

# Local Government Energy Efficiency

## BEST PRACTICES: STREET LIGHTING

San Diego Area

Population: 3,000,000

### SUMMARY

The San Diego Regional Peer-to-Peer Street Lighting Working Group (SLWG) was established in 2009, sponsored by SDG&E's Local Government Energy Efficiency Partnership Program.

Participating member cities and other public agencies are developing and sharing best practices and tools to accelerate the retrofit of approximately 145,000 streetlights in SDG&E's service territory.

This regional initiative has the potential to reduce annual street lighting energy consumption by 60 million kWh, which equates to a reduction of 26,000 tons of CO<sub>2</sub> emissions and an annual savings to taxpayers of \$10 million in combined energy and maintenance costs. In terms of economic development, full regional implementation has the potential to create \$58 million in combined product and installation revenues while generating 600 jobs.

The collaborative process, methodology, and unique "Dropbox" online best practice sharing toolkit establish a template that can now be replicated to address other key regional sustainability opportunities.

## SAN DIEGO REGIONAL PEER-TO-PEER STREET LIGHTING WORKING GROUP



PHOTO: Kenny Perez Sr.

### PROGRAM HIGHLIGHTS

The Street Lighting Working Group meets every 2-3 weeks with the initial primary goal of providing specification and procurement tools and templates which are intended to streamline and accelerate the process for participating public agencies to move forward with street lighting retrofit procurements.

Participating cities and public agencies receive the following assistance:

- Regional Specification Guidelines for Induction and LED streetlights
- Data from local/regional field evaluations
- Guidance on observatory dark sky considerations
- Recommendations for recycling of lamps and fixtures
- Compliance requirements of EECBG and ARRA grant funded procurements
- SDG&E guidance on tariffs and available incentives
- Insight on emerging adaptive controls
- Sample RFP, RFB and Best Value Evaluation Templates

# Regional Street Lighting Working Group

## LESSONS LEARNED

- The biggest key to this successful collaboration was staying technology neutral. The group developed regional specification guidelines for both of the leading retrofit technologies, light emitting diode (LED) and induction streetlights, and for adaptive controls. Choosing one technology over the other would have made it hard to keep the group from fragmenting. Already some cities have chosen each of the technologies.
- Select an independent, non-biased Group Leader. This will allow the group to receive samples and other assistance from street lighting suppliers without compromising a city/county's public purchasing policies.
- Appoint a lead stakeholder to develop specifications for a particular technology option. Then share the field testing, specifications and procurement documents they produce with the other members, while providing them constructive feedback from the group's collective expertise.
- Do real life testing of the technologies you are considering, and invite public feedback. Reading reports and taking light readings are not the same.
- Develop your specifications before approaching manufacturers. This will save you time sifting through their claims, and allow you to eliminate a lot of unsuitable products. Check with your utility and CalTrans first for their requirements, and borrow from other local governments that have already developed specs.

## THE REST OF THE STORY

The San Diego Regional Street Lighting Working Group (SLWG) was established in 2009 under funding provided by California's energy efficiency public goods charge program. Sponsored by SDG&E's local government energy efficiency partnership program, the effort is co-led by the City of San Diego and CleanTECH San Diego. More than half of the cities in San Diego County, the County and several other public agencies are actively participating in the program.

The mission is to accelerate adoption of best practices in sustainability across the San Diego region for the betterment of the environment and the local economy.

Approximately 145,000 streetlights throughout the SDG&E service territory are eligible for upgrades with more energy-efficient technologies, which will result in additional benefits including:

- Reduced energy consumption up to 40 percent
- Reduced maintenance costs (longer luminaire life and fewer replacements)
- Improved color for improved visual acuity and more pleasing appearance in the community

In the San Diego region, municipalities appear to be headed in different directions with the City of San Diego focusing primarily on induction lights and Chula Vista on the LED option. The SLWG has leveraged the work done by both to develop its guidelines.

By consolidating all of the relevant field-testing, specification, financial modeling and procurement documentation in one comprehensive repository, it eliminated the need for each city/agency to start its own retrofit project from scratch. The Specification Guidelines for both Induction and LED street lighting, as well as a comprehensive vendor qualification process, provide stakeholders with options that will meet their particular locale and application requirements.

The cities of Carlsbad, Chula Vista, El Cajon and Santee took advantage of American Recovery and Reinvestment Act (ARRA) stimulus funds to launch the first phase of street lighting upgrades, which will account for more than 13,000 retrofits, generate \$5 million in local product and installation expenditures, while creating an estimated 50 new jobs. By year-end 2010 these four cities will have reduced their street lighting energy consumption by more than 30%. In FY 2011, they will achieve a reduction of 6 million kWh of energy consumption, an equivalent of 2,600 tons of CO<sub>2</sub> emissions reduction, and save taxpayers \$1 million annually.

# Best Practices – Financing

## GAINING POLITICAL SUPPORT

Recognizing that on average more than 25% of a municipality's energy budget is spent on street lighting, and that the advanced street lighting technologies commercially available today can immediately reduce energy consumption by 40% while concurrently reducing ongoing maintenance costs, it is not surprising that this program is receiving unanimous support from all of the regional City Councils.

Energy Efficiency and Conservation Block Grant funding has already been approved for street lighting retrofit projects in San Diego, El Cajon, Santee, Encinitas, Lemon Grove, Imperial Beach, La Mesa and Vista.

Besides the compelling financial and environmental benefits to taxpayers, street lighting retrofits are one of the most visible examples to help cities and counties educate their constituencies on the tremendous potential for energy efficiency retrofits in the municipal, commercial and residential sectors.

*We have taken a technology-agnostic approach, since there is no one-size-fits-all solution.*

Phase 1 of the SLWG Project focused on roadway cobra street lighting retrofits. Phase 2 will focus on post-top acorn-style decorative street lighting retrofits and other exterior lighting energy efficiency applications, including parking and campus lighting.

Several members of the SLWG installed pilot field installations to visibly demonstrate the range of performance of the competing technologies. They also conducted focus groups including citizen volunteers as part of the overall review process.

Another important factor was the minimization of light pollution, which would negatively impact the work

of regional observatories. The Guidelines include a requirement to comply with the Illuminating Engineering Society definition of "full cut-off" in an effort to significantly reduce backlight, uplight and glare. SLWG also recommends that cities within a 30-mile radius of the local observatories specify the lowest possible correlated color temperature.

With SDG&E as the key sponsor and active member of the regional SLWG Team, there will be very rigorous documentation of the targeted energy, environmental and economic deliverables of this project. In order to secure the available rebates and reduction in the LS2 street lighting tariff rate, each participating city or public agency must provide a detailed listing of the location, type and wattage of each streetlight removed along with the details of its replacement.

SLWG estimates that with full implementation across SDG&E service territory, this project has the potential to save taxpayers up to \$10 million annually in energy and operating costs, reduce energy consumption by 60 million kilowatt-hours, and lower greenhouse gas emissions by 26,000 tons of CO<sub>2</sub> every year.

A benefit of this SLWG Project beyond the significant energy efficiency, environmental and economic impacts is the replicable collaborative process and tools that can now be applied to address other key regional sustainability opportunities.

## LEARN MORE

- **CleanTECH San Diego** is a new non profit membership organization formed to accelerate San Diego as a world leader in the clean technology economy, and co-leads the SLWG.  
[www.cleantechsandiego.org/streetlight-working-group.html](http://www.cleantechsandiego.org/streetlight-working-group.html)
- The **City of Chula Vista** has completed conversion of nearly all their streetlights to LED or induction technology. To learn about what they are looking at next, go to this link:  
<https://www.sdge.com/sites/default/files/documents/1683247846/2014%20ES%20Case%20Study%20City%20of%20Chula%20Vista%20FNL050714.pdf?nid=10831>

# Local Government Best Practices



PHOTO: City of San Diego

## SIMILAR PROGRAMS

- **City of Los Angeles, Department of Public Works, Bureau of Street Lighting** has a comprehensive website that tracks the qualification and initial implementation of LED street lighting retrofits across the City.  
<http://bsl.lacity.org/>
- **City of San Jose, Department of Transportation** has completed a comprehensive field study and evaluation of LED street lights integrated with adaptive controls for dimming and advanced functionality.  
[www.sanjoseca.gov/transportation/](http://www.sanjoseca.gov/transportation/)  
(Click on "Streetlight Study Report" under the "Quick Picks" tab)
- **Metropolitan Washington Council of Governments** has a regional street lights program:  
[www.mwcog.org/environment/streetlights](http://www.mwcog.org/environment/streetlights)

## ADDITIONAL RESOURCES

- **DOE Municipal Solid-State Street Lighting Consortium** shares technical information and experiences related to LED street and area lighting demonstrations.  
Resources include specifications, technology fact sheets, GATEWAY demonstration, and CALiPER testing reports, and video.  
[www1.eere.energy.gov/buildings/ssl/consortium.html](http://www1.eere.energy.gov/buildings/ssl/consortium.html)
- The **Clinton Climate Initiative** has identified street lighting retrofits as one of the top energy efficiency opportunities.  
[www.clintonfoundation.org/what-we-do/clinton-climate-initiative/our-approach/cities/lighting](http://www.clintonfoundation.org/what-we-do/clinton-climate-initiative/our-approach/cities/lighting)  
(Click on White Paper – Street Lighting Retrofits)
- The **Illuminating Engineering Society** seeks to improve the lighted environment by bringing together those with lighting knowledge, and by translating that knowledge into actions that benefit the public.  
[www.iesna.org/](http://www.iesna.org/)
- **Caltrans Traffic Manual, Signals and Lighting**  
<http://www.dot.ca.gov/hq/traffops/engineering/control-devices/chp9/chap9.htm>



THE CITY OF SAN DIEGO



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Funded by California utility customers and administered by California's investor owned utilities under the auspices of the California Public Utilities Commission.