Kimley»Horn

# Downtown Lighting Study, Project 15-34
# Scope of Services

**Task 1. Project Initiation and Management**
Kimley-Horn will participate in a Kick-Off Meeting with the City of Mountain View to review the goals, scope of services, existing information, and approach to the street light assessment. Preliminary project schedule including key dates (i.e. submittals), and the City's needs and requirements for the street and pedestrian lighting in the City's downtown district will also be discussed. This meeting will be a face-to-face meeting and take place at the City of Mountain View.

Kimley-Horn will set up bi-weekly conference calls between the project manager and the City to talk about project direction, provide progress updates, and get feedback on draft materials. It is assumed that the project duration is forty (40) weeks, and this task includes up to twenty (20) project status conference calls.

Other elements of this task include general project management, including management of project staff, quality control, and project accounting. Monthly project status reports will be prepared and summitted along with our standard invoicing.

**Task 1 Deliverables:**
- Kick-off meeting agenda, materials, and notes
- Up to twenty (20) bi-weekly conference calls with City staff
- Monthly invoices and progress reports

**Task 2. Existing Conditions Analysis**
***Task 2a: Data Collection***
This task will entail information gathering and reviewing of the City's existing standard provisions and details; local codes, policies, and ordinances; and the City's Downtown Specific Plan. The information collected from these sources, as well as the information presented in various industry lighting standards, will be combined and utilized throughout the remainder of this project.

Kimley-Horn will conduct an inventory of the City's existing street lighting system. This will include reviewing existing as-built plans and the City's Street Lighting Database to be provided by the City. It is assumed that the City will provide manufacturer and model information for the existing luminaires installed.

After the review of City-provided documentation of the existing street light system, Kimley-Horn will conduct a daytime field review to check/verify the existing street light information provided by the City and observe and record existing lighting deficiencies. During the field review, Kimley-Horn will confirm existing street light type (e.g. pedestrian post top, Caltrans standard luminaire, PG&E wood post), luminaire type (e.g. LED, HPS), nearby obstructions to lighting (e.g. trees), proximity to pedestrian paths and roadway, roadway widths, and pedestrian traffic patterns. In addition, Kimley-Horn will

review the current electrical supply infrastructure to determine any opportunities or constraints based on the existing conditions. Locations and sizes of conduits, conductors, and pull boxes will not be included in the inventory.

We will conduct one site visit during evening and night hours to identify actual lighting levels using a light meter. We will measure and record light levels at select locations along each of the project's downtown priority corridors to confirm lighting deficiencies and determine actual light levels.

In addition to taking field notes, we will create a photo log of existing street lights using iPads with ArcGIS Collector application that captures photos and records the latitude/longitude at which the photo was taken. ArcGIS Collector App data will be exported as an ArcGIS shapefile for integration into the City's existing GIS asset management database. The georeferenced photos are the associated with ArcGIS data points providing the City with the ability to pull up photos (in ArcGIS) of its lighting assets in the project area.

***Task 2b: Photometric Analysis of Existing Street Lighting System***

Kimley-Horn will prepare a photometric analysis of the existing (baseline) lighting conditions in Mountain View's Downtown District. This will include photometric calculations for street segments and crosswalks/pedestrian pathways based on the data gathered from the City and our field investigations. As available, Kimley-Horn will obtain and utilize manufacturer photometry files (.ies format) matching the existing luminaires. If photometry files are not available for an existing luminaire, we will identify a similar make and model that would closely represent the lumen output and light distribution, and incorporate that into the lighting analysis model.

We will use our field measured light levels to evaluate and adjust the photometric analysis model to establish the "baseline" model that represents existing conditions. Model adjustments to reflect existing conditions may include changing light loss factors of fixtures to simulate loss of light due to dust or lack of cleaning, and modification of light distribution patterns and light output of luminaires.

Kimley-Horn will submit a technical memorandum presenting the existing street lighting within the City's Downtown District and existing (baseline) conditions photometric analysis results. The memorandum will include exhibits showing existing lighting conditions throughout the City's Downtown District.

Updated street light network inventory, field notes, and georeferenced photo logs from Task 2a will be integrated into the Existing Conditions Technical Memorandum.

**Task 2 Deliverables:**

- Technical Memorandum of Existing Street Light Network and "Baseline" Lighting Conditions
- ArcGIS shapefile (including georeferenced street light attributes and field photos)

**Task 3. Propose Criteria for Lighting**
Following the American Association of State Highway and Transportation Officials (AASHTO) Roadway Lighting Design Guide, the Federal Highway Administration (FHWA) Lighting Handbook, Illuminating Engineering Society of America (IESNA) Roadway Lighting RP8-14, as well as any City specifications and/or details, Kimley-Horn will develop recommended lighting performance specifications for the City's Downtown District. The recommendations will consider street classification, land use patterns, and pedestrian/bike use in the area, including:

- High density/activity centers (school zones)
- Intersections (signalized, unsignalized, major arterials, minor arterials)
- Central Business Districts
- Plazas (City Hall/Performing Arts Plaza)
- Parking lots

Kimley-Horn's recommendations will include photometric requirements for both the retrofit of existing light fixtures and the installation of entirely new street light system elements to supplement or replace existing street light systems. The lighting recommendations are anticipated to include:

- Minimum horizontal luminance
- Maintained average horizontal luminance
- Uniformity ratio (average luminance/minimum luminance)
- Minimum and maximum lighting levels

Kimley-Horn's recommendations will also include various consideration items not directly related to the lighting levels but important in choosing exact luminaire manufacturers. These items include:

- Ambiance/aesthetics
- Energy efficiency
- Maintenance/replacement costs
- Dark sky compliance

After the submittal of the Draft Recommended Lighting Performance Specifications, Kimley-Horn will facilitate a night-time field meeting/lighting walk audit, with the City and project stakeholders, at sample locations in the City's Downtown District that demonstrate recommended lighting levels and non-conforming lighting levels.

Using City and stakeholder feedback from the nighttime field meeting, and City comments on the draft document, Kimley-Horn will prepare the Final Lighting Performance Specifications.

**Task 3 Deliverables:**
- Lighting Performance Specifications (Draft and Final)
- Participation in one (1) nighttime field meeting/lighting walk audit

**Task 4. Identify Preliminary Opportunities**
Using the recommended lighting performance specifications developed in Task 3, Kimley-Horn will identify and evaluate approaches to improving street lighting levels in the Downtown District. Based on the field observations of existing lighting deficiencies and the results of the baseline photometric analysis, Kimley-Horn will first identify opportunities to utilize existing light locations and enact "quick fix" measures such as tree trimming and replacing luminaires on existing poles with fixtures that offer higher light output and/or different light distribution patterns. After examining upgrades and improvements to existing system equipment, Kimley-Horn will investigate installation of new street light poles, either as infill at gaps of existing lighting or for improving overall light spacing.

This task will include a review of current commercially available lighting technologies, including luminaire types, photometric controls, and adaptive control systems. Kimley-Horn will examine the existing lighting types from the City's standard technical specifications and the additional lighting types on the market. We will review up to three (3) LED lighting manufacturers for both standard roadway lighting and decorative lighting. We will evaluate aesthetics, maintenance, capital cost, and light distribution. This evaluation will include a recommended lighting type that will meet the City's lighting needs while achieving the recommended light levels.

This task includes two iterations (Draft and Final) of the Technical Memorandum detailing the evaluation results, findings, and recommendations. This task will also include one (1) meeting with City staff after the submittal of the Draft Technical memorandum to discuss the recommendations and determine how to proceed with the following tasks.

**Task 4 Deliverables:**
- Draft Technical Memorandum – Recommended Light System Upgrades and Modifications
- Final Technical Memorandum – Recommended Light System Upgrades and Modifications
- Meeting preparation and materials for one (1) meeting with City staff

**Task 5. Community and Stakeholder Engagement**
Throughout this project, Kimley-Horn will assist the City with outreach to stakeholders as well as the community to get opinions on the existing lighting network and feedback on potential lighting improvements. In doing so, Kimley-Horn will attend the following meetings:

- Up to one (1) meeting with City of Mountain View Staff
- Up to one (1) meeting with Santa Clara County
- Up to one (1) meeting with VTA
- Up to three (3) meetings with community members and neighborhood organizations, including the Downtown Business Association, and Bicycle Pedestrian Advisory Committee (BPAC)

**Task 5 Deliverables:**

- Meeting agenda, materials and notes for up to seven (7) community and stakeholder meetings

**Task 6. Downtown Lighting Study**

Utilizing stakeholder and community feedback obtained in Task 5 as well as the findings and recommendations from Tasks 2-4, Kimley-Horn will develop a Downtown Lighting Study. This report will include findings from

- Existing lighting conditions summary including light types, wattages, location of lights, location of electrical systems, etc.
- Recommended improvements including fixture conversions, new light locations, and type of improvements
- Concept plans for lighting improvements
- Recommended future conditions photometric analysis

As part of the report, Kimley-Horn will include a prioritized list of future capital projects, including preliminary costs for construction, planning, and design. Prioritization of the projects will be dependent upon impacts to address existing lighting deficiencies on the corridor and cost effectiveness of energy savings and ongoing maintenance.

This task will also include one (1) meeting with City staff after the submittal of the Draft Downtown Lighting Study to discuss the findings and review City staff comments.

**Task 5 Deliverables:**

- Draft Downtown Lighting Study Report in PDF format
- Final Downtown Lighting Study Report in PDF and .doc format
- Photometric analysis in .agi format
- Final lighting map in .gis format

**Task 7. City Council Sessions**

Upon completion of the downtown lighting study, Kimley-Horn will prepare materials and participate in up to two (2) City Council sessions to present the results of the Downtown Lighting Study.

**Task 7 Deliverables:**

- Meeting preparation and materials for up to two (2) meetings with City Council
- Meeting Minutes

**Task 8. Additional Services**

Kimley-Horn, if requested and authorized by the City of Mountain View, will perform additional services including, but will not be limited to, the following:

- Attendance of additional meetings not specified in scope
- Photometric analyses outside of project area
- Development of construction documents
- Foundation design for proposed light poles

Services other than those set forth in the Scope of Services shall constitute additional services. Additional services shall be performed only with City authorization, and be billed on a time and materials basis as per the current Kimley-Horn rate schedule.

City of Mountain View
Downtown Lighting Study, Project 15-34
Price Proposal - August 2, 2018

| Proposed Staff | Akwabi-Ameyaw | Dole | Aguigui | Syntax Paderna Madsen | Rainey Arroyo | Pittman | Analyst | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Role / Classification | PIC | Project Manager | Senior Engineer IV | Senior Engineer II | Professional | Assistant Engineer II | Assistant Engineer I | Admin | Hours | Labor Costs | Indirect Expenses | Direct Expenses | Cost |
| Rate | $235 | $215 | $290 | $215 | $195 | $170 | $135 | $115 | | | | | |
| TASK 1- PROJECT INITIATION AND MANAGEMENT | | | | | | | | | | | | | |
| Kick-Off Meeting | 6 | 6 | | | 6 | | | | 18 | *$3,870* | | $50 | |
| Biweekly Coordination Meetings | | 20 | | | 6 | | | | 26 | *$5,470* | | | |
| Project Management | 6 | 12 | | | | | | 12 | 30 | *$5,370* | | | |
| *Subtotal* | *12* | *38* | *0* | *0* | *12* | *0* | *0* | *12* | *74* | *$14,710* | *$0* | *$50* | *$14,760* |
| TASK 2 - EXISTING CONDITIONS ANALYSIS | | | | | | | | | | | | | |
| Task 2a - Data Collection | | | | | | | | | 92 | *$14,670* | | | |
| Background Research and Information Gathering | | | | | 2 | | 8 | | 10 | *$1,470* | | | |
| Site Visits (Daytime and Nightime) | | 2 | | | 10 | 30 | 30 | | 72 | *$11,530* | | $250 | |
| Review of City Standard Provisions | | 2 | | 2 | | | 6 | | 10 | *$1,670* | | | |
| Task 2b- Photometric Analysis of Existing Street Lighting System | | | | | | | | | 86 | *$14,620* | | | |
| Photometric Analysis | | 2 | | 2 | 6 | 12 | 15 | | 37 | *$6,095* | | | |
| GIS Shapefile | | 2 | | 2 | | 6 | 15 | | 25 | *$3,905* | | | |
| Technical Memorandum | | 4 | | 6 | 8 | 4 | | 2 | 24 | *$4,620* | | $50 | |
| *Subtotal* | *0* | *12* | *0* | *12* | *26* | *52* | *74* | *2* | *178* | *$29,290* | *$0* | *$300* | *$29,590* |
| TASK 3 - PROPOSE CRITERIA FOR LIGHTING | | | | | | | | | | | | | |
| Draft Light Performance Specifications | | 1 | 1 | 4 | 12 | 4 | | | 22 | *$4,385* | | | |
| Final Light Performance Specifications | | 2 | 2 | 2 | 6 | 4 | | 2 | 18 | *$3,520* | | *$50* | |
| Nighttime Field Meeting/Walk Audit | | 8 | | | 8 | | | | 16 | *$3,280* | | *$100* | |
| *Subtotal* | *0* | *11* | *3* | *6* | *26* | *8* | *0* | *2* | *56* | *$11,185* | *$0* | *$150* | *$11,335* |
| TASK 4- IDENTIFY PRELIMINARY OPPORTUNITIES | | | | | | | | | | | | | |
| Draft Technical Memorandum – Recommended Light System Upgrades and Modifications | | 1 | 1 | 4 | 8 | 8 | 16 | | 38 | *$6,445* | | | |
| Final Technical Memorandum – Recommended Light System Upgrades and Modifications | | 2 | 2 | 2 | 6 | 6 | 10 | 2 | 30 | *$5,210* | | *$50* | |
| Meeting with City Staff | | 6 | | | 6 | | 2 | | 14 | *$2,730* | | *$50* | |
| *Subtotal* | *0* | *9* | *3* | *6* | *20* | *14* | *28* | *2* | *82* | *$14,385* | *$0* | *$100* | *$14,485* |
| TASK 5- COMMUNITY AND STAKEHOLDER ENGAGEMENT | | | | | | | | | | | | | |
| Meetings (up to 7) | | 36 | 16 | | | | 10 | 10 | 72 | *$14,880* | | $350 | |
| *Subtotal* | *0* | *36* | *16* | *0* | *0* | *0* | *10* | *10* | *72* | *$14,880* | *$0* | *$350* | *$15,230* |
| TASK 6 - DOWNTOWN LIGHTING STUDY | | | | | | | | | | | | | |
| Draft Downtown Lighting Study | | 4 | | 4 | 16 | 6 | 8 | | 38 | *$6,940* | | | |
| Final Downtown Lighting Study | | 2 | | 2 | 8 | | 4 | 2 | 18 | *$3,190* | | | |
| Meeting with City Staff | | 6 | | | 6 | | 2 | | 14 | *$2,730* | | *$50* | |
| Photometric Analysis | | | | 4 | 4 | 12 | 24 | | 44 | *$6,920* | | | |
| GIS Shapefile | | | | 2 | | 6 | 12 | | 20 | *$3,070* | | | |
| *Subtotal* | *0* | *12* | *0* | *12* | *34* | *24* | *50* | *2* | *134* | *$22,850* | *$0* | *$50* | *$22,900* |
| TASK 7 - CITY COUNCIL SESSIONS | | | | | | | | | | | | | |
| Sessions (up to 2) | | 12 | 12 | | | | 8 | 6 | | *$7,830* | | $100 | |
| *Subtotal* | *0* | *12* | *12* | *0* | *0* | *0* | *8* | *6* | *38* | *$7,830* | *$0* | *$100* | *$7,930* |
| TASK 8 - ADDITIONAL SERVICES | | | | | | | | | | | | | |
| Services As Requested and Authorized by City | *As Authorized by the City* | | | | | | | | | | | | |
| *Subtotal* | *TBD* | | | | | | | | | | | | *$12,000* |
| TOTALS: | 12 | 130 | 34 | 36 | 118 | 98 | 170 | 36 | 634 | *$115,130* | *$0* | *$1,100* | *$128,230* |