

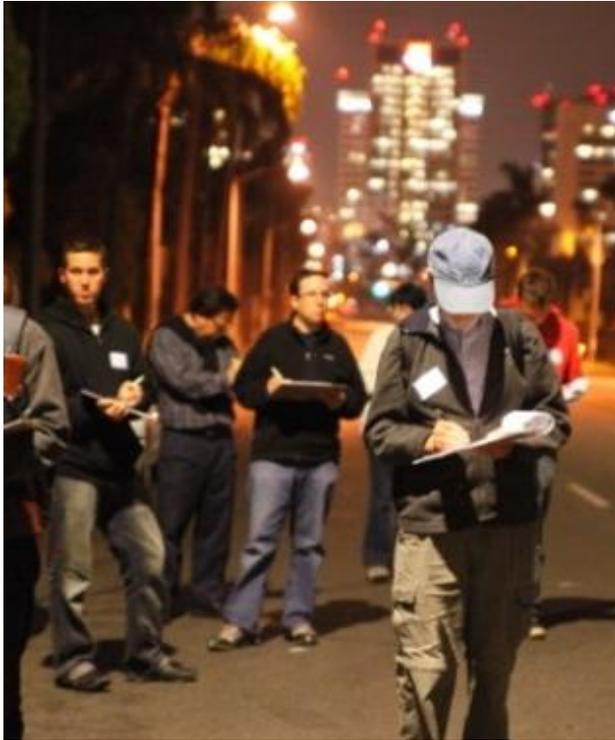
City of Beverly Hills Street Lighting Assessment



1 \ Introduction

August 11, 2016

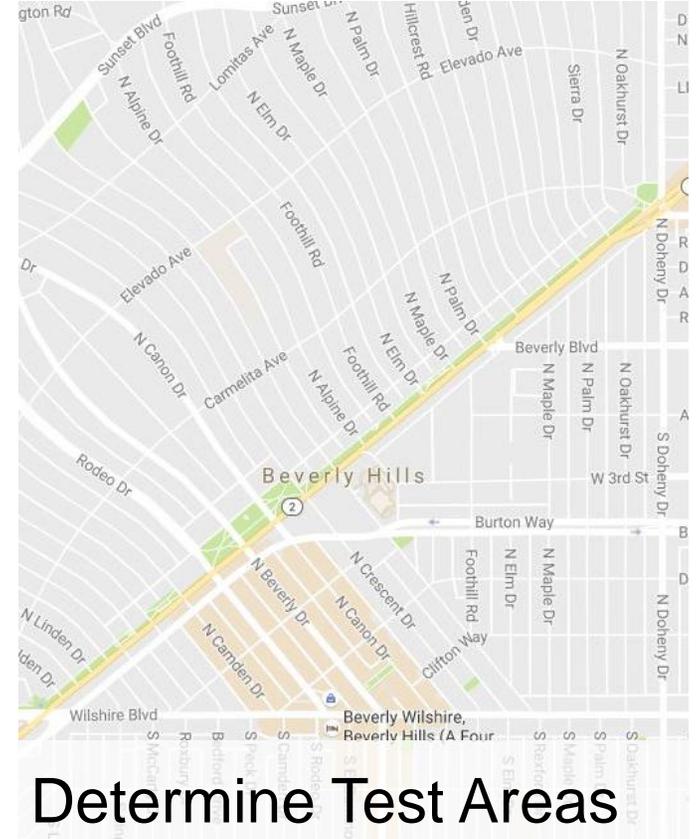
Project Discussion



Review Survey



Luminaire Selection



Determine Test Areas

1 \ Introduction

Street Lighting Assessment

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Schedule

LATE AUGUST – EARLY SEPTEMBER

Select pilot LED street lighting luminaires

Determine residential test streets

Develop subjective lighting evaluation and survey for the test areas

SEPTEMBER – EARLY NOVEMBER

Order and install sample luminaires and wireless outdoor lighting management system

Reach out to public stakeholders regarding pilot program

MID-NOVEMBER

Conduct a lighting evaluation and survey with public stakeholders

DECEMBER

Conduct analysis of energy performance and survey results

JANUARY 12, 2017

Present results to Public Works Commission

1 \ Introduction

Street Lighting Assessment

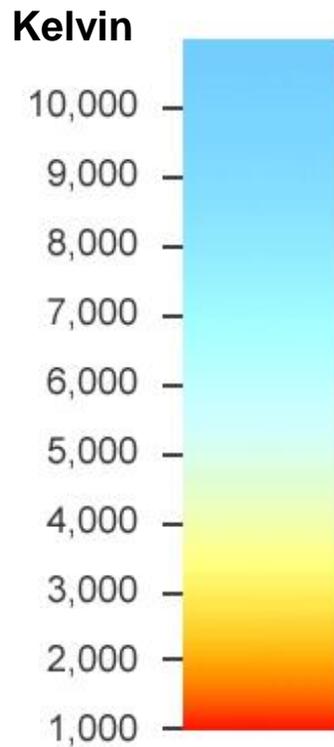
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Lighting Characteristics

Correlated Color Temperature



1 \ Introduction

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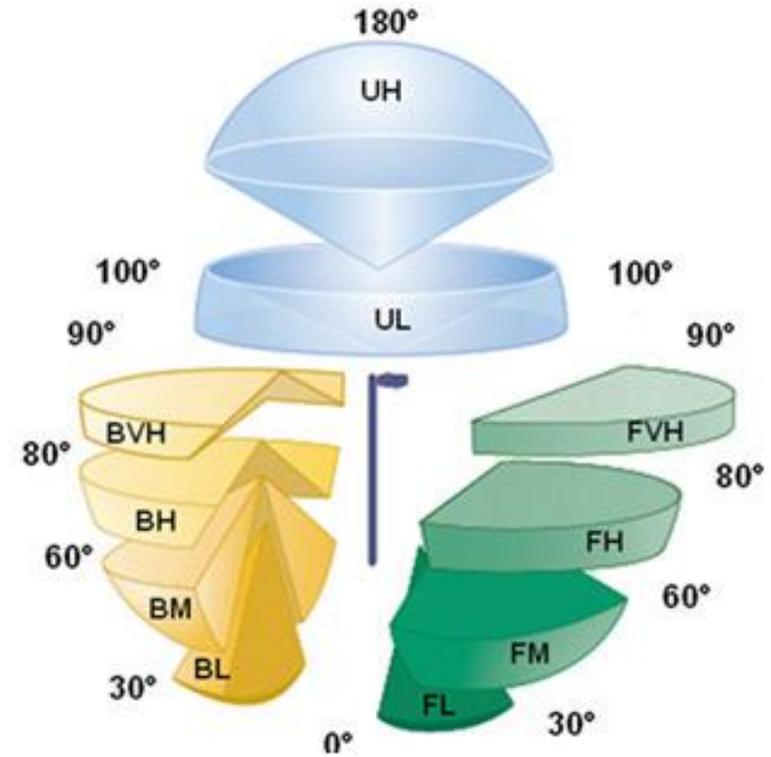
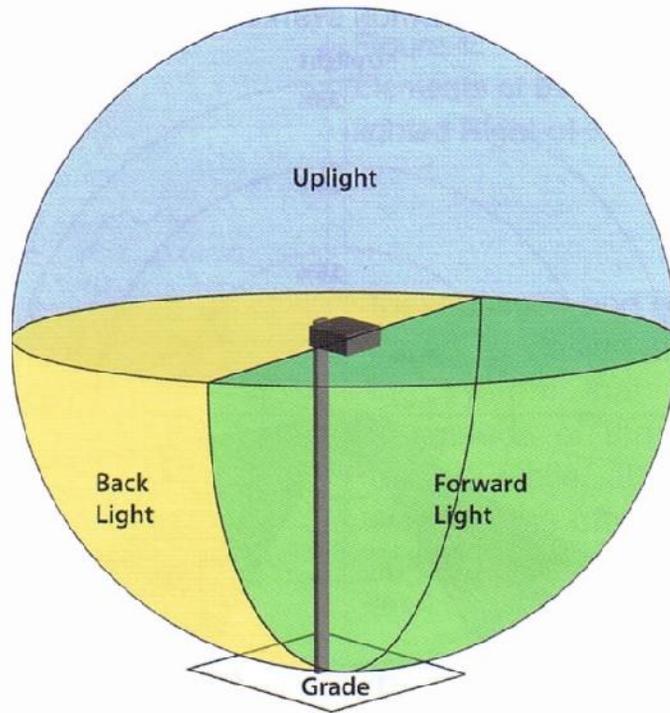
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Lighting Characteristics

Backlight-Uplight-Glare (BUG)



1 \ Introduction

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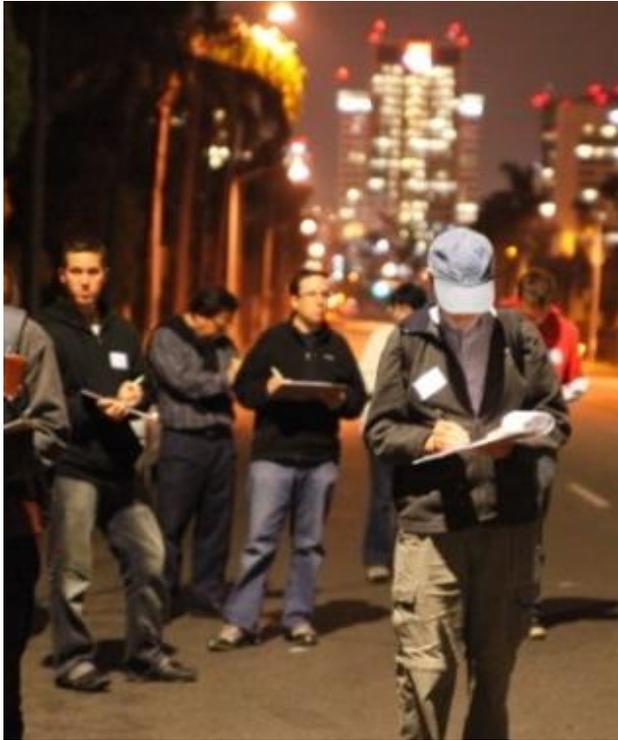
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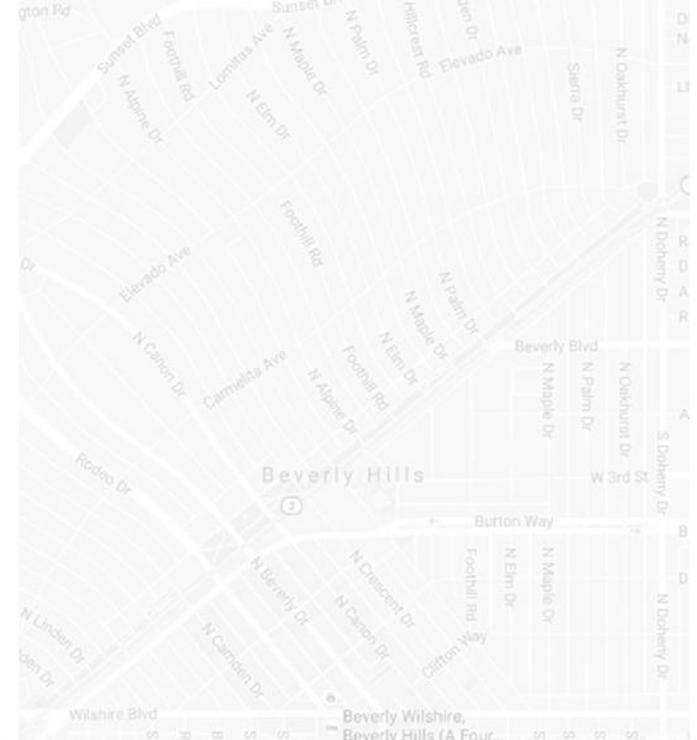
Review Survey



Review Survey



Luminaire Selection



Determine Test Areas

2 \ Evaluation Survey

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2 \ Conducting Evaluations

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Survey Page 1

Beverly Hills Nighttime Residential Street Lighting Subjective Evaluation

| | | |
|------------|--|------------|
| First Name | | Surveyor # |
| Last Name | | |

Thank you for participating in this important research on behalf of the City of Beverly Hills! We are trying to understand the effect of different lighting systems for potential application throughout the residential areas of the City. The main goal is to understand public acceptance of various residential street lighting systems. Please respond to each of the questions with that goal in mind. A separate survey will be conducted for commercial streetlighting.

All of the statements in the Test Area tables on the following pages refer to the lighting of the immediate area around you, **during darkness**. Please rate your level of agreement with each of the statements listed about the lighting.

General Questions

G1. Do you live in Beverly Hills?

Yes _____ No _____

G2a. Do you live within two blocks of one of the test areas?

Yes _____ No _____

G2b. If Yes, which test area? (please circle one)

Test area 1 Test Area 2 Test Area 3 Test Area 4

Test Area 5

G3. Do you work in the lighting industry? (Design, manufacturer, specification, sales)

Yes _____ No _____

G4. Stakeholder Group

- ___ Beverly Hills Resident
- ___ Beverly Hills Resident (within the test area)
- ___ Los Angeles County Resident
- ___ Beverly Hills Merchant
- ___ Out-of-Town Visitor
- ___ Law Enforcement

Demographic Questions

| | | | | |
|----|----------|---|---|--------------|
| D1 | Gender | M | F | (circle one) |
| D2 | Age | | | (in years) |
| D3 | Zip Code | | | |

Page 1 of 3

Survey Page 2

Beverly Hills Nighttime Residential Street Lighting Subjective Evaluation

Surveyor #

Site Questions

S1. Weather conditions --- Clear _____ Cloudy _____ Rain _____ Fog _____

S2. Ground conditions --- Streets Dry _____ Streets Wet _____

Observation Notes

Summary Questions

To be completed **AFTER** you observe and complete the survey questions for each of the test areas.

SQ1. The fixtures on **XX Road** that emit the best quality light are in Test Area # _____ (Choose from 1 or 2)

SQ2. The fixtures on **XX Road** that emit the best quality light are in Test Area # _____ (Choose from 3, 4 or 5)

SQ3. The fixtures on **XX Road** that have the best aesthetic look are in Test Area # _____ (Choose from 1 or 2)

SQ4. The fixtures on **XX Road** that have the best aesthetic look are in Test Area # _____ (Choose from 3, 4 or 5)

Final Comments

Page 2 of 3

Survey Page for Test Areas

| | <i>Rate Statements</i> | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | No Opinion |
|----|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1 | <i>It would be safe to walk here, alone, during daylight hours.</i> | <input type="radio"/> |
| 2 | <i>The lighting is comfortable.</i> | <input type="radio"/> |
| 3 | <i>There is too much light on the sidewalk.</i> | <input type="radio"/> |
| 4 | <i>There is not enough light on the sidewalk.</i> | <input type="radio"/> |
| 5 | <i>The light is uneven (patchy).</i> | <input type="radio"/> |
| 6 | <i>The light sources emit offensive glare directly into my eyes.</i> | <input type="radio"/> |
| 7 | <i>It would be safe to walk alone on the sidewalk here at night.</i> | <input type="radio"/> |
| 8 | <i>I cannot tell the colors of things due to the lighting.</i> | <input type="radio"/> |
| 9 | <i>I like the color of the light.</i> | <input type="radio"/> |
| 10 | <i>I would like this style lighting on my city streets.</i> | <input type="radio"/> |
| 11 | <i>I can see things better in this light.</i> | <input type="radio"/> |
| 12 | <i>I like the aesthetic look of this fixture.</i> | <input type="radio"/> |
| 14 | <i>This lighting will reduce unwanted light into residences.</i> | <input type="radio"/> |

13. How does the lighting in this area compare with the lighting of similar Beverly Hills city residential streets at night?

Much Worse

Worse

About The Same

Better

Much Better

14. Write additional comments below.

2 \ Evaluation Survey

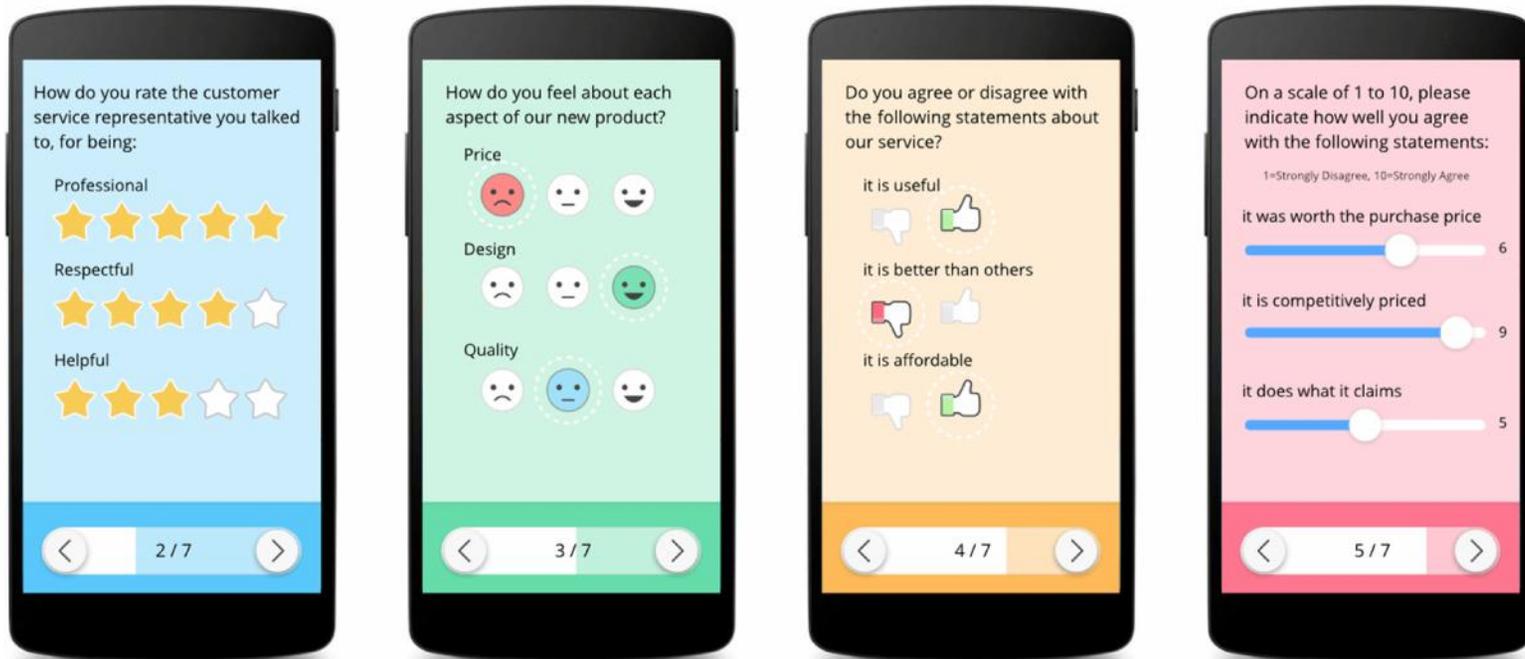
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Survey Phone App



2 \ Evaluation Survey

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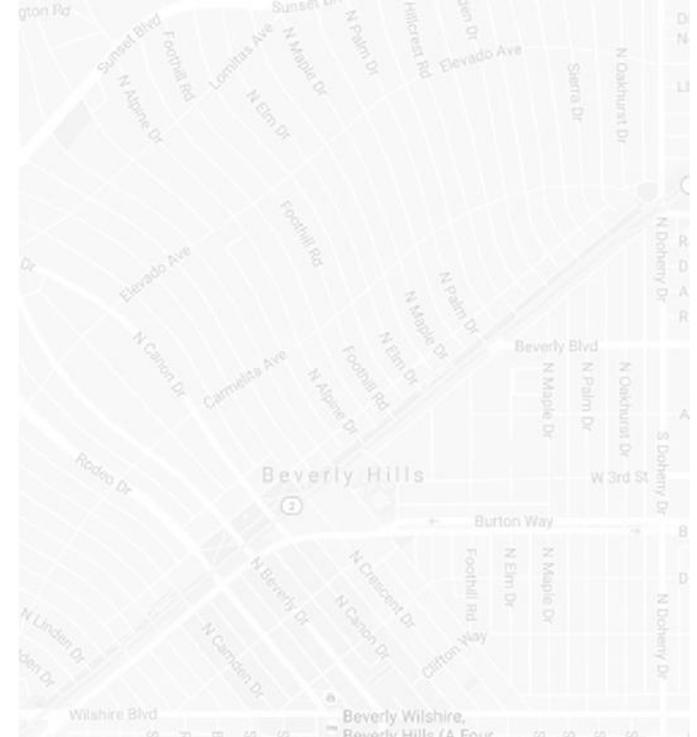
Luminaire Selection



Review Survey



Luminaire Selection



Determine Test Areas

3 \ Luminaires

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Luminaires

Existing High Pressure Sodium Luminaire:



Proposed Test Luminaire A:



Proposed Test Luminaire B:



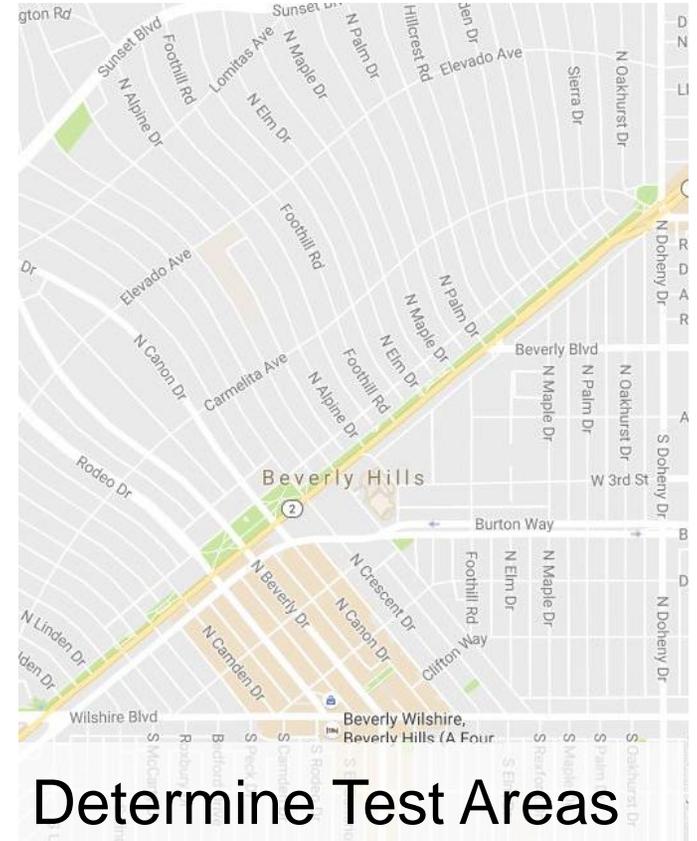
Determine Test Areas



Review Survey



Luminaire Selection



Determine Test Areas

4 \ Test Area Determination

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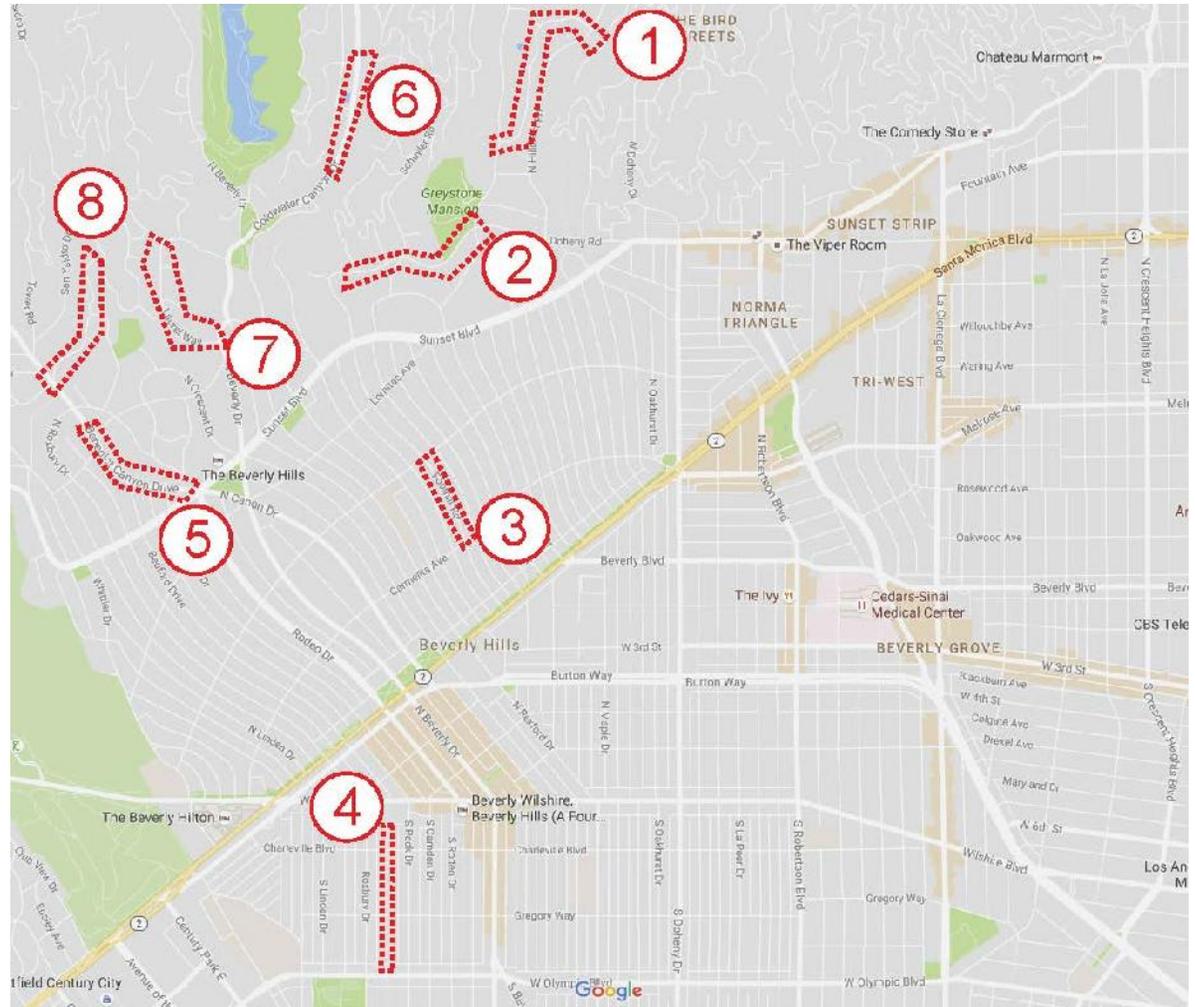
Overall Map

Potential Test Areas

1. Wallace Ridge
2. Doheny Road
3. Foothill Road
4. S. Bedford Drive
5. Benedict Canyon Drive
6. Coldwater Canyon Drive
7. Laurel Way
8. Summit Drive

Considerations

- Street Classification
- Topography
- Sidewalks
- Landscape



4 \ Test Area Determination

Street Lighting Assessment

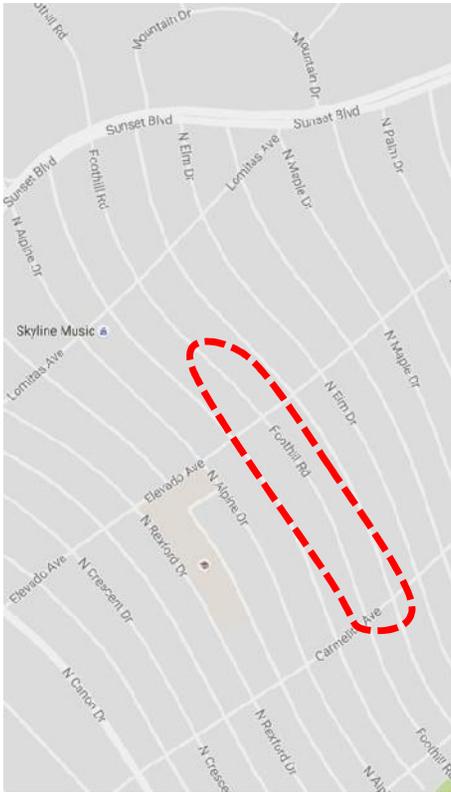
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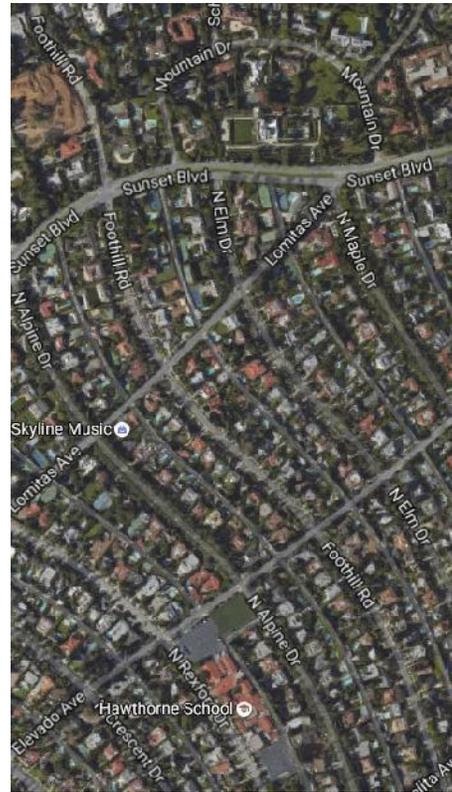


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3: Foothill Road



Map View



Satellite View



Street View



Key Map

4 \ Test Area Determination

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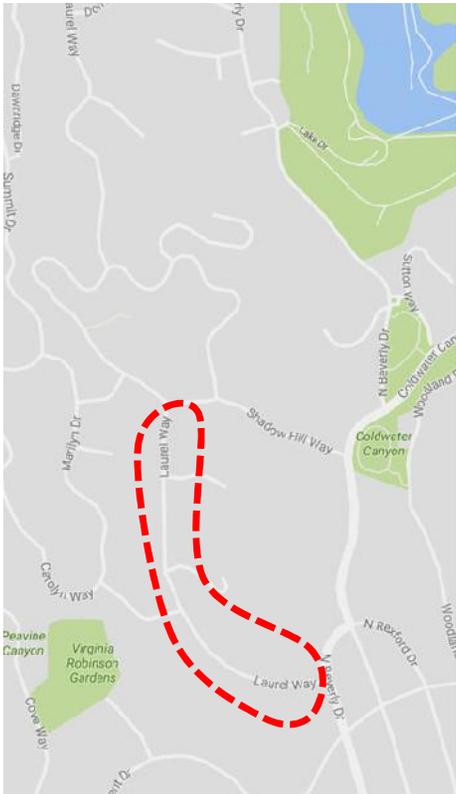
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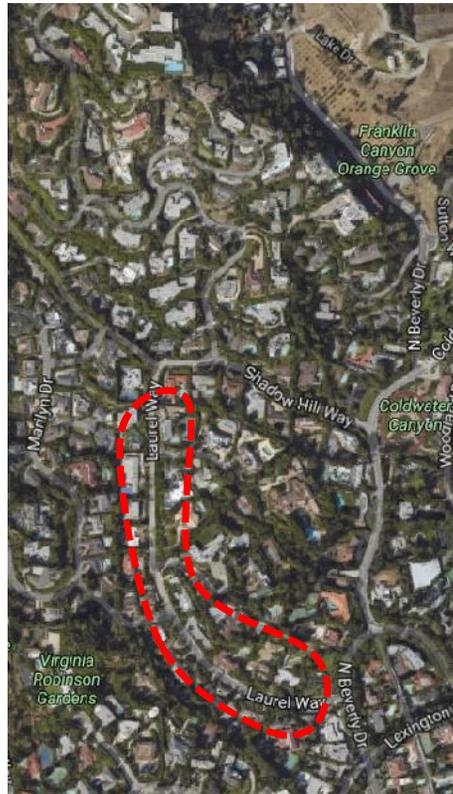


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7: Laurel Way



Map View



Satellite View



Street View



Key Map

4 \ Test Area Determination

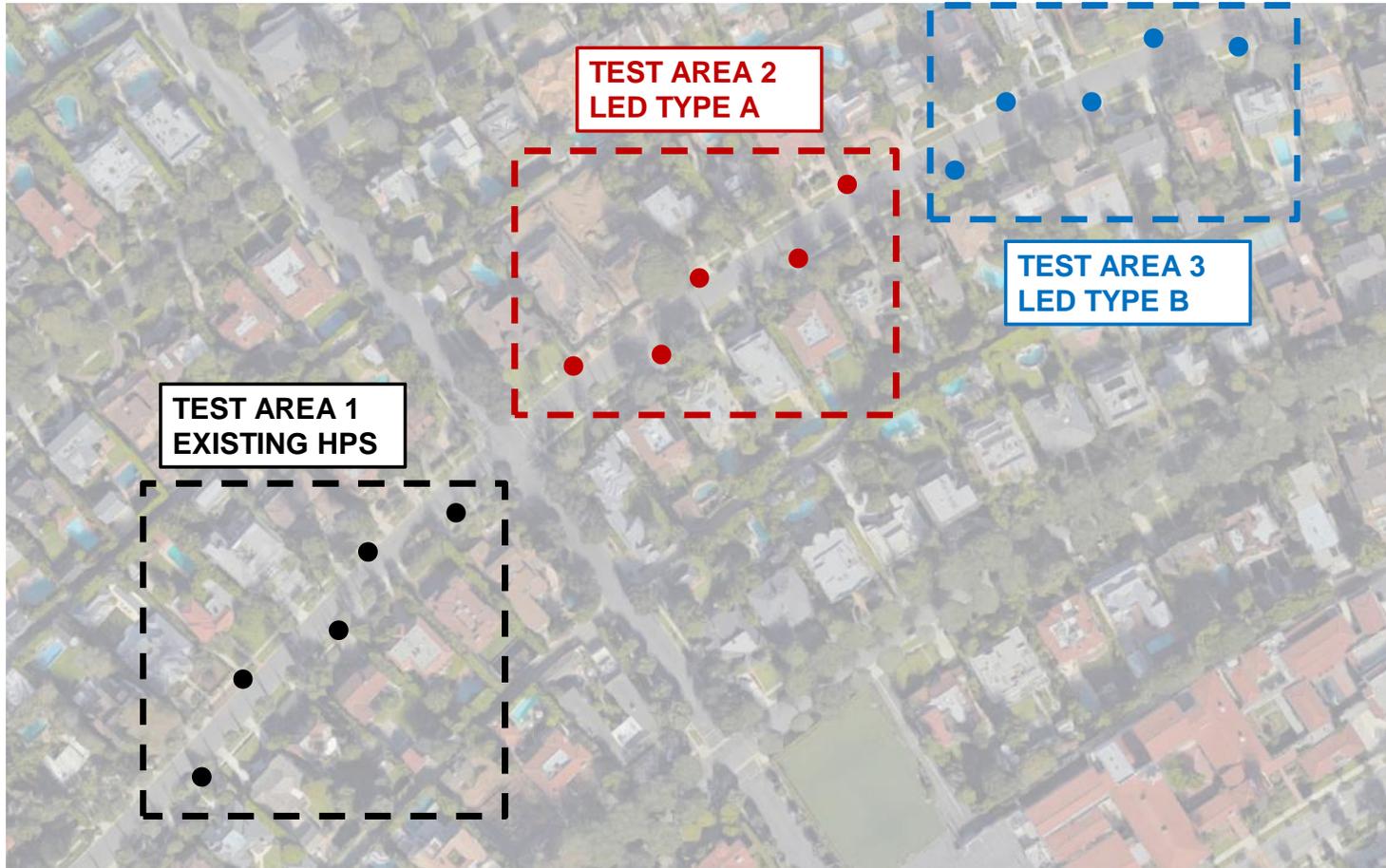
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Example Test Areas 1-3: (Foothill Road)



4 \ Test Area Determination

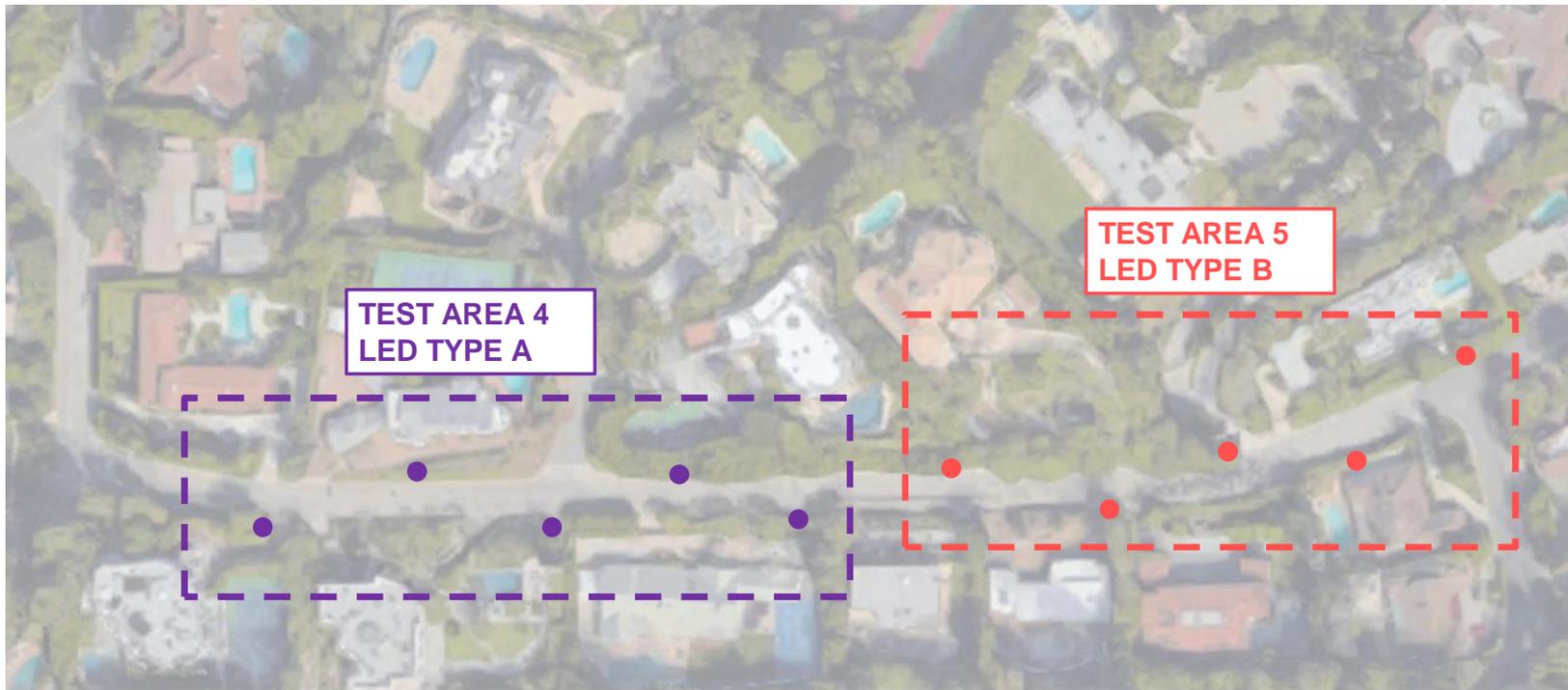
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Example Test Areas 4-5: (Laurel Way)



4 \ Test Area Determination

Street Lighting Assessment

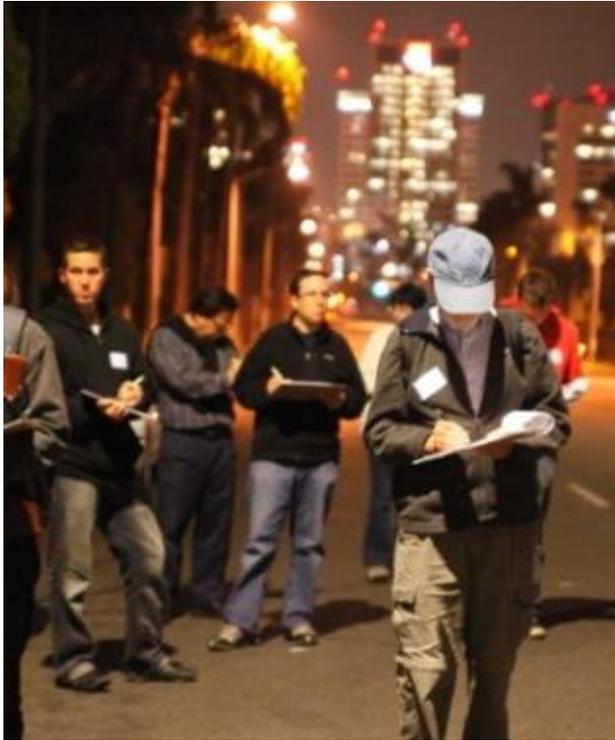
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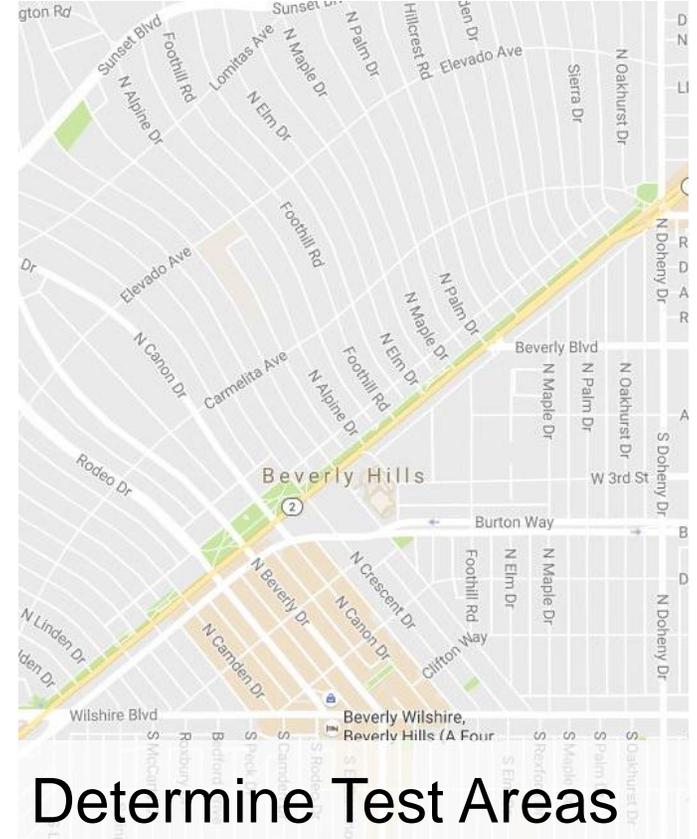
Questions



Review Survey



Luminaire Selection



Determine Test Areas

Additional Luminaire Information

Existing Beverly Hills Street Light



3 \ Luminaires

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GE Lighting

Evolve



3 \ Luminaires

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CREE

RSW



3 \ Luminaires

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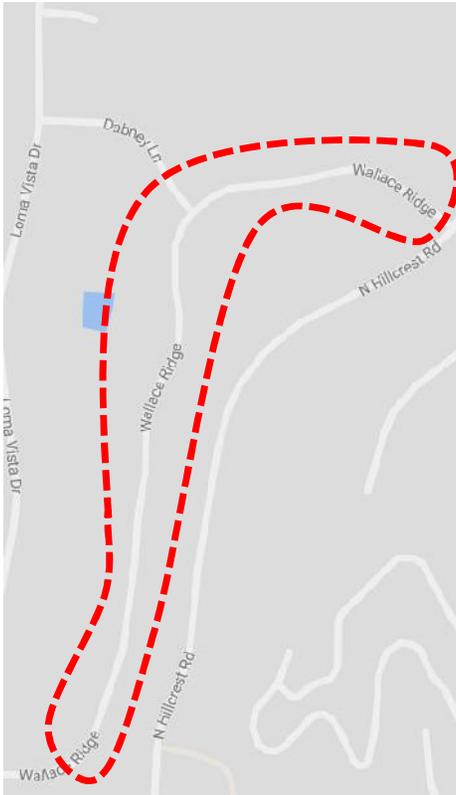


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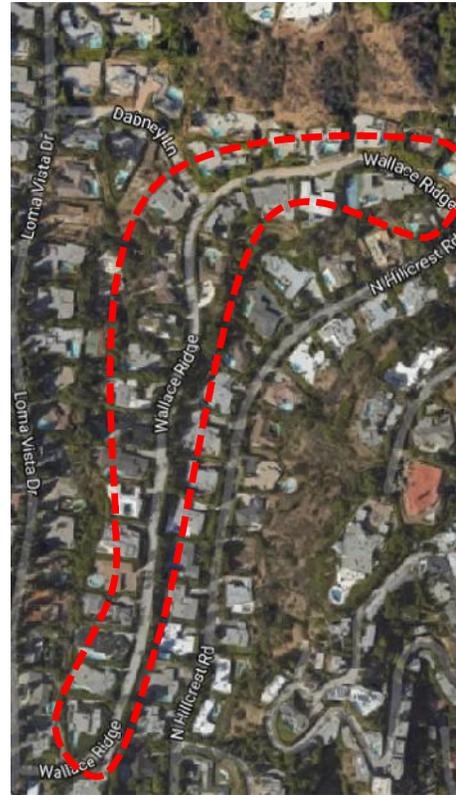
Additional Test Areas



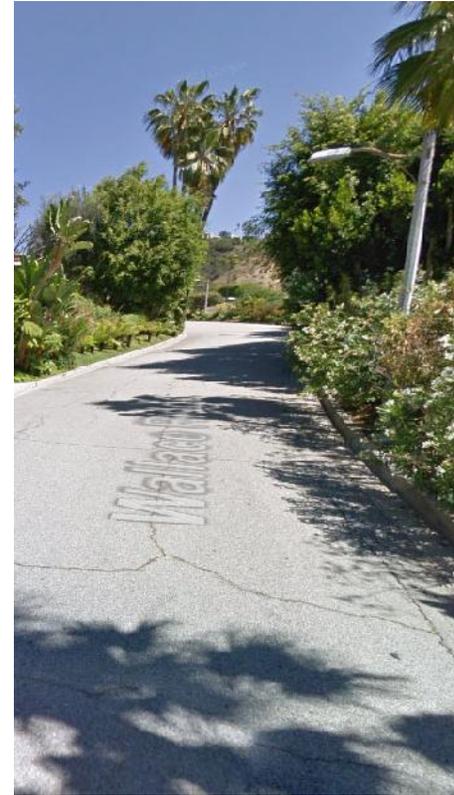
1: Wallace Ridge



Map View



Satellite View



Street View



Key Map

4 \ Test Area Determination

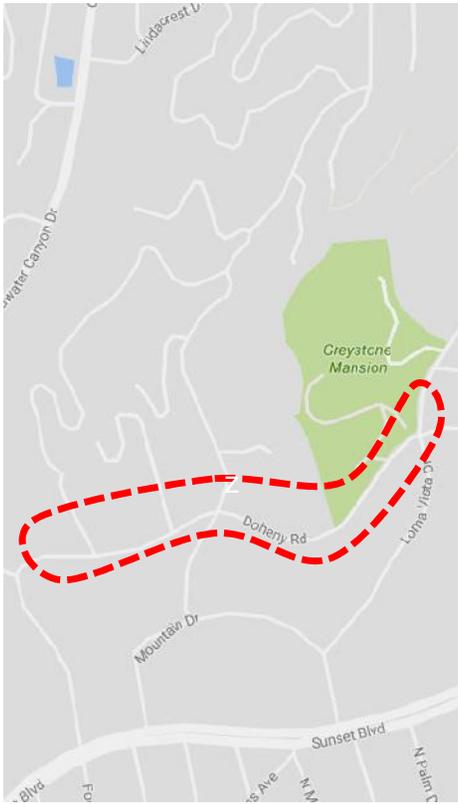
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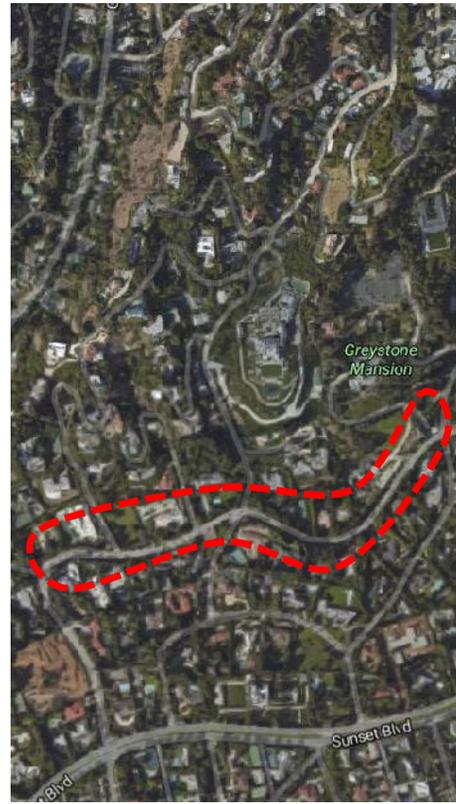
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2: Doheny Road



Map View



Satellite View



Street View



Key Map

4 \ Test Area Determination

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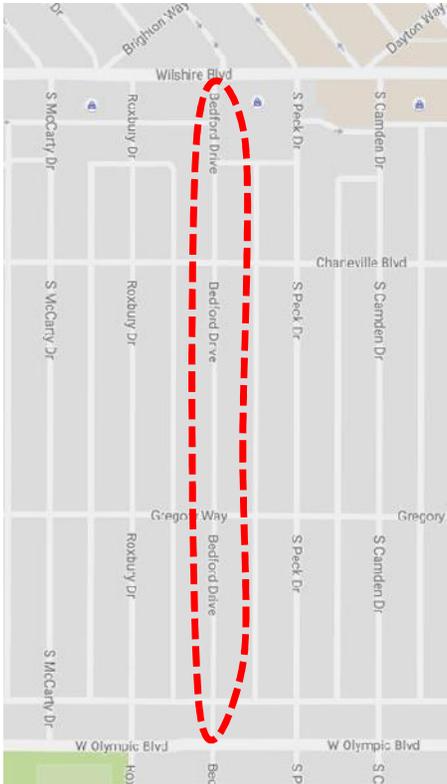
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4: S. Bedford Drive



Map View



Satellite View



Street View



Key Map

4 \ Test Area Determination

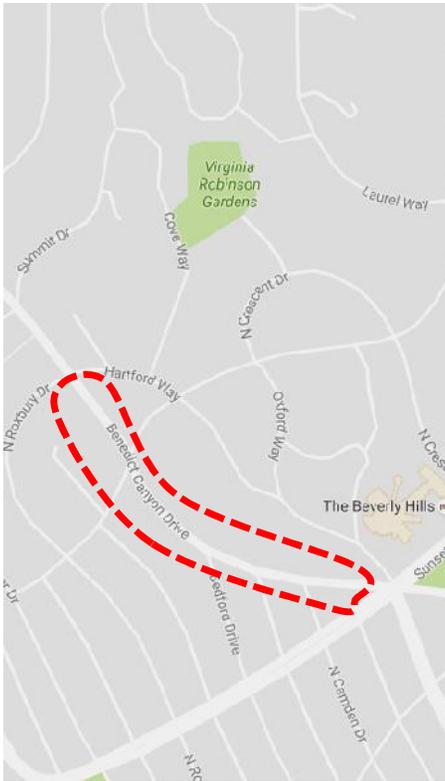
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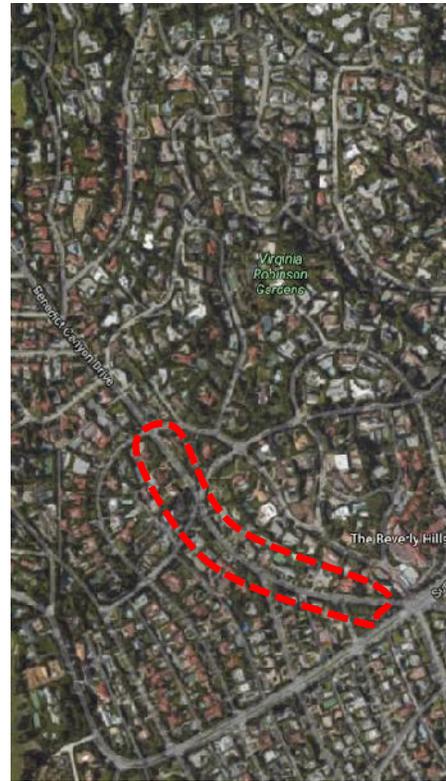
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5: Benedict Canyon Drive



Map View



Satellite View



Street View



Key Map

4 \ Test Area Determination

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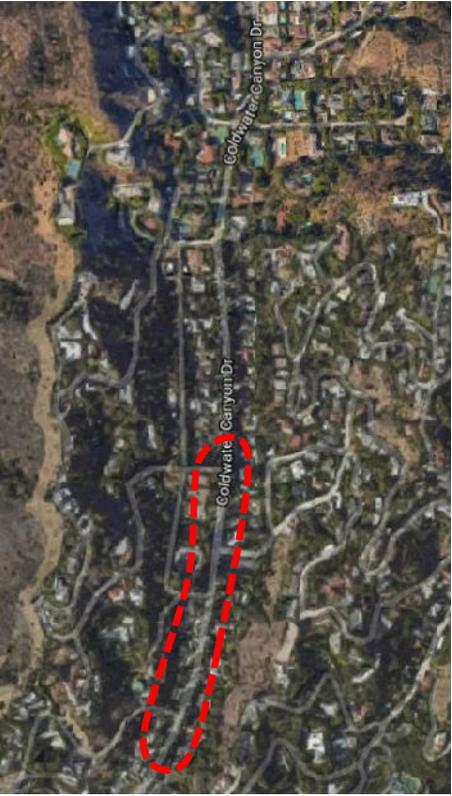
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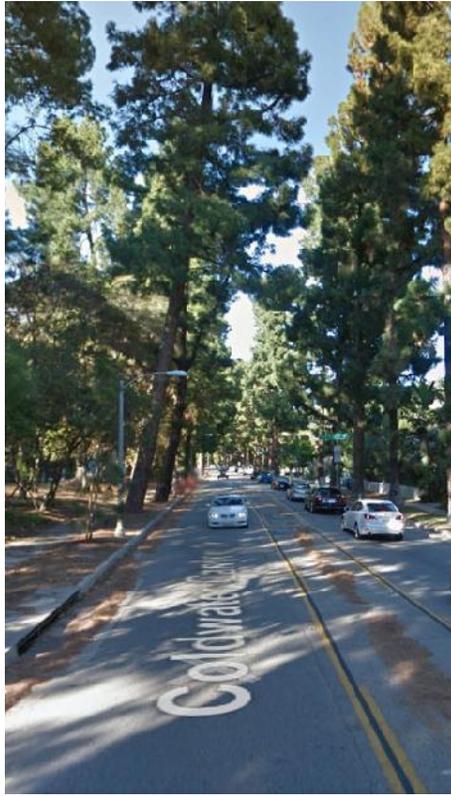
6: Coldwater Canyon Drive



Map View



Satellite View



Street View



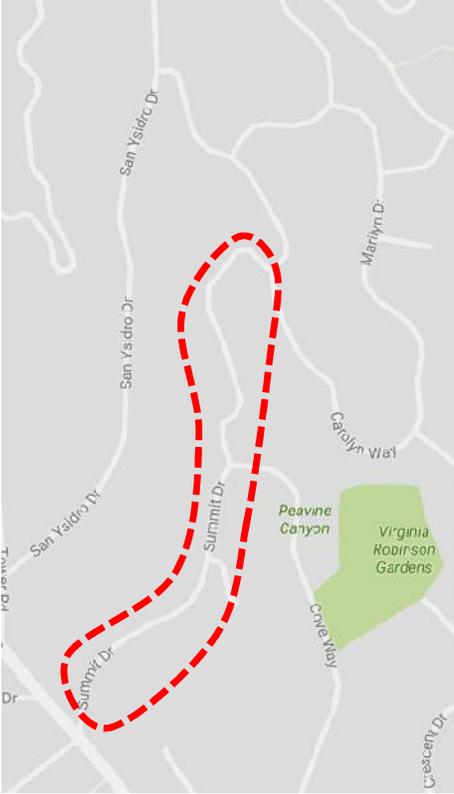
Key Map

4 \ Test Area Determination

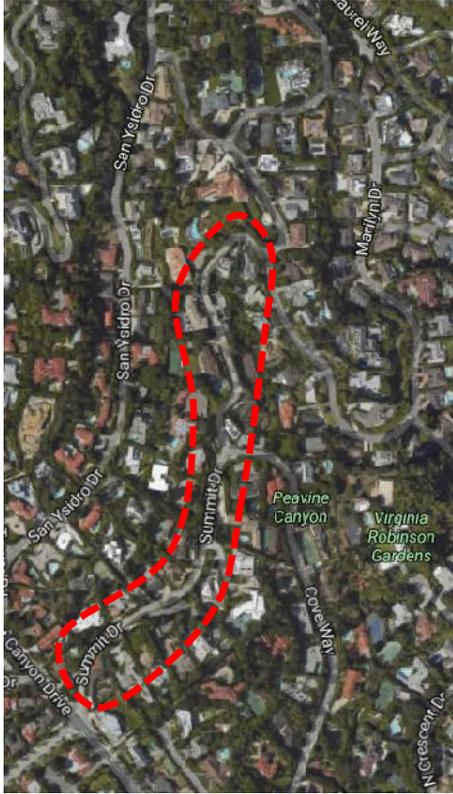
Street Lighting Assessment



8: Summit Drive



Map View



Satellite View



Street View



Key Map

4 \ Test Area Determination

Street Lighting Assessment

