



White Paper

The Port Operators' Guide to Picking the Right Large Area Lighting Solution

Improving safety and lighting large areas without breaking the bank

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The large areas of today's commercial ports are, ironically, also its most dense and dynamic environments. Heavy equipment, container trucks, and port personnel swarm intermodal terminals and container yards day and night. In this environment, it's no surprise that port workers register five times more fatalities and injuries than any other US industry. From 2011 to 2017, fatal injuries occurred at an annual rate of 15.9 per 100,000 workers.¹

According to the Bureau of Labor Statistics in the U.S., poor lighting and low visibility accounted for over 9% of all injuries that occurred during port operations. Apply this percentage and risk to the average number of employees working at large container yards and today's ports have a huge operational health and safety issue on their hands.

To combat these risks to personnel safety and keep container yard operations smooth and efficient, port operators must consider improvements to their large area lighting

systems. To keep costs reasonable, minimize delays and reduce disruption to operations, port operators should make the sound decision to consider an end-to-end large area lighting solution.

But with so many LED lighting products available, how can port operators make the right choice? In this paper, we explore aspects to consider when evaluating a complete large area lighting solution, including:

The 4 effective solutions for large area lighting project challenges

The 5 fundamental aspects a complete large area lighting solution should have

The key product and service benefits of working with a large area lighting expert

¹https://www.cdc.gov/niosh/programs/cms/hs/port_operations.html



Key Areas of Concern for Large Area Lighting Projects

Besides the impact on finances and everyday operations, port operators are often hesitant to begin any large area lighting project due to the immense complexities that are involved. As any veteran port personnel will tell you, delays in executing a lighting upgrade are common due to overlooked considerations or unforeseen issues, such as:

Lack of initial design and planning.

Without proper lighting design and expert guidance, port operators risk ending up with dark, unsafe gaps between fixtures in their container yards.



Unforeseen delays and disruptions.

Without a lighting specialist or project manager, port operators risk overlooking critical details that consequently cause hiccups to progress.



Difficulty finding replacement parts

or skilled technicians. Poor fixture quality could result in a frequent need for replacements, and outsourced technicians may not be familiar with the types of fixtures used – causing operational disruptions while port operators scramble to replace faulty lights.



Overspending on inflexible project

packages. Due to the difference in environments and space, ports have varying requirements and challenges for large area lighting. An inflexible, take-it-or-leave-it package could force port operators to overspend on unnecessary items and services.



Chart a Course Toward Your Successful Large Area Lighting Upgrade

With 4 Effective Solutions

New installations or even retrofits of existing high mast or large area lighting can become incrementally expensive and inconvenient, if not executed properly. To ensure project success and future peace-of-mind, large area lighting projects should be planned – with the help of a lighting solutions provider – from start to finish.

This section lays out the potential issues port operators could face, alongside viable solutions they should consider.

1.



Potential Issues

Suboptimal Lighting Design and Engineering

Without the benefit of an initial design phase, the final result of a large area lighting project may not meet expectations. Fixtures may not be correctly angled or installed, creating inconsistent areas of light and dark gaps in-between. On the other hand, there could be an overlap of light, creating overly bright spots that cause glare and eye strain to personnel – besides being very energy inefficient.

Multiply these issues in dozens of fixtures across a wide area, and the scope and cost of rework may be more than port operators can bear. Forward-thinking port operators would insist that their lighting solutions provider supply detailed lighting designs early on, to avoid issues like this.

A poorly designed large area lighting setup can result in glare, causing distraction and discomfort to longshoremen and shadowy areas in container yards.



Solution

Close Design Support

Professional lighting designs provide visual simulations of fixture layout and light coverage, giving port operators an idea of their project's expected outcome even before it begins. This reduces the risk of nasty surprises, mid-way project delays and protects lighting investments by guaranteeing a good result. Certain lighting solutions providers even go the extra mile, by sending representatives on-site to assess, identify, and troubleshoot any potential issues prior to the installation or maintenance process – further, setting the project up for success.

2.



Potential Issues
Operational Disruptions

To keep costs reasonable, port operators may choose not to hire project managers or form a specific team to lead their large area lighting projects. Unfortunately, this creates more problems like misalignment between schedules and misplaced components as port operators juggle day-to-day operations and their large area lighting project. In some cases, it could cause massive disruptions to operations and safety risks as technicians attempt to conduct installations in busy work areas.



Solution
Project Management

There is another way to keep lighting installation costs reasonable while obtaining all the advantages that a project management team brings. Port operators can choose to work with a lighting solutions provider that can supply a competent on-site project manager to coordinate and manage the details of their large area lighting project. This frees port operators and their teams to focus on what they do best – running a bustling, thriving commercial port.

3.



Potential Issues
Difficulty Sourcing Parts and Technicians

Port operators may also attempt to source their own fixtures and lighting technicians to reduce the cost of upgrading or retrofitting lighting. However, price-based buying of fixtures from unverifiable brands may not comply with port safety or quality standards, and cause issues down the road – leading to higher maintenance costs or safety fines.

Outsourced lighting technicians may also be unfamiliar with the brands and types of fixtures operators have purchased, creating unnecessary hassle and confusion, which could lead to operational hold-ups and increasing costs. Both potential issues can easily be avoided by finding a provider that can offer top-quality fixtures as well as experienced technicians.



Solution
Ease of Installation and Maintenance

Engaging a full-service provider ensures a one-stop solution encompassing quality fixtures, alongside skilled technicians familiar with the installation and maintenance work port operators need. Technicians and project managers who are familiar with the products and able to source additional technical equipment, when necessary, will remove much of the hassle of installation work, leaving port operators free to focus on ensuring operations run smoothly.

4.



Potential Issues
Inflexible Packages

While there are lighting service providers offering fixtures and service packages, those are often take-it-or-leave-it packages that are rigid, non-customizable, and fail to account for the different needs and budgetary constraints port operators may have.

Operators may find that, despite engaging a lighting provider for minor upgrades, they are saddled with the bill for a complete retrofit and services they didn't need.



Solution
Flexible Lighting Solutions

Best-in-class lighting solution providers provide either complete pre-packaged deals that include everything from lighting design to installation, or a flexible level of customization – including minor changes to LED fixtures, such as drilled mounting holes or optic swaps – for large area lighting solutions. This results in greater freedom of choice and control over the resulting project.

Case Study

Port Freeport

Freeport's 1000W HPS lights were not only energy inefficient, but also required unnecessary maintenance. As it expanded its port operations, Freeport quickly came to realize that it needed a solid-state LED lighting solution that provided energy savings and long-term reliability.

To achieve these goals, it engaged Phoenix. After a series of pre-installation site visits and expert-led consultation sessions, Phoenix installed 500W LED High Mast fixtures with adaptive lighting control technology, resulting in:

Over 70%

reduction in energy consumption

Projected annual kWh saved

1,593,970 kWh

Projected annual energy savings

\$127,518

Projected annual maintenance savings

\$13,884

Payback

2.8 years



Tick all the boxes with Phoenix

5 Aspects of a Complete Large Area Lighting Solution

Phoenix Lighting provides the flexibility to choose your lighting upgrades, from fixtures alone to the entire system, including wiring, poles, fuses and filters, and will also integrate our system into your existing requirements, whether you require fully integrated or remote mounted components.

By choosing Phoenix, you will work with a global leader in durable LED lighting solutions. We design and manufacture fixtures that exceed light requirements, improve light uniformity (meaning no shadowy areas), reduce glare, and increase visibility throughout your container yard.

The Phoenix Package: Best ROI and Least Risk

1. Design and engineering Includes lighting simulations, structural review and design, and professional engineer sign-off on structural design documents.	✓
2. Customized fabrication Complete scope of supply for retrofits and new builds	✓
3. Project management Hassle-free installation process, thanks to a team of experts involved throughout the process, and on-site project management.	✓
4. Installation service Our streamlined delivery of fixtures, rings, and poles ensures minimal operational disruption. We also provide in-house technicians for installation, or as assistance to a preferred contractor.	✓
5. Comprehensive warranty Standard warranty options begin at 5 years and extend all the way up to 25 years. There are no limitations or third parties: deal directly with us, the lighting manufacturer.	✓

Case Study

Georgia Ports Authority

The HPS lights used by the Port of Savannah had light levels that didn't meet safety and security requirements for nighttime operations, burnt out quickly, and required relatively frequent replacements. The port needed a large area lighting service provider that would not only be able to provide state-of-the-art upgrades, but that would also understand – and work around – the operational challenges of a large-scale lighting retrofit in its Ocean Terminal.

The port met these goals by working with Phoenix. Phoenix provided an in-depth consultation and conducted pre-installation site visits, before retrofitting the port's legacy high mast poles with Phoenix Highland Series fixtures and wireless lighting controls that resulted in:

Projected annual kWh saved

1,356,048 kWh

Projected annual energy savings

\$108,484

Projected annual maintenance savings

\$39,766

Achieved

5 fc

illuminance avg on the wharf

Payback

3.2 years



Download our large area lighting
solution sell sheet [here](#).



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Phoenix Lighting has a 75-year track record in the lighting industry and has been installing LED lighting since 2007. Our complete, coordinated LED lighting solution allows us to tackle the unique challenges presented by every facility lighting upgrade or development – and by combining a strong background in port lighting, state-of-the-art products, and superior service, we guarantee high performance, energy savings and increased safety for years to come.