



LED versus HPS Lighting: A Shoot-Out on the Nason Street Corral

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Authors:

Eric Lewis, P.E., T.E., City Traffic Engineer
John Kerenyi, P.E., Senior Engineer
City of Moreno Valley



Summary of Presentation

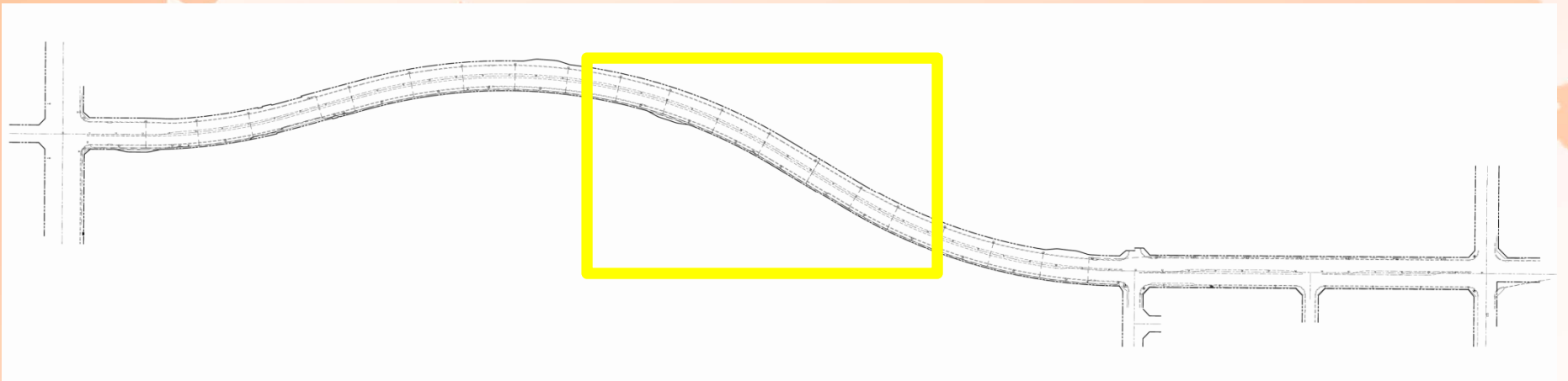
- Why is Nason Street a corral?
- Comparison of Lighting Performance
- Comparison of Electricity Consumption
- Comparison of Costs

Nason Street

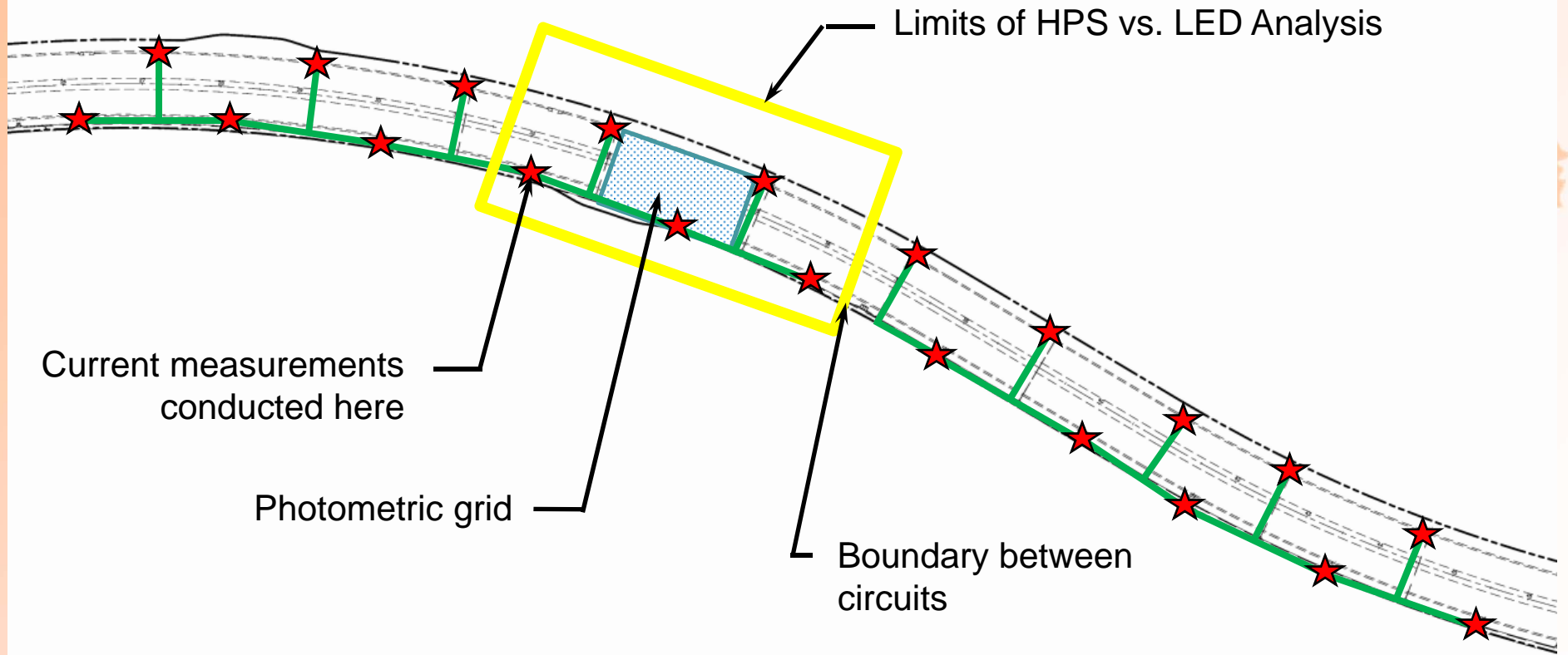
- Connects hospitals
- Direct freeway access
- 1 mile of new roadway (no traffic)
- \$10 million construction cost
- Vacant adjacent land (*no stray light*)
- No moonlight



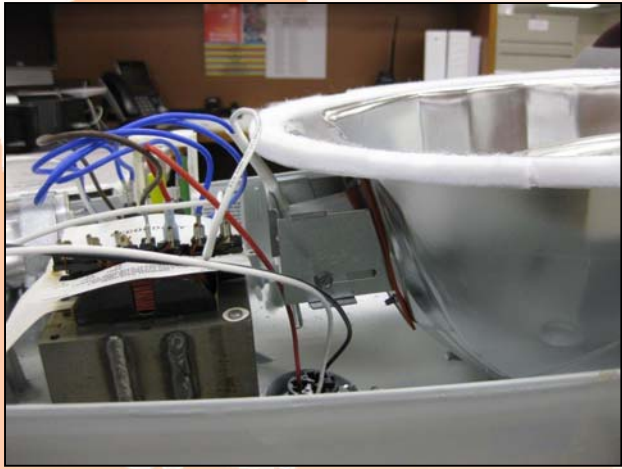
Street Lighting System



Analysis Area

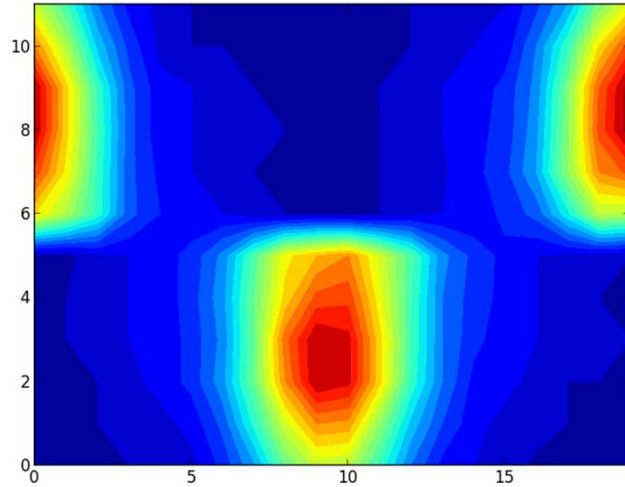


HPS Bulb Position Is Adjustable



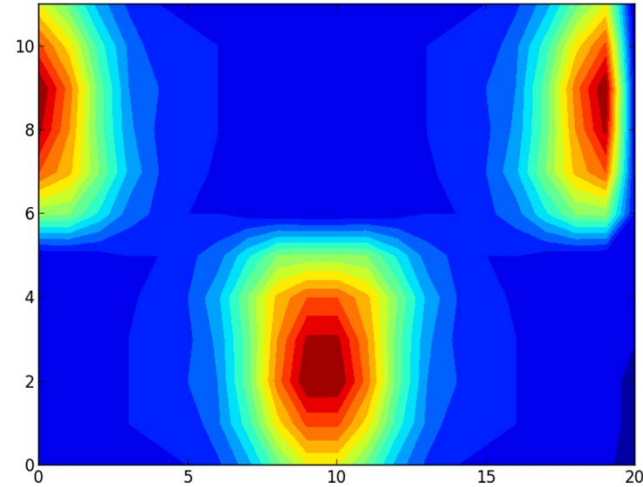
- Bulb position is adjustable in two dimensions
- Type 3 Medium Distribution assumes a certain bulb position
- Incorrect positioning can result in unsatisfactory performance

LED Observed vs. Predicted



Observed

Average Illuminance: 15.7 lux
Avg/Min Ratio: 16:1

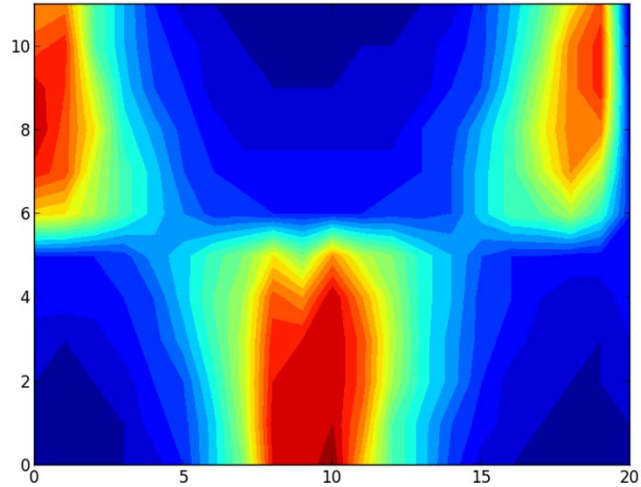


Predicted

Average Illuminance: 17.7 lux
Avg/Min Ratio: 4:1

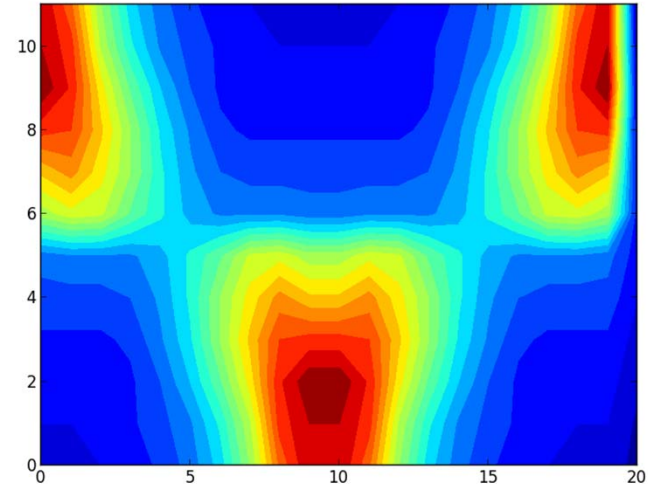
IES Recommendation:
Average Illuminance: 9 lux (*exceeded*)
Avg/Min Ratio: 3:1 (*less than recommended*)

HPS Observed vs. Predicted



Observed

Average Illuminance: 13.0 lux
Avg/Min Ratio: 13:1

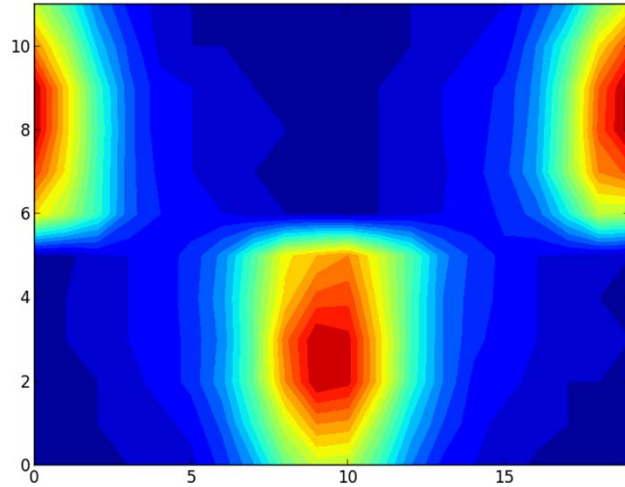


Predicted

Average Illuminance: 18.4 lux
Avg/Min Ratio: 4:1

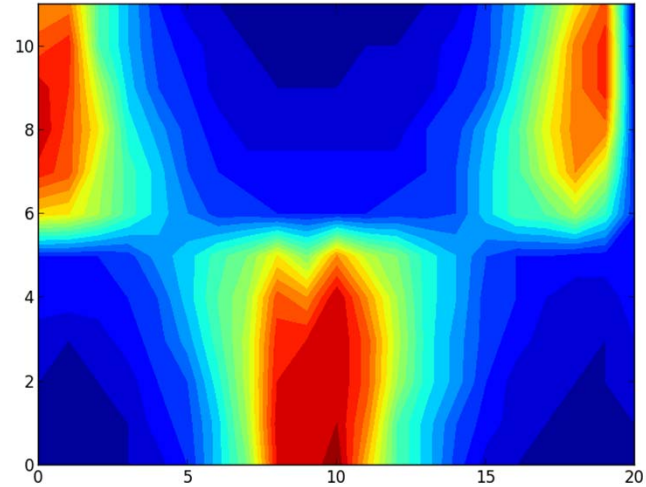
IES Recommendation:
Average Illuminance: 9 lux (*exceeded*)
Avg/Min Ratio: 3:1 (*less than recommended*)

Observed: LED vs. HPS



LED Observed

Average Illuminance: 15.7 lux
Avg/Min Ratio: 16:1

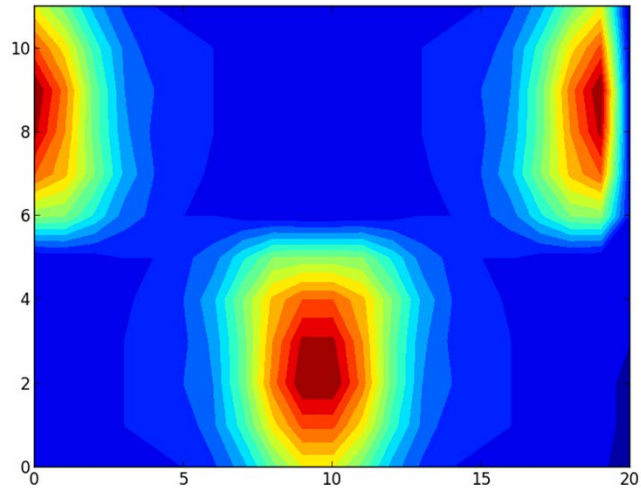


HPS Observed

Average Illuminance: 13.0 lux
Avg/Min Ratio: 13:1

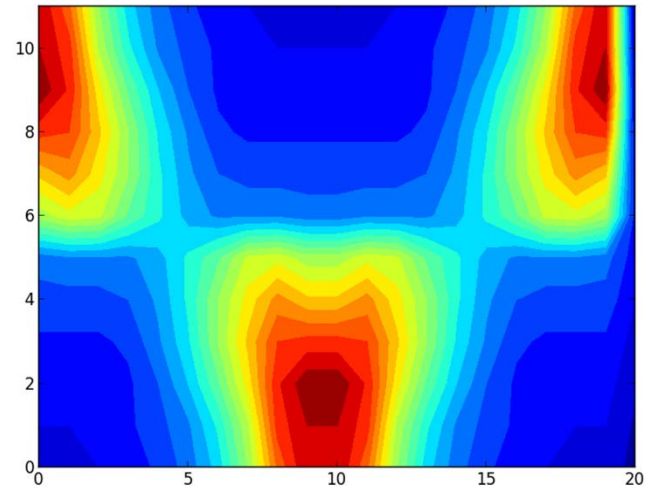
IES Recommendation:
Average Illuminance: 9 lux (*exceeded*)
Avg/Min Ratio: 3:1 (*less than recommended*)

Predicted: LED vs. HPS



LED Predicted

Average Illuminance: 17.7 lux
Avg/Min Ratio: 4:1



HPS Predicted

Average Illuminance: 18.4 lux
Avg/Min Ratio: 4:1

IES Recommendation:
Average Illuminance: 9 lux (*exceeded*)
Avg/Min Ratio: 3:1 (*less than recommended*)



Electrical Consumption

Circuit isolated – 5 lights total

185W LED – 2.12 kWh / night

200W HPS – 2.60 kWh / night

22.53% more energy consumed by
HPS lights

Comparison of Costs

Initial installation cost

LS-1 vs. LS-3

Replacement schedule

Further research

Gather more data

Long term degradation



Questions?