


SRP OUTDOOR LIGHTING OVERVIEW

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DEFINITIONS OF COMMONLY USED TERMINOLOGY

ATP: Authorization to Proceed

BALLAST: An iron core and copper coil designed to limit the electric current through and control the voltage to the lamp

CIRCUIT, STREETLIGHT: The streetlights and one or more branches of conductor served from a single electrical source, preferably a single phase transformer

COLLECTOR ROADWAY: Generally one-half mile roadways

CUTOFF STYLE: A luminaire from which light rays emitted either directly from the lamp or indirectly from the fixture are projected below the horizontal plane of the lowest point of the fixture; legally required by the Dark Sky Ordinance

DARK SKY ORDINANCE: Primarily Bill 2347 passed by the state of Arizona in 1986 but also various other bills which require SRP, and others installing outdoor lighting, to discontinue use of mercury vapor and install only cutoff style lighting. All MV and non-cutoff lighting must be removed by 2011.

FOOTCANDLE: One lumen per square foot

IES: The Illuminating Engineering Society publishes lighting standards

JUNCTION BOX (J-Box): Flush mounted box is where the connection to the light is made; it is the contractual point of delivery. Above ground junction box is where service to the flush mounted junction box is connected to secondary from the transformer, if not served directly from the transformer.

LOA: Letter of Authorization


LOCAL or MINOR ROADWAY: Roadways within residential

LPAC: A PC-based program maintained and distributed by Electric System Engineering that, among a variety of other functions, calculates lighting service voltage drop and luminaire spacing calculations

LUMEN: A unit of measure used to rate the total usable light output of electric lamps; usable light being light at wavelengths visible to the human eye.


MARS: Miscellaneous Accounts Receivable System

MAJOR ROADWAY: Generally mile roads (there are exceptions), expressways and similar streets

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DEFINITIONS OF COMMONLY USED TERMINOLOGY (continued...)

- MINIMUM AVERAGE MAINTAINED FOOTCANDLES:** Average illumination on the roadway when the reflector and refractor are dirty and the lamp is at its lowest output
- MOLE ASSEMBLY:** The submersible connector used inside the J-box to make the electrical connection from the transformer to the luminaire
- PEFO:** Power Entry Flat Rate Memo or flat rate memo
- PHOENIX CRS:** (CRS Customer Relationship System) Customer information system. Generates customer's orders, trouble calls and billing.
- PHOTOCELL:** A small electronic device mounted on top of the luminaire for the purpose of switching the luminaire on at dusk and off at dawn. Specified to fail on so the light would be a day-burner.
- REFLECTOR:** The mirror-like part of a luminaire behind the lamp that redirects light out to the area to be illuminated
- REFRACTOR:** The lens through which light passes from the lamp, or bulb, out to the area to be illuminated
- FULLY SHIELDED LIGHTING:** Luminaires with a flat glass refractor.
- SLC:** A PC-based program; it calculates Streetlight Circuit (SLC) voltage drop and amp loading. Call ESP&P to obtain a copy. Also on the ESP&P web page.
- STARTER:** An electronic device in a high-pressure sodium luminaire that delivers a high voltage pulse to the lamp with the purpose of starting the lamp
- UNIFORMITY RATIO:** The ratio of the average maintained foot-candle value to the lowest maintained foot-candle value at any point on the pavement.

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SRP OUTDOOR LIGHTING CONTRACTS

SRP offers the following lighting contracts:

Municipal Street Lighting (Public) Available to all municipal districts within SRP territory. These are used on public thoroughfares and publicly owned lighted street signs.

| Foreign Lighting Equipment owned by the SRP municipal customer. These are mapped for the purpose of outage tracking and maintenance if maintained by SRP.
Design to p.o.d.

| Public Customer owned and maintained.

Security Lighting


Private Private streets, parking lots, drives and alleys, thoroughfares and common areas. Used in PUE or SRP easement.
Requires a 20 year contract

Compatible units for this category end with the code letter **P**.
Example: **ULHC2609P**

Dusk to Dawn Private residences and commercial applications such as parking lots. Used on private property. This service is not intended for activities requiring illumination higher than an average of two foot-candles. Requires a 4 year contract.

Compatible units for this category end with the code letter **D**.
Example: **ULHC2609D**

See Distribution Design Policies and Procedures for costing, contracting, permits, paper flow, notification and billing.


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Municipal Design Procedures

The general design procedures for **Municipal Street Lighting** is listed below. For Municipal Street Lighting there are two additional outlines on the following pages, titled "MIDBLOCK" and "SUBDIVISION/ROAD WIDENING/AESTHETICS". These illustrate steps occurring outside the design process and are provided for added understanding. For individual cities requirements, refer to Chapter 2 Municipal Lighting Flowcharts in the Distribution Design Policies and Procedures Manual.


If Customer requires **Municipal Street Lighting**:

- A. SRP receives a lighting plan from the municipality.
- B. Designer receives approved streetlight plan from municipality.
- C. Designer determines the p.o.d. requirements.
- D. Designer determines costs.
- E. Designer prepares the contract and submits it to the municipality.
- F. Design for p.o.d. and energization only. (Customer owned street light)
- G. Municipality submits the payment or signs authorizing SRP to bill the city.
- H. City sends Letter of Authorization (LOA) for monthly billing to Design.
- I. Designer releases job to Construction.
- J. Designer sends Line Maintenance the job package.

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Municipal Midblock


- A. Customer requests light(s) from City
- B. City obtains signatures from neighborhood via petition
- C. City obtains easement to install pole and associated equipment, based on Customer approval
- D. City submits a letter requesting service and costs to SRP describing type of light and location of proposed light(s). SRP Design for p.o.d. only, calculates costs on Jet, prepares contract and submits contract to the City.
- E. City signs contract and returns to SRP with payment or requests to be billed for CIAC. City submits LOA to Design for monthly billing.
- F. Miscellaneous Accounts Receivable enters ATP and invoices City. Designer is notified of ATP.
- I. Designer releases job to Construction.
- J. If no costs are involved, Designer releases job to Construction.
- K. Construction schedules, constructs, and closes the job
- L. DD&C (JPC) bills for monthly energy to Customer
- M. DD&C posts lights to exhibit mapping
- N. DD&C retains all documentation

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Municipal Subdivision / Road Widening / Aesthetics

Lighting requests for subdivisions, road widening and aesthetics are processed the same by all divisions, except for the final billing. For subdivisions, the subdivision contractor will submit a request for lighting to the municipality, prior to contacting SRP. For lighting requests from a municipality involving road widening or aesthetics, the municipality will contact SRP directly.


- A. Municipality contacts SRP
- B. Municipality submits approved light plan to SRP
- C. Designer assigns streetlights p.o.d. locations and subdivision street light numbers on the subdivision/road widening/aesthetics job.
- D. Draft job - for Road Widening and Aesthetics Only:
 - 1. Designer prepares construction cost proposal and may collect connection fees.
 - Designs for p.o.d only
 - 2. After the municipality approves the costs and payment is received, the Designer receives the authorization to proceed (ATP), and letter of authorization (LOA) for monthly billing responsibilities.
- E. Release job package to SRP Construction, Customer
- F. Construction schedules, constructs and closes the job
- G. DD&C authorizes billings for monthly energy to Customer
- H. If the lights are to be owned by the City, DD&C (JPC) processes
- I. DD&C posts lights to exhibit mapping
- J. DD&C retains all documentation

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Private and Security Design Procedures
Cities Other Than the City of Phoenix

If Customer requires **Dusk to Dawn or Private Lighting (4 or 20 year contracts):**


- A. The Customer contacts SRP through Residential Customer Services (RCS) at 602-236-8888.
- B. RCS generates an Unmetered Service Memo Order on Phoenix CRS, (formerly called a Power Entry Flat Rate Order or PEFO) and transmits it to DD&C the following day.
- C. DD&C schedules a meeting between the Designer and Customer
- D. Designer meets with Customer
- E. Designer and customer determine the lighting needs of the customer
- F. Design opens job order number
- G. Designer provides proposal to Customer
- H. Designer draws up a contract for CIAC charges and monthly equipment charges
- H. Customer signs contract and pays applicable fees
- I. MARS enters ATP
- J. Designer drafts and grids the job
- K. Design releases the job to Construction and SRP Inspection as applicable and provides copies to the customer.
- L. Design sends Job Package to DD&C (JPC)
- M. SRP Inspection is involved if any construction is done by the customer, typically any underground work, i.e. trench, conduit, and j-box.
- N. The customer should call (602)236-6300 East Valley or (602)236-0676 West Valley for a pre-construction meeting with SRP Inspection, the Designer and the customers contractor. At this meeting SRP answers any of the customer's questions about what work the customer must perform.
- O. When the customer has completed his work, a final inspection is required. The customer calls (602)236-6300 E.V. or (602)236-0676 W.V. for inspection schedule.
- P. After SRP Inspection has given final approval they send the *Inspection And Communication Record*, the "Pink sheet" as it is called, to SRP Construction for completion of the work.
- Q. Construction will schedule, construct and close the job.
- R. DD&C initiates billing
- S. DD&C posts lights to exhibit maps
- T. DD&C retains all documentation

<p>Outdoor Lighting Standards</p>  <p>PROPRIETARY MATERIAL</p>	<p>SRP OUTDOOR LIGHTING OVERVIEW PRIVATE AND SECURITY DESIGN PROCEDURES, CITIES OTHER THAN CITY OF PHOENIX</p>	<p>ISSUE DATE: 01-21-00</p>
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Private and Security Design Procedures
Within the City of Phoenix

If Customer requires **Dusk to Dawn or Private Lighting (4 or 20 year contracts):**

- A. The Customer typically contacts SRP through Residential Customer Services (RCS) at 602-236-8888.
- B. RCS generates an Un-metered Service Memo and transmits it to Maintenance the following day via Phoenix. Maintenance sorts the Un-metered Service memos and forwards them to the appropriate Designer.
- C. The Designer schedules a meeting with the Customer.
- D. Designer meets with the Customer.
- E. Designer and customer determine the lighting needs of the customer.
 - 1. In the city of Phoenix the mounting height is restricted to 15 ft. when located within 150 ft. of a residential district, and 25 ft. in a non-residential district. Mounting heights greater than this will require the customer to obtain a zoning variance issued by the City of Phoenix.
 - 2. The Designer shall inform the customer that dusk-to-dawn lighting installed & maintained by SRP on customer's private property requires a permit issued by the City of Phoenix Development Services Department as determined by the "City of Phoenix Permit Fee Schedule" in G below. Permits may be filed & obtained by the customer or SRP. The cost of this permit is based on the average cost per light valuation of the project as calculated by JET and described in G below.
 - Exceptions where a permit is not required:
 - Dusk to Dawn or Private lights installed along public streets and alleys, located within the right-of-way or within public utility easements (PUE) adjacent to the city right-of-way.
 - Dusk-to-Dawn lighting installed within a tract of land platted and approved as a private road and/or within a PUE that parallels a private road.
 - Dusk-to-Dawn lighting attached to existing poles located within a public right-of-way or within a PUE.
- F. Designer provides proposal to Customer.
 - 1. Designer requests a job order number from the Expediter or Engineering Technician.

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G. Calculate Charges

1. **Permit Fee** - If SRP is applying to the City of Phoenix for the permit the contract shall include the city of Phoenix fees of E.2. above.

JET will determine the value of the light(s) to be installed. Enter the compatible unit(s) and the quantity of lights plus any other charges. JET, as of June 2005, uses an average cost per light of \$1095 (as determined by Distribution Design and Construction, New Business) and the table below to determine the permit fee.


City of Phoenix Permit Fee Schedule (as of 6/24/05) *	
Project Value from JET on Excel	Permit Fee
\$1 - \$1000	\$75.00
\$1001 - \$10,000	\$67.00 + \$8.00 for each \$1000 or fraction thereof
\$10,001 - \$50,000	\$77.00 + \$7.00 for each \$1000 or fraction thereof
\$50,001 - \$200,000	\$277.00 + \$3.00 for each \$1000 or fraction thereof
* The City of Phoenix Design Safety Department contact to verify this table is up to date or to answer questions is Cathy Chapman Phone number 602-534-3165. http://phoenix.gov/DEVPRO/feesc7h.html (Click on Building Safety)	

2. **Plan Review Fee** - The city of Phoenix also requires the customer to pay a plan review fee of 75% of the permit fee if the customer is Commercial or if the residential customer is requesting more than one light. A residential customer does not pay this fee if they are requesting only one light.
3. **SRP Fee For Handling City of Phoenix Permits** – *(PP&S will set up a supplemental code)*
When SRP processes the City of Phoenix fees for the customer JET's supplemental code adds charges to cover SRP' permit handling costs.


Example: A residential job has two lights. The job has not been designed yet but use DD&C's average of \$1095 per light for a job cost of \$2190.

1. Permit Fee from the table above, $\$67 + \$16 = \$83$ permit fee
2. Plan Review Fee of 75% of \$83.00 or \$62.25 plan review fee
3. SRP Handling Fee (presently \$25)

Total permit cost of $\$83 + 62.25 + \$25 = \$170.25$.

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- H. Designer draws up a contract
- I. Customer signs contract and pays applicable fees
- J. Designer drafts and grids the job
 - Design shall include special tags, stickers, fuses, grounding etc. See these compatible units in the Outdoor Lighting Standards book.
- K. Designer or customer files for a permit with the City of Phoenix (see sample permit). If the customer files for the permit:
 1. The Designer must supply the customer the Project Value from JET described above.
 2. The customer must forward the approved permit to the Designer
- L. The permit application must include:
 1. the permit fees
 2. a site plan showing the proposed location
 3. type of Dusk-to-Dawn light to be installed
 4. method of service, overhead/underground
 5. The wiring method shall be identified as:
 - *“in accordance with pre-approved blanket standards”*.
- M. Upon receipt of an approved permit the Designer:
 1. releases the job to Construction and SRP Inspection as applicable
 2. provides copies to the customer
 3. sends the job package to DD&C.
- N. SRP Inspection is involved if any construction is done by the customer, typically any underground work, i.e. trench, conduit, j-box.
- O. The customer should call (602)236-6300 East Valley or (602)236-0676 West Valley for a pre-construction meeting with SRP Inspection, the Designer and the customers contractor. At this meeting SRP answers any of the customer’s questions about what work the customer must perform.
- P. When the customer has completed their work, they again call (602) 236-6300 East Valley or (602) 236-0676 West Valley for a final inspection.
- Q. After Inspection has given final approval they send the “Inspection And Communication Record” known as the “pink sheet”, to SRP Construction for completion of the work.

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R. Construction will:

1. Schedule the job


- The city inspector (602) 495-0268 will be advised of the construction schedule. This inspection is intended to verify zoning compliance (conformity to approved site plan) and spot check conformity to the installation standards. The city has advised this inspection requirement will not delay energization. The facility may be energized following completion of construction, whether or not the inspector was on site during construction.

2. Construct the job

3. Z-code the job when complete


S. DD&C initiates billing and posts lights to exhibit maps

T. DD&C retains all documentation for two years and then forwards the documentation to Graphic Records to be stored permanently.

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ADDITIONAL REFERENCES

- A. See the Customer Charges section of the “Distribution Design Policy and Procedures” manual for information regarding:
- Customer street lighting services
 - Customer charges
 - The lighting request process
 - Customer responsibilities
 - SRP Lighting Policy
 - Lighting conflicts with trees in the City of Phoenix
 - SRP outdoor lighting options
- B. See the Job Types section of the “Distribution Design Policy and Procedures” manual for information regarding streetlight connection blanket numbers.
- C. See the Forms section of the “Distribution Design Policy and Procedures” manual for examples of the various forms mentioned in this book.

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