

# APPLICATION DESIGN

## Sewer Plant Coalinga, CA



**Project Number:** G4711  
**Date:** 6/1/2020  
**Written by:** Mike ZERMANI



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# The global leader in solar lighting

**SolarOne Solutions, Inc.** was founded in Massachusetts in 2004. Since then, SolarOne has been manufacturing product for Municipalities, State & Federal Government Agencies, Native American Tribes, and Commercial Developers across the country. SolarOne's solar street, parking lot, and pathway lighting is the most cost effective and resilient way to deploy infrastructure grade outdoor lighting.



## The **3** key benefits for your project

### - OFF-GRID

100% solar, not connected to the utility grid. No outages.  
**365 nights of light a year – guaranteed.**

### - POWERFUL

Powerful illumination, on a par with grid-connected systems.

### - COST-EFFICIENT

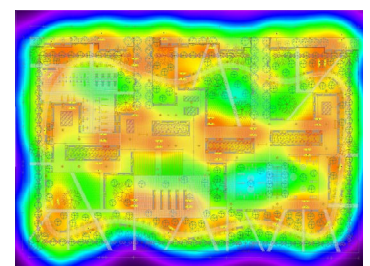
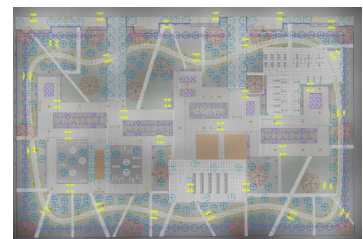
No maintenance for the first 10 years.  
Rapid installation. No operating costs.

## Feasibility of your solar lighting project

To guarantee powerful, cost-effective off-grid lighting, SolarOne operates its own **design office**.

We assess the feasibility of each project in four stages:

1. First, we define your **lighting requirements**.
2. Next, we analyze the last 10 years of **local weather data** to determine how much energy our PV panels will generate.
3. On this basis, we **calculate** what size and how many products we need to install.
4. Finally, our sales team draws up a **cost estimate**.



## 1 Project = 1 Study



1



### 10-Year Analysis of local weather data

We use the **PVsyst** software suite and **Meteonorm** historical time series irradiation data to calculate the real-world operating conditions — orientation and tilt angle of the panel, shadow, etc. — and external parameters, such as direct and diffuse irradiation, temperature and the solar calendar.

2



### Simulation of product(s) over a typical year

Our teams have developed a solar sizing software application, which we use to determine which products will best meet your needs. We then simulate how these products operate over a typical year, based on the average conditions for **the last decade**.

3



### Sizing the project to your needs

We use a set of key criteria to optimally specify your project:

- Average battery charge level over the year
- Minimum charge level
- Comparative analysis of energy generated by the panel vs. energy used by the system
- Worst-case scenario (lowest irradiation, longest night)

4

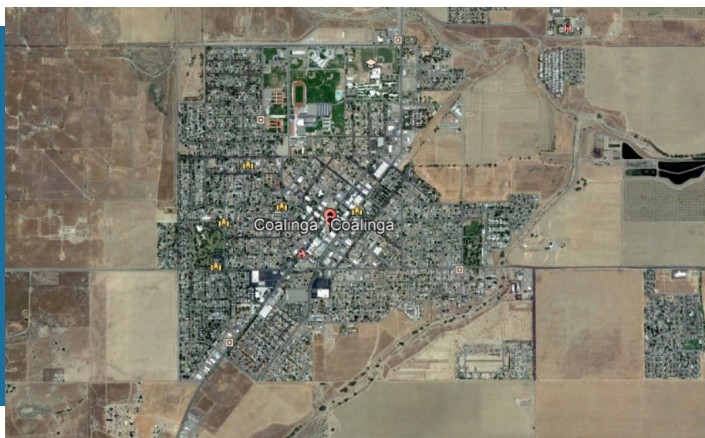


### Results

Based on our experience, we propose the **optimal solution** in terms of lighting **performance** and **cost effectiveness**.

Autonomy of  
**365**  
nights of lighting /year

## Your Project location



### Sewer Plant

### Coalinga, CA

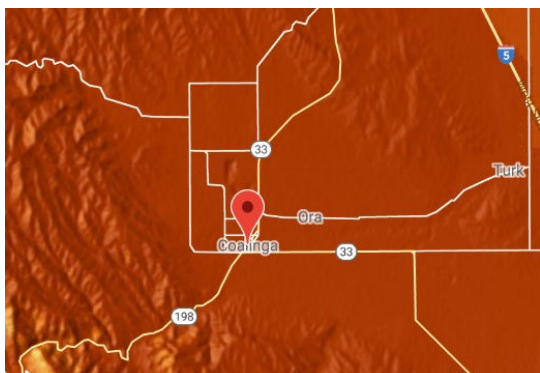
#### GPS COORDINATES

Latitude: 36.0813

Longitude: -120.2122

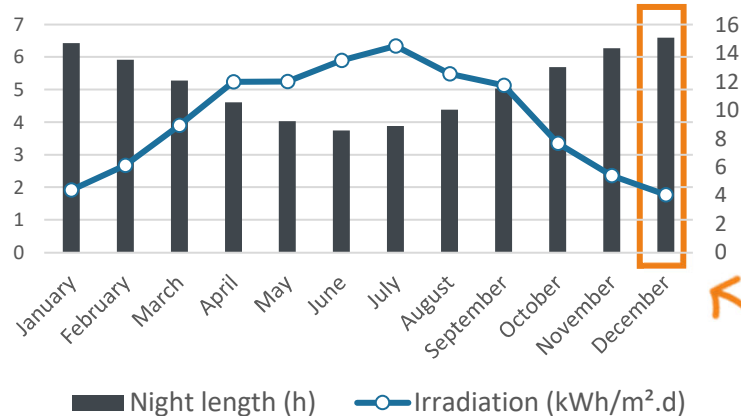
## Your Solar Potential

We have analyzed the weather data for the last 10 years at your project location so that we can guarantee constant lighting every night of the year.



Average annual irradiation : 5.72kWh/m<sup>2</sup>.d

### Irradiation and night length by month



*Sizing takes account of the month with the lowest irradiation and the longest night.*

## Your Lighting Application



Industrial site parking

### Compliance with public lighting standards

Your project has been designed in compliance with:

- IESNA standard
- AASHTO standard





## SMARTLIGHT WITH SIGNIFY ROADFOCUS



Non pro-rated

**signify**

Lumec RoadFocus LED



### PHOTOVOLTAIC MODULE

PV panel power rating 140 Wp

PV panel tilt angle 20°



### POWER 365: SMART STORAGE AND MANAGEMENT

Battery capacity 624 Wh



### LED LIGHT UNIT

Lighting power 40 W nominal

LED light unit specification 4000K - 117 Lm/w



### POLE & CROSSPIECE

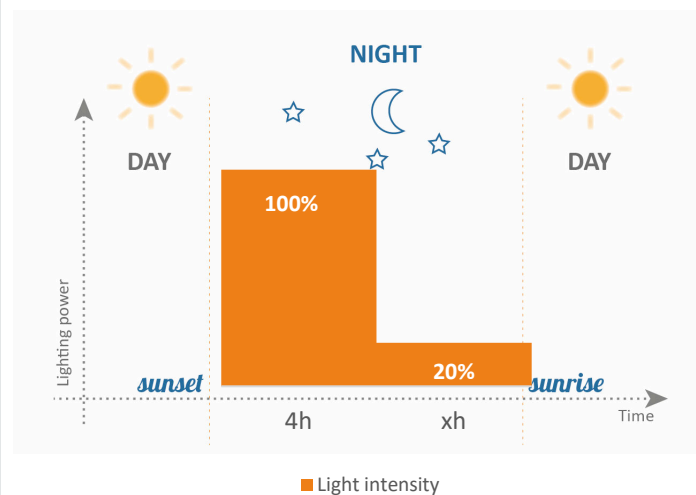
Pole height 20'

Protective treatment Finish Paint/Galvanized

**POWER 365**  
Ultimate Solar Lighting Technology by FONROCHE



Chosen lighting profile for your project



Zone	Average lighting level (fc)	Uniformity	Quantity product 1
Office	1.44	1.34	4 x Smartlight Power 365 40W nominal

## Eco-friendly lighting

*Choose SolarOne — and we will reduce your environmental footprint.*

*A standard streetlight consumes in average 80 W during 4200 h per year which represents  $0.08 \times 4200 \times$  number of solar streetlight = X kWh of energy saving.*

Once installed, solar lighting reduces  
**CO<sub>2</sub> emissions by 1kWh = 0.99 lbs CO<sub>2</sub>**  
 compared to a grid-connected installation. (<https://www.eia.gov/>)



### Recycling our components

Long product service life and component recyclability are key aspects of Fonroche Lighting's environmental commitments. Our solar streetlights are over 90% recyclable.

Unlike lead-acid batteries, **NiMH batteries** do not contain any toxic chemicals. They are 98% recyclable — the nickel is extracted and used to make various materials, mostly stainless steel.

The **solar panels** have an extremely long service life. Even after 25 years, they will still be producing at least 80% of their initial peak power. So they can continue to be used. Alternatively, about 96% of their component materials can be recycled to make new panels.

# PHOTOMETRIC STUDY

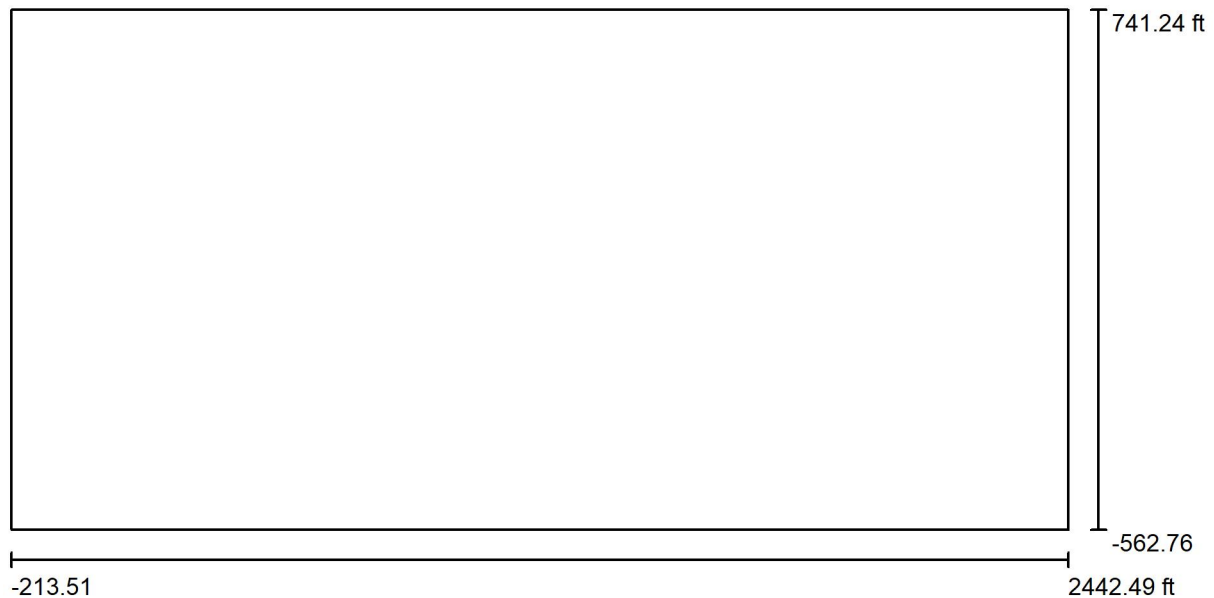
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*\*Note: these results are only valid if the Smartlight PV panel is at an azimuth angle of zero degrees and is completely free of shadow.*

*\*\*These results are subject to change due to technological or regulatory advances. This technical report is valid for 60 days from the date you receive it.*



Fonroche Lighting America

220 Reservoir Street #19  
Needham, MA 02494Operator MZ  
Telephone (339) 225-4530  
Fax  
e-Mail**Exterior Scene 1 / Planning data**

Light loss factor: 1.00, ULR (Upward Light Ratio): 0.0%

Scale 1:5788

**Luminaire Parts List**

No.	Pieces	Designation (Correction Factor)	$\Phi$ (Luminaire) [lm]	$\Phi$ (Lamps) [lm]	P [W]
1	19	PHILIPS LUMEC RFS-35W16LED4K-G2-4 RoadFocus LED Cobra Head - Small (RFS), 16 LED's, 4000K CCT, TYPE 4 OPTIC (1.000)	4444	4444	38.0
2	3	PHILIPS LUMEC RFS-35W16LED4K-G2-R2M RoadFocus LED Cobra Head - Small (RFS), 16 LED's, 4000K CCT, TYPE R2M OPTIC (1.000)	4565	4565	38.0
Total:			98131	98131	836.0

Fonroche Lighting America

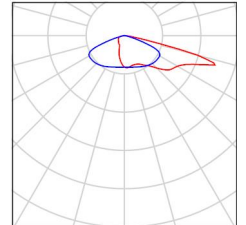
220 Reservoir Street #19  
Needham, MA 02494

Operator MZ  
Telephone (339) 225-4530  
Fax  
e-Mail

## Exterior Scene 1 / Luminaire parts list

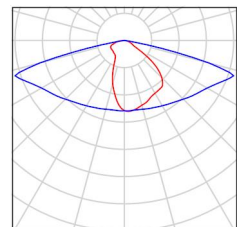
19 Pieces PHILIPS LUMEC RFS-35W16LED4K-G2-4  
RoadFocus LED Cobra Head - Small (RFS), 16  
LED's, 4000K CCT, TYPE 4 OPTIC  
Article No.: RFS-35W16LED4K-G2-4  
Luminous flux (Luminaire): 4444 lm  
Luminous flux (Lamps): 4444 lm  
Luminaire Wattage: 38.0 W  
Luminaire classification according to CIE: 100  
CIE flux code: 25 55 92 100 100  
Fitting: 1 x (1) LEDgine ARRAY(S) DRIVEN AT  
700mA (Correction Factor 1.000).

See our luminaire  
catalog for an image of  
the luminaire.

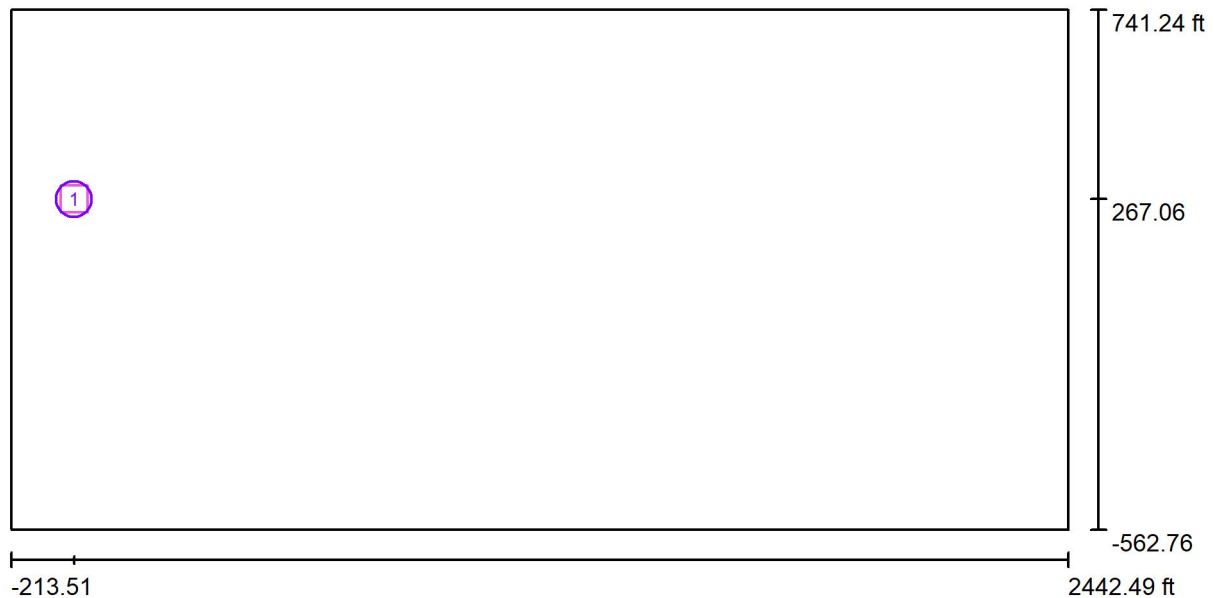


3 Pieces PHILIPS LUMEC RFS-35W16LED4K-G2-R2M  
RoadFocus LED Cobra Head - Small (RFS), 16  
LED's, 4000K CCT, TYPE R2M OPTIC  
Article No.: RFS-35W16LED4K-G2-R2M  
Luminous flux (Luminaire): 4565 lm  
Luminous flux (Lamps): 4565 lm  
Luminaire Wattage: 38.0 W  
Luminaire classification according to CIE: 100  
CIE flux code: 35 68 95 100 100  
Fitting: 1 x (1) LEDgine ARRAY(S) DRIVEN AT  
700mA (Correction Factor 1.000).

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Telephone (339) 225-4530  
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Scale 1 : 5788

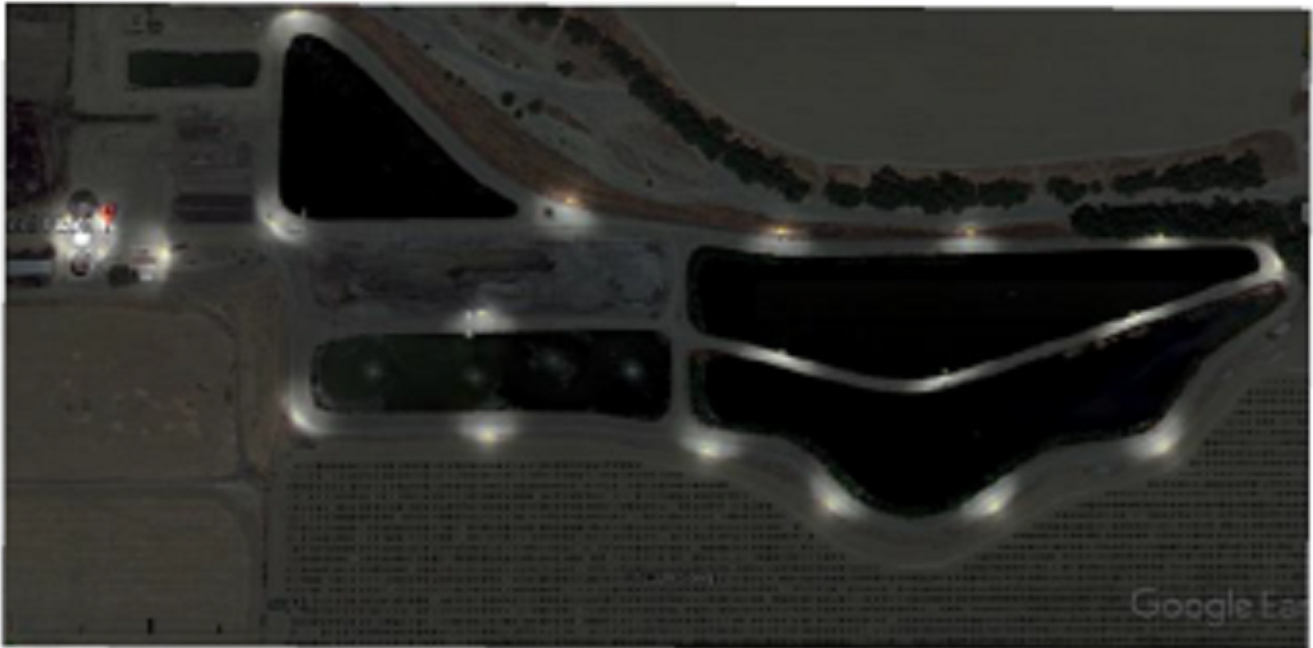
**Calculation Surface List**

No.	Designation	Type	Grid	$E_{av}$ [fc]	$E_{min}$ [fc]	$E_{max}$ [fc]	$u0$	$E_{min} / E_{max}$
1	Office	perpendicular	64 x 64	1.44	1.07	2.41	0.742	0.444

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## Exterior Scene 1 / 3D Rendering





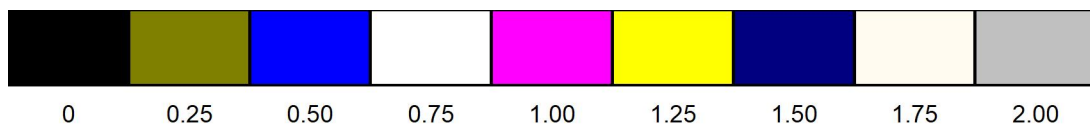
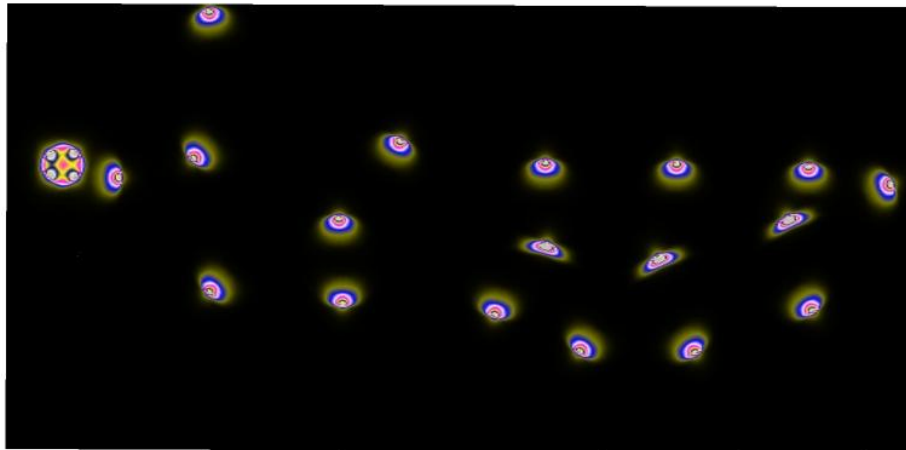


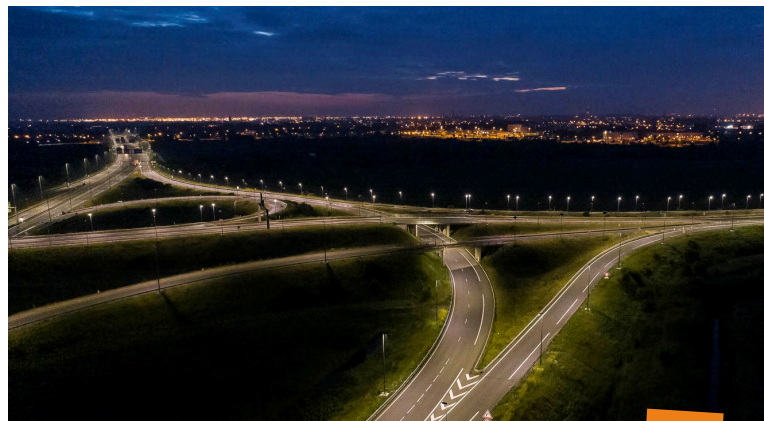
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## Exterior Scene 1 / False Color Rendering







A FONROCHE LIGHTING BRAND

Solar lighting

Your commitment to sustainability

**Contact us**

**Henry Moorhead**

*Key Account Manager*

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**E: [hmoorhead@solarone.net](mailto:hmoorhead@solarone.net)**

FIND OUT MORE AT

**[www.solarone.net](http://www.solarone.net)**



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