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## San Jose Innovative LED Streetlight Replacement RFP 15-16-01 Phase II

An Environmentally Responsible and Economically Sustainable Approach:

The “STSC-ES” Way



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## List of Attachments

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- A. Proposal Checklist
- B. Proposal Specific Worksheet
- C. Proposal Valuations and Cost Form with Designated Responsible Parties
- D. Proposer Certification Form
- E. Project Team and Financial Background Information Worksheet
- F. Previous Customer Reference Form (three required)
  - a. (3) Customer References for Installation Partner (with completed Customer Reference Worksheet)
- G. Environmentally Preferred Procurement Program (EP3) Information Sheet
- H. Backhaul Specifications (if applicable)
- I. Power Specifications
- J. Telecommunications Specifications
- K. Streetlight Control & Management System Specification Response Form
- L. LED Luminaire Specifications
- M. Local and Small Business Enterprise Preference

### Post Award Attachments

- 1. TBD
- 2. TBD
- 3. TBD
- 4. TBD
- 5. TBD
- 6. PG&E Report Requirements (shall be completed with the installation of the control system)
- 7. Insurance Requirements (Certificate(s) of Insurance)
  - a. Installation partner certificates
- 8. TBD
- N. Public Agency Participation Form

## Executive Summary

---

The STSC Enterprise Solutions, Inc. (STSC-ES), is a company located in Duluth, Georgia, in the metro Atlanta area. Established in 2008 as a subsidiary of STSC, Inc., founded in 2001, its focus is renewable energy solutions that include solar and wind powered electrical generation and LED lighting technology. STSC-ES has assembled a team of experts in the areas of LED light fixture manufacturing, wireless remote control systems, streetlight and signal infrastructure installation, and alternative energy project management and financing to bring about a total success of the project.

STSC-ES has won contracts with the U.S. Navy, TBRE, NDI, Southeastern Louisiana University, and City of Covington, GA, in the last few months alone.

STSC-ES consortium lighting manufacturers have sold over a million LED street lighting fixtures throughout the world. Here is a snapshot of what one of these companies has done past three years: 28,600 lights in Los Angeles for \$5.5M; 16,500 lights in Sydney, Australia for \$2.4M; 63,400 lights in Dongguan, China for \$14.9M; 7,640 lights in Incheon, Korea for \$2.6M; 13,700 lights in Bucheon, Korea for \$4.8M; 67,880 lights in New Delhi, India for \$7.7M; and 46,800 lights in Guangzhou, China for \$11.0M, for a total of 244,520 lights and \$48.8M.

Our wireless control system partner brings its expertise to the table by providing its world's No. 1 Central Management System (CMS) for outdoor lighting, covering one million lighting fixtures in 8 countries around the globe. Its telecells screw onto ANSI C136.41 dimming receptacle and provide discreet, flexible, accurate, and resilient performance with or without the network, while its base stations range over 6 miles and control up to 5,000 telecells each. All these field components are eventually managed by its cloud-hosted CMS that can easily integrate with any existing system and be made scalable to support 63,000 streetlights. Its active dimming control can realize additional cost savings at least 17%, even with a modest dimming program. By combining a sophisticated and accurate light meter on each base station, supported by programs that can vary switching times very precisely, its trimming control can realize additional savings of around 4% of peak priced energy.

Our installation partner is a subsidiary of one of the largest infrastructure contractors in the country. Its depth and breadth in lighting installation throughout the country will bear upon the success of the San Jose project. It is one of the leading street light maintenance and construction contractors in the U.S. It provides street light maintenance, construction, and emergency response services in 14 states. It is also at the forefront in the LED and Control conversion initiative with projects of 550,000 LED change-outs in three states, 75,000 LED change-outs, and 675,000 smart photocell retrofits elsewhere. It shall maintain operations facility of a sufficient size in the City to support this project. Crews shall utilize Apple/Samsung tablets to operate work order management software that will interface with the City's system, while the Project Management team will be responsible for the installation, operations, and maintenance of the City's lighting grid components and LED upgrade.

In addition, one of the STSC-ES consortium partners is the third largest LED lighting manufacturer in China, which brings the smart pole technology to the table, called “Intelligent Street Lamp.” These poles are smart and flexible enough to house any different combination of services that the City may desire including, but not limited to, temperature and atmospheric measurements, noise and motion detection, Wi-Fi service, emergency assistance, EV charge station, and advertisement platforms. Also, these functions can be adapted onto existing light and utility poles. These smart poles and their associated technology will be the platform for additional revenue generation including that from telecommunications lease.

STSC-ES partner, AVIC Energy, an international alternative energy technology company can provide financing and expertise from energy efficiency service team that are composed of experts in the areas of lighting, HVAC, power distribution, and automation. It is not only committed to providing the financing necessary to bring the project to its successful conclusion but also providing engineering and maintenance expertise as required. AVIC has already accomplished dozens of projects in several industries around the world, providing customers with quality energy efficiency services that brought about social, economic, and environmental benefits as a result. Any of its established methods as shown below or any other alternate method that the City of San Jose and STSC-ES consortium may come to agree upon can serve as the basis for not only financing, but also executing and managing the entire project:

<p>We can provide lots of cooperation model, let the energy-consumption enterprises effectively reduce the energy consumption fees, reform the energy-consuming equipment, acquiring long-term environmental benefits without any capital or technical risks.</p>	<p><b>Guaranteed Savings Model</b> When the project accomplished, all the relevant index of the project will be checked by fair methods, energy consumption enterprises will pay for the whole project payment once under the condition that all the energy efficiency object were fulfilled.</p>
	<p><b>Energy Sharing Model</b> Energy consumption enterprises needn't spend any money. After the projects are completed, the two parts verify the energy saving by fair methods, share the energy savings according to contract agreements.</p>
	<p><b>Energy Hosting Model</b> Energy consumption enterprises needn't spend any money. After the projects are completed, AVIC Energy is responsible for the operation and management of the projects and share the energy savings during the Contract period. After the termination of the contract, the projects are handed over to customers.</p>

Using the City’s own valuation of the project at \$32,000,000 for 40,000 lights or \$800 per light is reasonable to include an LED upgrade and wireless remote control installation. To be more precise, for 39,285 lights, the initial investment comes out to be \$31,428,000. Now with a very attainable goal of 60% energy savings and 13.14% reduction in the maintenance costs (based on the best lifespan of LPS and HPS at 20,000 hours vs. 50,000 hours minimum for LED lighting fixtures, and \$800 unit replacement costs), that initial investment can be recouped within a little

more than 6.5 years. With additional energy savings realized from dimming and other refinements in light controls along the required 10-year warrant, the period of 100% ROI is going to be even shorter. During this period, additional stream of revenue through additional services that these networks of street lights host will make this project not only financially feasible but profitable.

In conclusion, STSC-ES and its consortium partners have the technological know-how, financial wherewithal, and management skills to be responsive to the city staff and project's needs in its entirety in all four zones.



# Project Team

## Management Plan

The STSC Project Team is composed of leading LED lighting manufacturing and world’s most experienced wireless control company and the nation’s best urban lighting and signalization infrastructure installer.

The STSC Enterprise Solutions, Inc. (STSC-ES), is a company located in Duluth, Georgia, in the metro Atlanta area. Established in 2008 as a subsidiary of STSC founded in 2001, its focus is renewable energy solutions that include solar and wind powered electrical generation and LED lighting technology. STSC-ES has partnered with a team of experts in areas of LED lighting fixture manufacturing, wireless remote dimming control systems, streetlight and signal infrastructure installation, and project financing to bring about a total success of the project.

Your main point of contract for this project is: Justin Park, Vice President. He can be contacted at (770) 545-8803 office or (404) 944-9614 direct and emailed at [jpark@stscHQ.com](mailto:jpark@stscHQ.com). He is an electrical engineer and registered architect in Georgia and will coordinate the consortium’s activities and interface with the City. With Justin Park at the helm of the project as the project manager, all major technical and schedule issues are addressed and resolved.

## High Level Project Plan with Timeline

Our high level project plan with timeline includes post-implementation survey and evaluation to ensure not only that the City’s needs are met but also that the residents find the LED conversion beneficial to their communities and overall quality of life. The plan is to complete the entire process within three years from the notice to proceed for the LED conversion scope of the project. In reality, this will be an iterative process for each initiative.



Figure 1: High Level Project Plan with Timeline

## Key Personnel Assignments/Responsibilities

Our key personnel assignments and responsibilities are appropriately structured to deliver the maximum benefit and efficiency for the project.

## Organizational Chart with Reporting Structure

Headed by Dr. Rick I. Yi who has served in the U.S. Army for over 22 years including 4 years serving President Bill Clinton in the White House and spent more than 15 years as a government contractor, STSC Enterprise Solutions is home to a group of experts with more than 200 years of

experience in various field. He continues to serve his country and community as a service-disabled veteran.

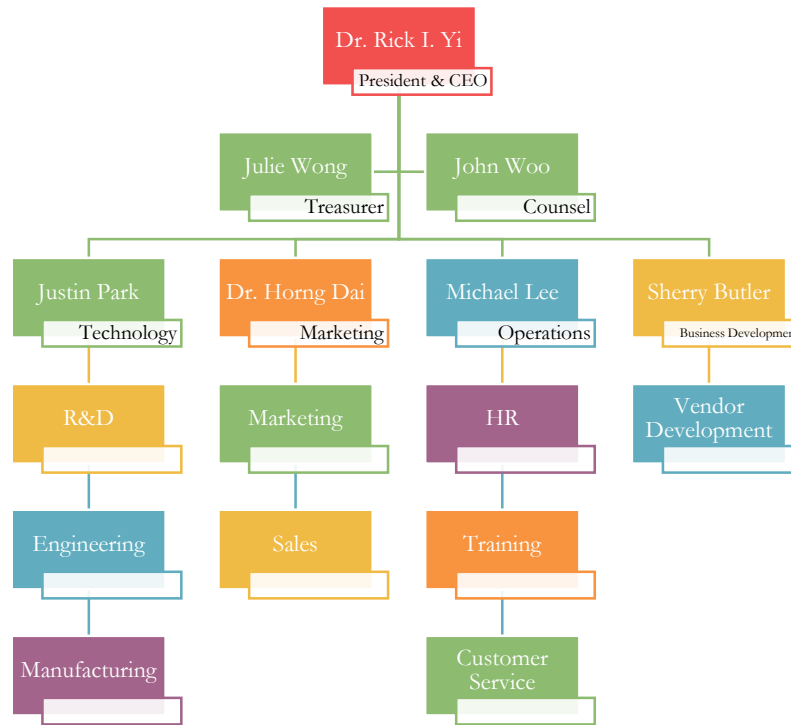


Figure 2: Project Management Team Organizational Chart

***Key Personnel with Job Titles and Project Manager***

The key personnel for this project includes Justin Park as the Project Manager and Michael Lee as the Operations Manager along with the entire organizational structure as the support team.

**One Page Resume for each Key Personnel**

These are found at the end of this proposal as an enclosure.

**Contractor or Installation Partner Documents**

***Key Personnel Assignments/Responsibilities***

The installation team is composed of experienced manager and work crews that will carry out the project safely and efficiently.

## Organizational Chart with Reporting Structure

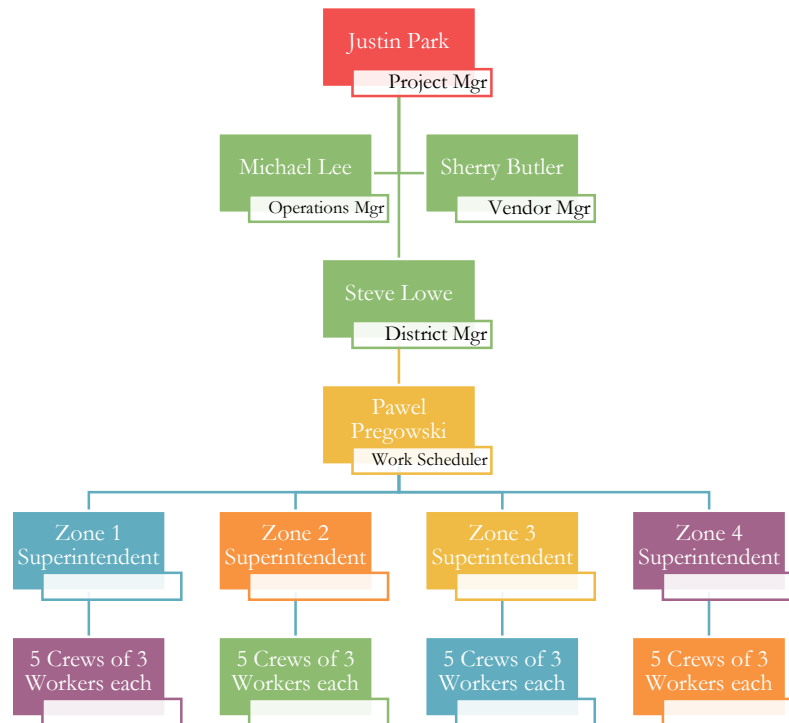


Figure 3: Installation Team Organizational Chart

### **Key Personnel with Job Titles and Project Manager**

Steve Lowe with American Lighting and Signalization (ALS) is the key personnel for installation. He will oversee a 12 to 14-month long process of LED conversion, which may stretch to 24 months if additional scopes of Smart City initiatives are included in the work scope.

### **One-page Resume for Each Key Personnel**

These are found at the end of this proposal as an enclosure.

### **Streetlight Design and Engineering Documents**

Our conglomerate of several LED manufacturers will aid the team with experienced engineers at every level. If required, the team will also hire a local professional electrical engineer with a California license to certify any on-site design requirements as necessary.

### **Key Personnel Assignments/Responsibilities**

Each product line is represented by the leading manufacturing and engineering team for that specific product line in the industry.

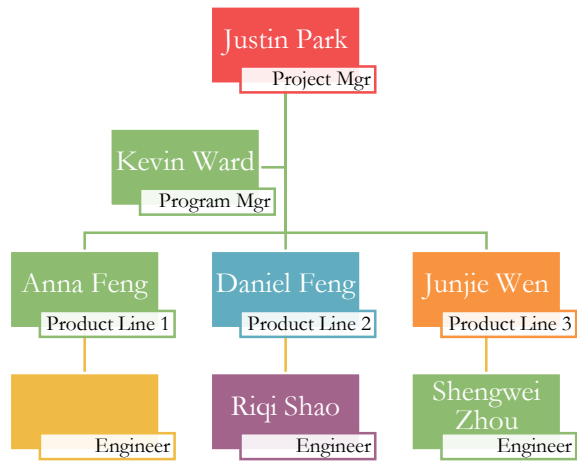


Figure 4: Products Organizational Chart

***One-page Resume for Each Key Personnel***

These are found at the end of this proposal as an enclosure.

# Proposal Specifics

The required Proposer Certification Form (Attachment D) and Environmentally Preferred Procurement Program (EP3) Information Sheet (Attachment G) are found at the end of this proposal.

We propose to replace the lights in any or all of the four zones with cutting edge LED light fixtures and lamps, while providing a network of wireless dimming control management system that is compatible with the existing Owllet system.

## Products

### Light Fixtures

STSC-ES affiliate lighting manufacturers have sold over a million LED lights throughout the world. Here is a snapshot of the past project history on streetlight fixtures from one of these companies:

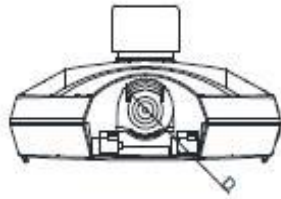
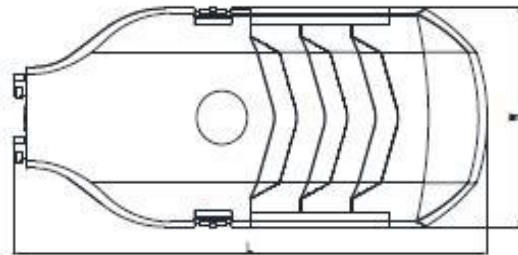
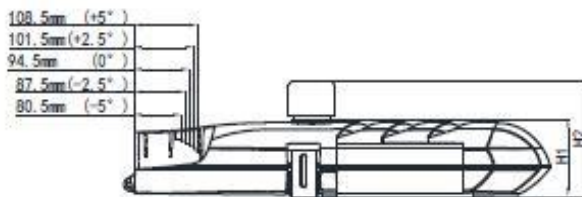
Sample Past Performances	Light Count	Wattage Types	Project Value (US\$)
Los Angeles, USA	28,600	60W, 90W, 120W, 150W, 180W, 400W	\$5,535,484
Sydney, Australia	16,500	60W, 90W, 120W, 180W	\$2,395,162
Dongguan, China	63,400	60W, 90W, 120W, 180W	\$14,865,397
Incheon, S. Korea	7,640	45W, 120, 150W	\$ 2,609,400
Bucheon, S. Korea	13,700	45W, 60W, 90W, 150W	\$ 4,807,150
New Delhi, India	67,880	60W, 120W, 150W	\$7,663,871
Guangzhou, China	46,800	80W, 120W, 150W, 200W, 400W	\$10,979,444
<b>TOTAL</b>	<b>244,520</b>		<b>\$48,855,908</b>

Figure 5: LED Streetlight Project Reference

While we are offering a limited selection at the time of the Phase II response, our plan is to expand that selection during the final negotiating stage to include more advanced fixtures featuring the most current innovations in LED lighting technology as the technology is rapidly changing to better match the conditions throughout the City. No matter what, the light fixtures that we will offer in the end will feature tool-less entry and modular replacement to keep the maintenance costs low.

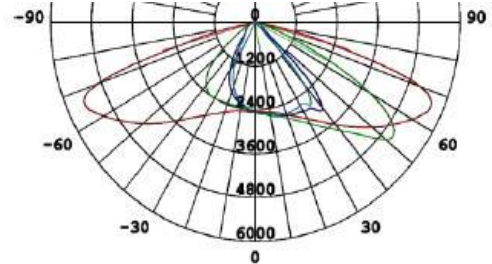
The samples we are offering at the time of the Phase II response are selected to represent five (5) distinctly different situations that are encountered throughout the city and in no way exhaustive of our capabilities: they are fixtures for major roadways, local streets, and decorative neighborhood and a corn lamp and tunnel retrofit kit as follows:

## T20A Series Cobra Head Lighting Fixture (Roadway Luminaires Application)

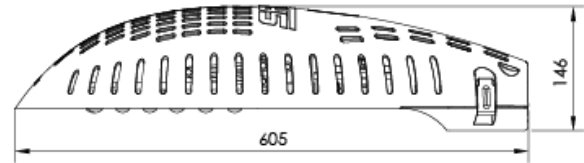
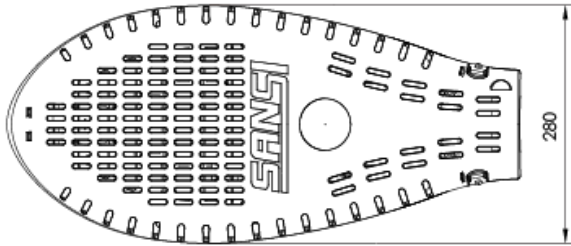


	-1	-2	-3	-4	-5
L	670mm (26.38")	670mm (26.38")	750mm (29.53")	830mm (32.68")	910mm (35.83")
W	325mm (12.80")				
H1	120mm (4.72")				
H2	180mm (7.09")				
D	φ 55-φ 65mm (2.17"-2.56")				

<p><b>Air Convection Effect</b></p>	<p><b>Whole-structure Heat Dissipation</b></p>
<p><b>Double-coupling IP68 Protection</b></p>	<p><b>Tool-less Maintenance</b></p>
<p><b>High-efficacy LED Light Source</b></p>	<p><b>Flexible Combinations of Modules</b></p>



## C0830 Series Cobra Head Lighting Fixture (Local Street Luminaires Application)



### Optical Info

System Efficacy: 105 lm/w

Color Index: Ra ≥ 70

Color temperature: 4000K / 5000 K

### Electrical Info

Power Input: 120-277 VAC (480V optional)

Power factor: ≥ 0.95.

Start time: <1 second continuous

Surge Protection: 10KV

### Mechanical Info

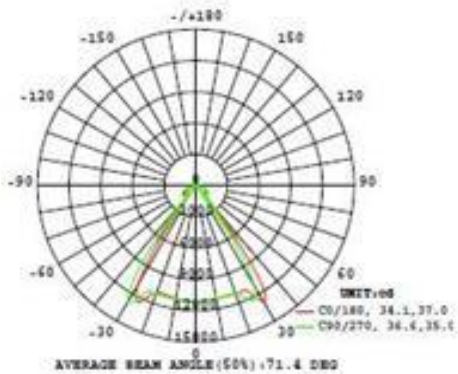
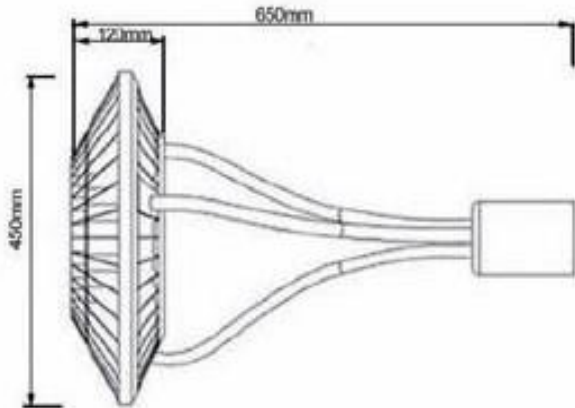
Ingression Protection: IP66

Enclosure color: White/Bronze/Gray/Silver

Rated Lifetime: 50,000 hrs

Model	Power Wattage	CCT 5000K		CCT 4000K		CRI	Dimensions	Net Weight
		Luminous Flux	System Efficacy	Luminous Flux	System Efficacy			
	W	lm	lm/w	lm	lm/w		mm	Kg
C0830-30W-SR	30	3150	105	3150	105	70	L605×W280×H146	4.7 kg
C0830-40W-SR	40	4200	105	4200	105	70	L605×W280×H146	4.7 kg
C0830-50W-SR	50	5250	105	5250	105	70	L605×W280×H146	4.8 kg
C0830-60W-SR	60	6300	105	6300	105	70	L605×W280×H146	4.9 kg
C0830-70W-SR	70	7350	105	7350	105	70	L605×W280×H146	5.0 kg

V-AL02 Decorative Lighting Fixture (Neighborhood Luminaire Application):





## C0820 Series Vertical “Corn” Lamps (Decorative Luminaires Retrofit Application)



### Features

- High brightness maintenance rate at long life operation
- Patented “Independent Pixel Heat Sink”™ and unrivalled heat dissipation efficiency
- Customizable lens distribution & color temperature
- Lightweight aluminum housing
- Electro-statically applied polyester powder coat finish

### Optical Performance

CCT: 4000K/5000K (2700K/3000K optional)  
 Lens: N61  
 Luminous Efficacy : 115 lm/w

### Electrical Specifications

Power Options : 40 W  
 Power Input : 120-277 VAC  
 Frequency : 50/60Hz  
 Power Factor : ≥ 0.95  
 Power efficiency: ≥ 88%  
 Base : E39

### LED Performance Specifications

Model	LEDs	Rated Power (W)	Color Temperature 5000K			Color Temperature 4000K			Mounting Base
			Flux Output (lm)	Flux Efficiency (lm/W)	CRI	Flux Output (lm)	Flux Efficiency (lm/W)	CRI	
C0820-PT-40W	24	40	4600	115	65	4600	115	65	E39

## C21LP Series Retrofit Kit (Tunnels and Other Application)

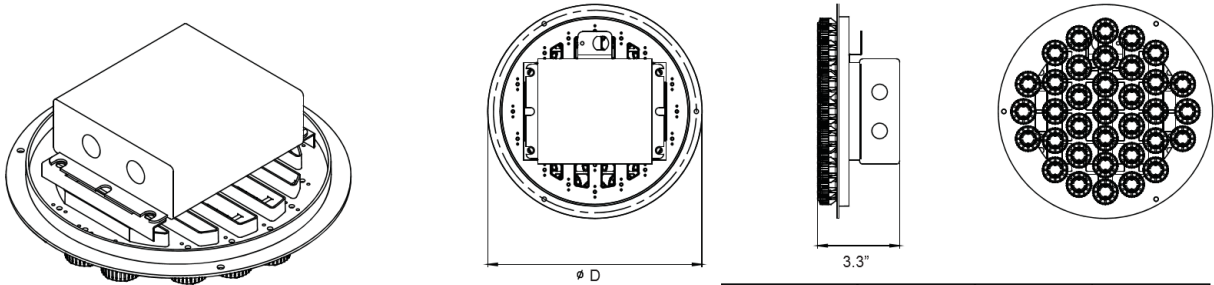


### Optical Performance

- Color temperature: 3000K/4000K/5000K
- Multiple beam patterns available

### Electrical Specifications

- Power input: 90-305 VAC 50/60Hz
- Power factor:  $\geq 95\%$
- THD  $< 15\%$  at full load
- Dimming control (optional)
- 347 VAC (optional)



Note: Plate dimension & LED number varies in accordance to fixture power.

LEDs	<35 pc	36 - 60 pc	61 - 90 pc
D (Diameter )	8.7"	12.2"	13.5"

Model	Rated Wattage	Color Temperature 5000K			Color Temperature 4000K		
		flux output	Flux Efficiency	CRI	flux output	Flux Efficiency	CRI
C21LP-XXW- XXK	20	2400	120	65	2400	120	65
	30	3600	120	65	3600	120	65
	40	4800	120	65	4800	120	65
	45	5400	120	65	5400	120	65
	50	6000	120	65	6000	120	65
	60	7200	120	65	7200	120	65
	70	8400	120	65	8400	120	65
	80	9600	120	65	9600	120	65
	90	10800	120	65	10800	120	65
	100	12000	120	65	12000	120	65
	120	14400	120	65	14400	120	65
	130	15600	120	65	15600	120	65
	150	18000	120	65	18000	120	65

We have a warehouse in Ontario, CA, as the central distribution center for the goods received from abroad. In the City, staging facilities will be established in several convenient locations, if desired, to serve all the zones efficiently and effectively.

### Easy-tool Maintenance



### Wireless Dimming Control Management System

Telensa brings its expertise to the table by providing its world's No. 1 Central Management System (CMS) for outdoor lighting, covering one million lighting fixtures around the globe.

**WORLD #1 IN WIRELESS OUTDOOR LIGHTING CONTROL**

- 1 million telecells in 8 countries
- Wide-area wireless: range up to 6 miles
- Major city coverage in 2 days
- Works with all leading manufacturers

**Telecell**

- **Discreet** – size of a regular photocell; no visible antenna
- **Flexible** – NEMA, internal & decorative; all variants fixture independent
- **Accurate** – Utility-grade metering and GPS
- **Resilient** – works without network

**Base station**

- **Long range radio** – up to 6 miles
- **Compact** – laptop-sized case
- **Fast and easy** deployment
- **Capacity 5,000** telecells
- **Low-cost** internet connection

**Central system**

- Cloud-hosted secure system
- Complete control & map view
- Scales to millions of telecells
- Integrates to other systems

Telensa's active dimming control can realize additional cost savings at least 17%, even with a modest dimming program. By combining a sophisticated and accurate light meter on each base

station, the program can vary switching times very precisely, Telensa's trimming control realize savings of around 4% of peak priced energy.

While the challenge remains concerning integration of the existing Owlet system, we are confident that our technological capability will find the best solution to overcome such challenges. Here is a short discussion on the integration challenge:

Q1. Is the system Telensa provides "compatible" with Owlet?

A1. Yes, Telensa system is "compatible" in the sense that both can co-exist in the same place without impacting on each other.

Q2. If so, please provide further technical exposition.

A2. I don't know of any interchangeable products, so the only way for the city to have any way to operate with 2 systems completely thru one user interface is if Owlet make at least part of their system TALQ-Compliant (or compliant with some other 3<sup>rd</sup> party software that also works with other vendors). If they do not, then the city is stuck with staying with Owlet or taking it out.

If Owlet make both their CMS and OLN TALQ-compliant the city will have the option to

- a) Use the Owlet CMS with the Owlet OLN and another TALQ compliant OLN (e.g. Telensa)
- b) Use another TALQ compliant CMS with the Owlet OLN and another TALQ compliant OLN (e.g. Telensa)

If Owlet make their CMS TALQ-compliant the city will have the option to: Add other TALQ-compliant OLN (e.g. Telensa) and use this thru the Owlet CMS

If Owlet make their OLN TALQ-compliant the city will have the option to: Buy a TALQ-compliant CMS (e.g. Telensa) and add another TALQ-compliant OLN (e.g. Telensa)

Our position is that our OLN will be TALQ-complaint in the 4<sup>th</sup> quarter this year, but our TALQ CMS will not be available until Q1 2017, so San Jose could use our gateways and nodes with our CMS or a TALQ-compliant CMS (but none are available yet) and add our TALQ CMS later (and integrate Owlet gateways and nodes if they make them TALQ-compliant).

There might be a middle position we can suggest without the need for Owlet to be TALQ-compatible, as follows, but we'd need to know more about the Schreder system and what interface capability they have:

This middle position would be to buy a Telensa system to:

- A. Provide complete wireless coverage across the entire San Jose area (easily and cheaply achieved with our base-station)
- B. Create a simple interface between the Owlet CMS and Telensa CMS so that the mainly used functionality of asset display, alerts, data monitoring and real-time actions

(override) can be done thru the Telensa CMS. We have done this with another CMS already, and routinely interface with asset management and billing systems so know how to do this (but it completely depends on how Schreder works and their willingness to collaborate – so might be simpler to take Schreder out)

- C. Add Telensa nodes within the existing Owlet areas and replace problem Owlet nodes with Telensa nodes without the need to add more gateways or replace the whole owlet area (big advantage over other mesh systems, that we need extra gateway and replace larger areas at same time)

Essentially this avoids:

- A. The requirement for Owlet to become TALQ-compliant
- B. The need to buy now an (expensive) 3<sup>rd</sup> party TALQ-compliant CMS
- C. The need to take out the owlet system now

Provides the flexibility to:

- A. Phase out Owlet as desired
- B. Add other TALQ-compatible components as they become available

But, we'd need more info to understand what's involved, and might not be viable or worthwhile.

Q3. If not, can the Telensa system be priced competitively enough to be proposed to replace the entire system? If this is not a solution, what else can you suggest?

A3. See above for suggested approach. I have provided pricing for 40,000 lights and for 63,000 lights based on a conservative assumption of 2000 lights per base-station. The 63k unit price is to illustrate the final total pricing if they go for total replacement. We would supply the first 40K units at the 40K price and then the replacement 23k units at a specially discounted price to help them do this (roughly \$60 per telecell). This would give them the flexibility to explore integration options mentioned above before deciding or when owlet units fail or give problems. IF Owlet nodes are \$120 each – could be – then our price for 63K units would be cheaper than 40k Owlet.

Q4. In line with the Smart Cities Initiative, what else can Telensa provide or suggest that we could offer to the City in conjunction with our LED lighting and your wireless monitoring system? What services have you seen across the globe that more and more city would like to have?

A4. The only things that are currently available are:

- A. Traffic monitoring and using that to influence dimming
- B. Some basic environmental monitoring
- C. Smart street parking solution

#### D. Sending outputs to signs and sirens

BUT, our parking solution (that is already working in Russia and China) is not ready for deployment in US yet and our traffic and environmental monitoring deployments will be completely revised in Q3 / Q4 when we launch a whole raft of smart city apps that will connect a wide range of generally available sensors via our “Sensor Hub” telecell. There is also the option for the city to host and own the network to add whatever apps they want.



Figure 6: Telensa Smart City IoT Possibilities

## Installation

Our installation partner is American Lighting & Signalization (ALS), a subsidiary of Asplundh, Inc. Its depth and breadth in lighting installation throughout the country will bear upon the success of the Chicago project. It is one of the leading street light maintenance and construction contractors in the U.S. ALS provides street light maintenance, construction, and emergency response services in 14 states.

ALS is also at the forefront in the LED and Control conversion initiative with projects of 550,000 LED change-outs in three states, 75,000 LED change-outs, and 675,000 smart photocell retrofits.

ALS shall maintain operations facility of a sufficient size in San Jose to support this project. Crews shall utilize Apple/Samsung tablets to operate work order management software that will interface with the City's system, while the Project Management team will be responsible for the installation, operations, and maintenance of the lighting grid components and LED upgrade. Its presence in the City with locally hired employees will add to the local economy.

Finally, the legacy system will have dedicated crews to assess the current system's condition and upgrade as necessary to modernize the system with current technology and LED fixtures.

**ALS PERFORMS A WIDE VARIETY OF LIGHTING AND TRAFFIC SERVICES**

**TRAFFIC SERVICES**

- Design-Build Projects
- Traffic Signal Construction and Maintenance
- Intelligent Transportation Systems (ITS)
- Arterial Dynamic Message Signs (ADMS)
- Traffic Incident Management Systems (TIMS)
- Wireless Communication and Fiber Optic Systems
- Overhead Sign Structures, Ground Mount Signs and Guardrail
- Pedestrian Walkways and ADA Ramps

**LIGHTING SERVICES**

- Roadway Lighting Construction and Maintenance
- Luminaire Conversions – HID / LED / EE
- Fault Locating / Repair of Underground and Aerial Services
- Street Light Inspection, Voltage Testing and Pole Painting
- Storm Restoration
- System Identification and Mapping
- High Mast, Bridge, Under-Deck and Shoulder Lighting
- Upgrade / Retrofit / Pole Replacement Projects
- Airport and Navigational

**TRAFFIC SERVICES**

- Design-Build Projects
- Traffic Signal Construction and Maintenance
- Intelligent Transportation Systems (ITS)
- Arterial Dynamic Message Signs (ADMS)
- Traffic Incident Management Systems (TIMS)
- Wireless Communication and Fiber Optic Systems
- Overhead Sign Structures, Ground Mount Signs and Guardrail
- Pedestrian Walkways and ADA Ramps

Disposal will be handled expertly per the EPA and other regulatory requirements.

Warranty is for ten (10) years on the parts and (1) year for the installation.

### **Implementation Plan**

While accomplishing the conversion of the existing HPS and MH streetlight and decorative light fixtures into energy-efficient, networked LED lighting, we will also implement any or all of the following services to make the entire project profitable and thus viable. These proposed services constitute part of what is called “Smart Cities” Initiative that, through technology and innovation, will help local communities address key challenges such as traffic congestion, crime, and economic development, while ameliorating the effects of climate change and improving the delivery of city services. Pending final negotiations, the City will have the option of electing place-based solutions that are most appropriate for each zone or for the whole City

We propose to run a tight but flexible ship of five (5) crews of three (3) men each in each of the four (4) zones. This is based on an average of one-hour replacement and/or modification with traffic control per each light fixture location, resulting in 12 to 14 month implementation of the LED conversion scope. Since the total number of light fixtures in each zone varies from 7,135 to 11,090, the crews will be assigned their main zones of responsibility but flexible to aid slow and/or larger zones to achieve an overall balanced implementation throughout the zones.

### **Telecommunications Services**

City Council Policy 6-20 and 7-10 govern telecommunications services. The City owns over 1,000 properties and 63,000 light poles, which are ideal for telecommunication service providers to locate their equipment. With its City Council approved standardized lease agreement, it is a cinch to host such telecommunications services on the streetlight poles throughout the City.

This proposal reserves the right to access the City-owned properties for future installation of telecommunications services for profit.

### **On-street Parking Management System**

The City currently has about 2,600 on-street parking spaces, half in the downtown area, and the other half scattered around at key locations such as the HP Arena, Japantown, San Jose State University, and the civic center areas<sup>1</sup>. While the parking meters help turn over the spaces by limiting time and levying fines on violators, finding the space and having the right change to use the meter has increasingly become anachronistic. The process adds to the air pollution and creates traffic jam, unnecessarily. This response proposes to use part of the investment to bring in an already established parking management system such as Pango™ to allow the City residents

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<sup>1</sup> <https://www.sanjoseca.gov/index.aspx?nid=1871>



and visitors to find and pay for parking on their smart phones. This scope of initiative indirectly support of the City Council Policy on Greenhouse Gas Reduction.



Figure 7: Typical Parking Meters around the City

## Solar and Wind Generated Power



Figure 8: Installation of solar and wind power generation station on a pole in various city locations – residential, civic center, and commercial area (from left to right)

Another core strength of STSC is the alternative energy, solar and wind generated power, in particular. This kind of system along with energy storage system can be installed along the street or on roof tops and the electricity can be sold back to the grid for profit.



These high-strength and light-weight aluminum alloy units are not only safe to use but aesthetically pleasing to complement the street scape and skyline of a modern city like San Jose. The rotation of the blades is not subject to any particular direction of the wind, providing almost constant energy generation, while maintaining ultimate silence.

## Banner and Advertisement



*Figure 9: A Smart Light Pole with LED “Banner”*

Title 23 of the SJ Municipal Code governs the regulations related to signs. 63,000 street light poles provide an excellent opportunity to create City-wide communication with its residents and visitors. Physical banners and signs can be hung from the poles for the purpose of public announcements and commercial advertising but also electronic means of displaying these messages would provide a flexible and low-cost management of the contents that many advertising companies show interest in long-term lease of the City’s street light poles.

One example of such electronic means is an LED display as shown to the left. It comes as part of a new integral smart light pole or as a retrofit unit to be installed on an existing light pole. This proposal reserves the right to get into a final negotiation with the City in order to attract potential advertising company to manage and create revenue through these displays.

## Cameras

While the City Memorandum titled “Use of Privately Owned Surveillance Cameras” provides the City residents and business owners the option of registering their surveillance equipment with the City for potential use by the Police Department, the City does not appear to own or operate its own cameras for traffic control and crime prevention.

The ubiquitous nature of the streetlights throughout the City makes them ideal installation points for such cameras; thus this proposal reserves the right to install not only cameras but also other IOT devices including, but not limited to, microphones for noise detection and sensors for air quality detection, that will help enhance administration of the City and subsequently the quality of life by the residents of and visitors to the City alike.

## Electrical Car Charging Stations

According to the information on the City’s website, San Jose has participated in several grants to purchase electric vehicles (EV) and install charging infrastructure. The City currently has 53 EV charging stations in operation, but only 3 are installed by “on street” parking spaces while the rest are installed in public parking garages or surface lots in the downtown area. (See Picture 1 Below)



Figure 11: "On-street" Charging Station on E. Santa Clara St. between 4th and 5th

shown in Picture 2 as the light poles provide ready-made infrastructure for easy installation. Again, instead of starting from scratch, the operation can be easily managed by such an established outfit like ChargePoint as the bidder group becomes an Authorized Reseller. Since the existing charging stations are being operated at cost to cover electricity, maintenance, and ChargePoint network subscription, an augmented rate structure and even more robust EV market will need to be established for this operation to be profitable. Therefore, this scope of service is reserved for a future launching in the next 5 to 7 years when the economic environment becomes more favorable. Nonetheless, this scope of initiative is in direct support of the City Council Policy on Greenhouse Gas Reduction in its Category 3 strategy.



Figure 10: ChargePoint Pole-mounted Charging Station Model CT2002

## Naming Rights



Figure 12: An Example of Naming Rights in Practice – SAP Center, San Jose

The City Council Policy No. 7-5 titled "Naming of City-owned Land and Facilities" provides guidelines in naming City properties, other than City streets, to reflect the City's ethnic and cultural diversity as well as the distinct geographical and environmental features of such locations. The same policy recognizes the opportunity to attract potential contributors and sponsors by allowing the naming of the City properties including the City Parklands to create significant funding for the City. The long-term use of the City parklands is covered by City Council Policy No. 7-8.

<sup>2</sup> <http://www.chargepoint.com/businesses/cities/>

STSC Enterprise Solutions has several potential individual and corporate donors who might be interested in obtaining naming rights to some of the City-owned lands and facilities. This proposal reserves the right to negotiate with the City on the terms and conditions to create a more inductive circumstances for potential donors to invest with the City.

### The Smart City Initiative

All these individual functionalities come under the larger concept called the Smart City Initiative, which is an unstoppable trend in cities around the globe to integrate IT technology to create services for the City denizens. Below is a diagram of a vision where all these Internet of Things (IOT) devices are installed on a single smart lighting pole.

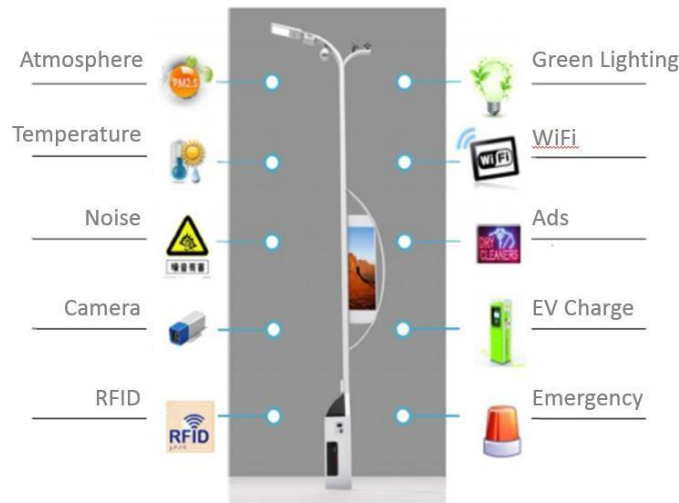


Figure 13: Integral Smart Lighting Pole Featuring IOT Technologies

Our smart light pole partner Shanghai Sansi held a press conference at the Frankfurt international lighting exhibition called Light+Building on March 14 this year to introduce the charging station version of its smart light pole with BMW. It is introducing its latest ground-braking-innovation in the new “Intelligent-IOT-Street-Lighting-Solution,” which is the integration of LED lighting with energy-saving-function, video-security-monitoring, environmental air quality measurement, WiFi base station with LTE/5G coverage, RFID communications system, and integrated EV charging solution. This latest and most advanced technology can be part of the San Jose project.



Figure 14: Shanghai Sansi Exhibition at 2016 Frankfurt Light+Building

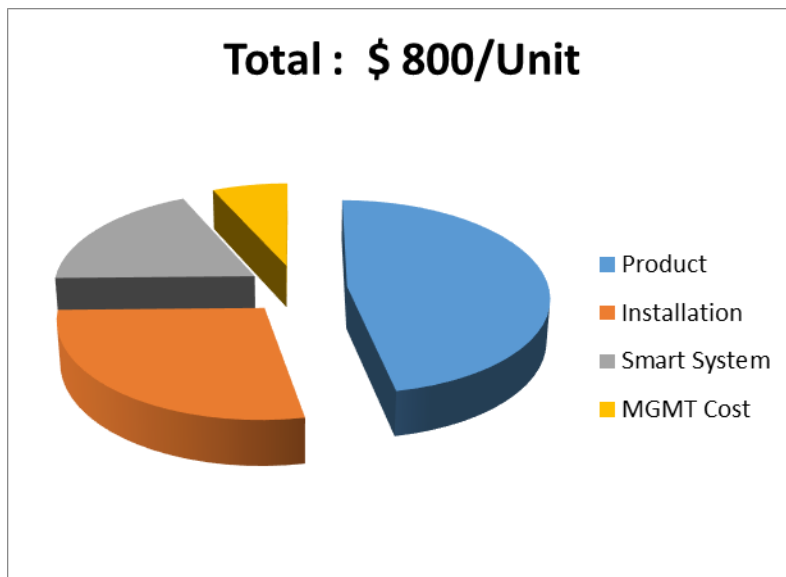
# Cost Proposal

## 1. Proposed Costs

Area	Cost/Fixture	QTY/Fixture	Total
Central	\$800.00	11,090	\$8,872,000
North – East	\$800.00	10,780	\$8,624,000
South	\$800.00	10,280	\$8,224,000
West	\$800.00	7,135	\$5,708,000
	<b>Project Total</b>	<b>39,285</b>	<b>\$31,428,000.00</b>

Source: City of San Jose

### A. Product & Installation



<b>Per Unit Price Structure</b>	
Product	\$ 380
Installation	\$ 225
Smart System	\$ 150
MGMT Cost	\$ 55

- Products & price are subject to change due to rapid technology advancement in the industry.

## B. Cost: Smart (Controller) System

Item	Description	Qty	Part #	Unit Price	Total Price (Telensa Hosted)
<b>Initial Cost</b>					
1	US NEMA Telecell2, black, with dimming (incl. GPS)	40,000	T2A1N-B-3	\$80	\$3,200,000
2	Gateway ("Base-station"), includes PC, light meter, single pole-top box (excludes disconnect), radio, antenna standard mounting bracket, & 10-yr warranty	20	BS-E-LM	\$6,500	\$130,000
3	Detailed network and system plan	1	-----	\$9,500	\$9,500
4	Standard server Set-up (Central system) at Telensa or on customer server meeting Telensa spec.	1	TCS-STD	\$2,500	\$2,500
5	Central System Software License	1	-----	\$11,500	\$11,500
6	Extended 10 Year Warranty on telecell (yrs 6-10)	40,000	5%	\$160,000	\$160,000
7	Commissioning Support including inventory upload	2	-----	\$1,800	\$3,600
8	Training for installers, operators and users (based on \$1,500/Day)	2	-----	\$1,500	\$3,000
9	Other expenses to support installation, planning, & commissioning and integration to other systems as needed (daily rate)	0	-----	\$1,500	-
<b>Total Initial Price :</b>					<b>\$3,520,100</b>

<b>Annual Costs</b>					
10	Telensa Annual Hosting, Support & Updates Fee	40,000	-----	\$1.00	\$40,000
11	User Annual Hosting, Support & Updates Fee	40,000	-----	\$0.70	-
12	Annual Support Fee: Telephone, software, mtc., etc.	Incl. above	-----	-	-
13	Modem Connection Fee per year	20	AT&T or T-Mobile	\$20.00	Included
14	Expenses, Other	0	-----	-	-
<b>Total Annual Fee:</b>					<b>\$40,000</b>

## 2. Proposed Revenue

### A. On-street Parking

#### 1) Parking

City of San Jose	Zone	Meter	\$2.00/hr.	Annual revenue/meter
	Downtown Core	1,122	\$2,415,000	\$2,152.40

(Source: City of San Jose/memorandum  
07/30/2013)

STSC-ES (Estimated)	Zone	Meter	\$2.00/hr.	Annual revenue/meter
	All Areas	2,600	\$5,596,240	\$2,152.40

#### 2) Violation

##### Assumptions:

- Operating Hours: 9 Hours (9am -6pm)
- Operating Days: 300 Days
- Sundays & City Holidays: 65 Days ( 52 Sundays & 13 City Holidays)
- Operating Parking meter: Approximately 2,600
- Violation Rate: 2% of all parking events per hour
- National Fine Average: \$35
- San Jose Fine Average: \$50

Parking Meter	2,600
Operating Hours/Day	9
Operating Days	300
Operating Hours/Year	7,020,000
Violation Rate	2%
Fine per Violation	\$50
Annual Total Fine (Est.)	\$ 7,020,000



## B. Telecommunications

ANNUAL PAYMENTS (number of sites)	SITE DESCRIPTION	STANDARD USE CHARGES (annual payment per site)
1-4	A	\$29,129
	B	\$34,956
	C	\$41,944
5-8 (20% reduction from annual payments)	A	\$23,303
	B	\$27,956
	C	\$33,555
9+ (30% reduction from annual payments)	A	\$20,391
	B	\$24,470
	C	\$29,361

First payment is due upon agreement execution. There is a minimum yearly increase of 4% or CPI, whichever is greater.

(Source: The City of San Jose)

- \*A 1-4 antennae and/or foundation/surface area containing equipment or cabinet is less than 150 square feet.
- \*B 5-8 antennae and/or foundation/surface area containing equipment or cabinet is 150 to 499 square feet.
- \*C 9 or more antennae and/or foundation/surface area containing equipment or cabinet is 500+ square feet, but not more than 16 antennas and 2,000 square feet.

The City of San Jose has 63,000 light poles in operation, which are ideal for telecommunications service providers to place their equipment. In accordance with City Council Policy 6-20, city facility can host antennas from multi companies.

**100 city properties (Buildings) x 3 companies x \$20,391.00 (the lowest) = \$ 6,117,300**

## C. Naming Rights

- 1) **Park, Recreation, and Neighborhood Center (2014 PRNS Catalog)**
  - Manages 42 Community and Neighborhood Centers
  - Manages 54 Facilities, of which 10 are community center hubs.
- 2) **City Owned Properties**
  - The City owns over 1,000 properties

The New Meadowlands Stadium, shared home of the New York Giants and New York Jets in East Rutherford, New Jersey, US., was expected to eclipse both deals, with experts estimating it would value \$25–30 million annually. It ultimately fell short of that benchmark, with MetLife Stadium earning \$17 million annually from its naming rights deal with MetLife. The place San Jose hockey fans call the Shark Tank has been recently renamed as the SAP Center. German based software company struck the deal with the City the similar deal as with HP, who paid 3.1 million dollars per year. The City owned properties are relatively smaller in size, yet marketable.

Property Type	QTY	Average Price/Year	Annual Revenue
Community and Neighborhood Center	42	\$ 15,000	\$ 630,000
Parks and Community Center Hub	54	\$ 20,000	\$ 1,080,000
Other City Owned Properties	1,000+	-	-
			\$ 1,710,000

### Traffic Tickets

Utilize sensors for traffic violation on the street light pole detecting speed violation and traffic light violation. In addition to the base fine the driver will be subject to additional fees that may include:

#### Average Traffic Ticket (Moving Violation): \$300.00

	Charge Category	Amount
	State Penalty Assessment	\$100.00
	County Penalty Assessment	\$70.00
	DNA Penalty Assessment	\$50.00
	Court Facility Construction Penalty Assessment	\$50.00
	20% Surcharge (allowed on all tickets)	\$20.00
	EMS Surcharge	\$8.00

(Source: [www.drivinglaw.org](http://www.drivinglaw.org))

The required Proposal Valuations and Cost Form with Designated Responsible Parties (Attachment C) is found at the end of this proposal.

## Telecommunications and Other Proposals Requiring Backhaul / Power

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We reserve the rights to implement telecommunications and other proposals requiring backhaul and power such as fiber optics installation and Wi-Fi network.

## Streetlight Installation Proposal

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We propose to run a tight but flexible ship of five (5) crews of three (3) men each in each of the four (4) zones. This is based on an average of one-hour replacement and/or modification with traffic control per each light fixture location, resulting in 12 to 14 month implementation of the LED conversion scope. Since the total number of light fixtures in each zone varies from 7,135 to 11,090, the crews will be assigned their main zones of responsibility but flexible to aid slow and/or larger zones to achieve an overall balanced implementation throughout the zones.

## Optional and Post Award Submittals

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We will comply with all the optional and mandatory post award submittals as required.

The required Local and Small Business Enterprise Preference (Attachment M) is found at the end of this proposal.

Post award submittals such as Insurance Requirements (Appendix 7, Certificate(s) of Insurance), PG&E Report Requirements (Appendix 6), Public Agency Participation Form (Attachment N), Performance/Payment Bond, 100% of final Proposal Valuation (as represented in Attachment C, Proposal Valuations and Cost Form with Designated Responsible Parties),

## Conclusion

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STSC-ES' strong alternative energy and technical expertise and academic diversity will allow the company to provide required LED lighting products, technical expertise, and hands-on customer service to accomplish the San Jose's improved lighting requirement. Positioned as a multi-disciplinary, alternative energy (LED), technical service, and research and development firm, STSC-ES is capable of providing LED products and flawless technical support to the City. Consequently, this wide range of operational and technical skills and qualified personnel will ensure that STSC-ES will be able to respond immediately to support the city's future objectives and alternative energy solutions and initiatives.

STSC-ES will shift into a responsible development of America's resources and the current, ever-growing demand for LED lighting products and services that incorporate cost-saving energy technologies. We can deliver all aspects of the renewable energy industry with clear benefits and inherent potential for multiple spin offs of the new nanotechnology applications. The financial rewards are made stronger by government incentives and tax benefits. Over the past several years, this market sector has become one of the most technologically advanced industries in the United States. STSC-ES will play a role as a new technology provider in the evolution of solar and wind energy generator by focusing on technologies in the research and development phase as well as the production sector and by so doing, create long-term highly skilled jobs for the local community.

