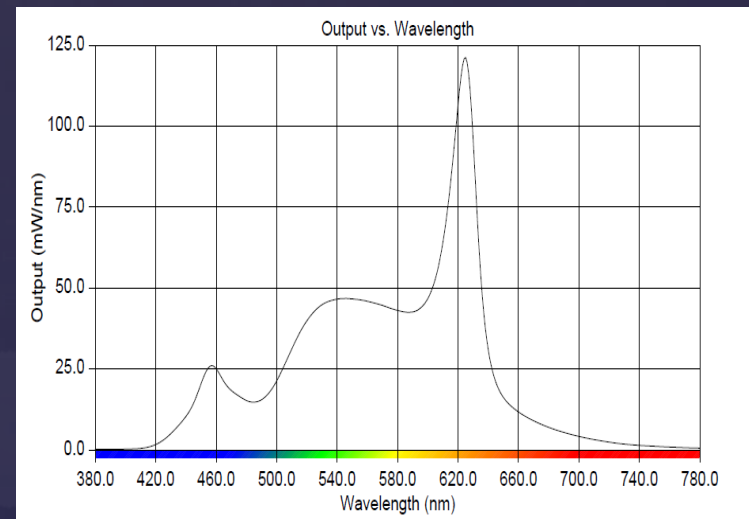
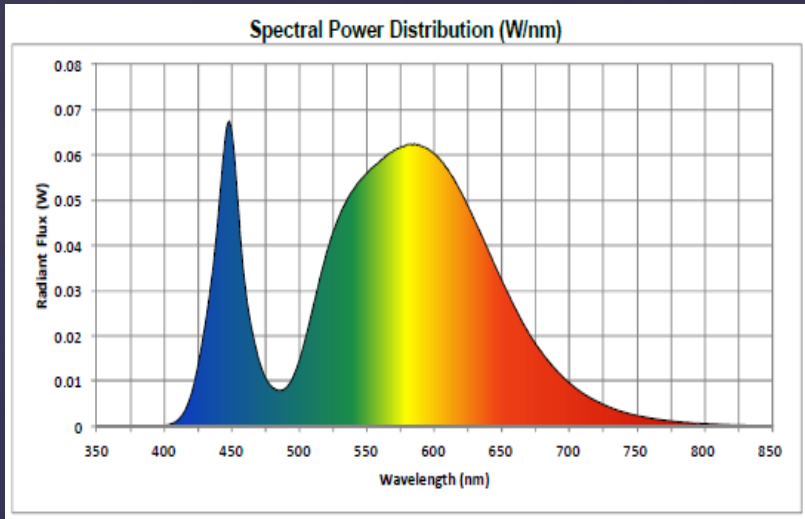
Blue Light

- ⌘ 5 times as disruptive
- ⌘ Damage to Retina, esp. over 55

Human & Wildlife Health

{ Older LED – XSPR 4000K

{ Newer LED – RSW 3000K



LEDs – Blue Light

- Install test lights - RFP
- Hold a Site Visit
- Mark lights that can be removed (up to 17)
- Comment Period for Residents
- Finalize counts and send RFP out for bid
- Field Work
 - Remove lights permanently *
 - Convert the rest to LEDs
- Recycle old lights
- Switch to Eversource EOL Rate
- Add lights at new locations *

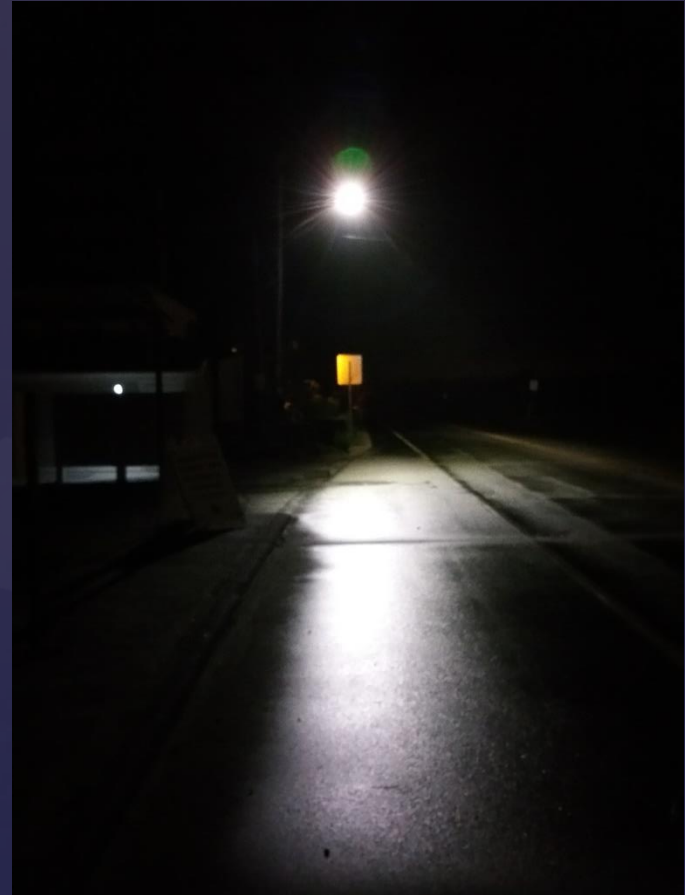


Plan for JB Streetlight Project

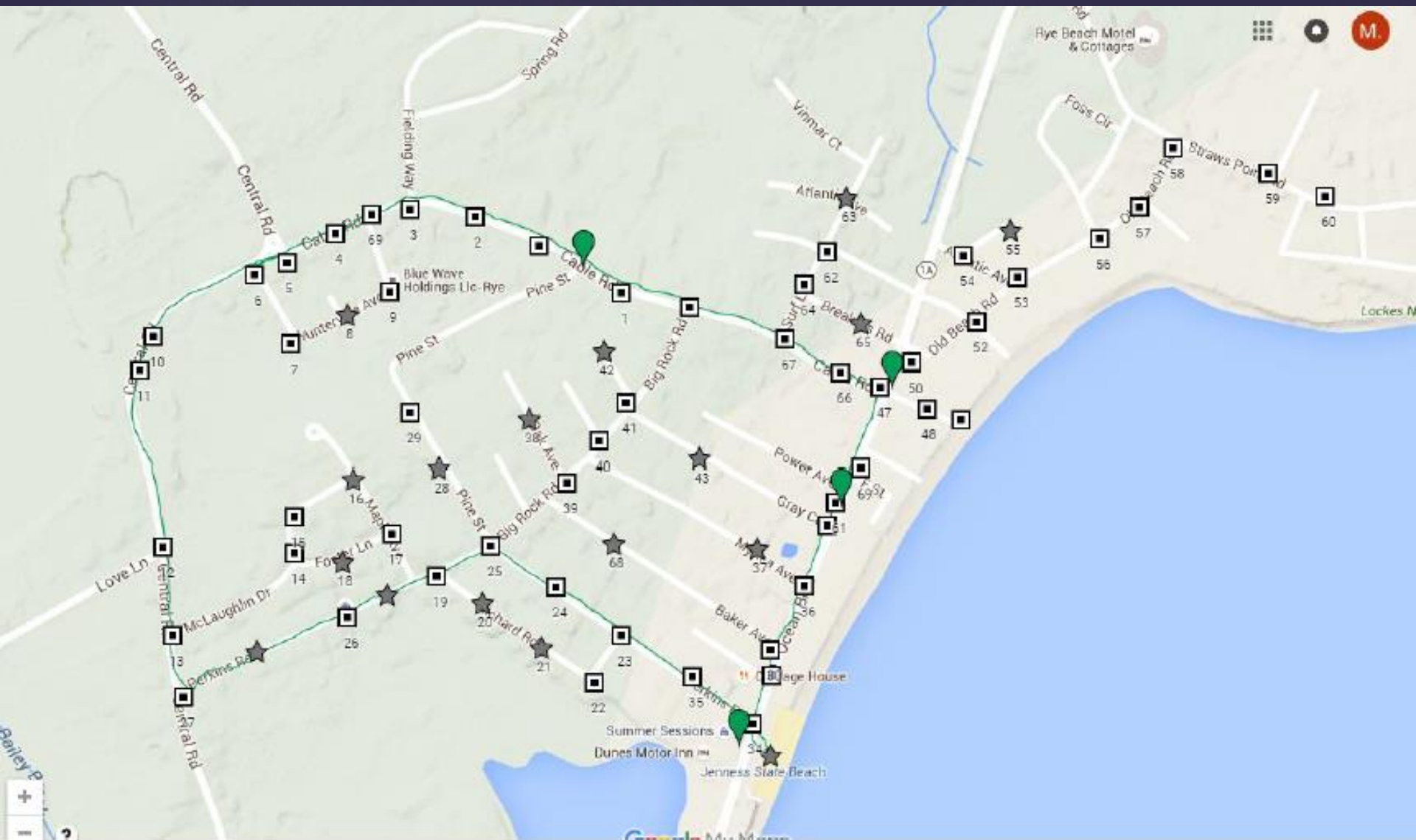
{ Perkins/Ocean



{ Near Bathhouse



Test Streetlights – Ocean Blvd



LEGEND: Black/white squares –replace with LEDs, gray stars - lights to be permanently removed, green markers – new lights to be added.

Jenness Beach Streetlight Project Map

	No Removals	17 Removals
Quantity	72 Streetlights	55 Streetlights
Project Cost	\$26,000	\$22,200
Annual Electricity Cost Savings	63%	70%
Simple Payback (yrs)	3.0	2.2



Economics

39 Comments so far

- ⌘ General support for conversion to LEDs
- ⌘ Opposition to removals
- ⌘ Opposition to new lights
- ⌘ Requests for new light
- ⌘ Requests to remove lights
- ⌘ Complaints about lights shining in windows

Public Comment Update

- Randy Crapo, District Commissioner
Jon Menes, Resident
Sam Winebaum, Resident
Michele Sopher, consultant



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