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Renewable Energy- Renewing the Commitment to Safety Compliance

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Introduction

For the past 20 years, the author has worked as an EHS Director, Manager and Consultant to the Construction, Telecommunications, Utility and Renewable Energy sectors. His services include establishing written safety programs, record keeping, site safety auditing, incident investigation, communication techniques, subcontractor management and training. As an accredited OSHA Outreach trainer, he has created and delivered hundreds of OSHA Outreach and specialized safety training programs.

In his renewable energy roles, he has consulted on hundreds of residential and commercial wind tower, solar-thermal and photovoltaic projects. He created project specific safety plans and training programs for his clients and their subcontractors in compliance with OSHA/ANSI/NFPA regulations and NABCEP standards, and collaborated with various State clean energy funds and equipment manufacturers.

This experience has recently lead him to share his thoughts on some of the finer points of safety compliance surrounding these projects, and how best to analyze and mitigate them. Also included are the various steps in which a project is procured, developed, implemented, installed, commissioned and maintained, and the associated project roles in which safety is integrated into, such as estimators, project managers, foremen, laborers, service technicians, subcontractors, construction managers and owners.

The Critical Role of Safety for Renewable Energy Projects

In recent years, with the economic downturn and climate have taken a tragic effect on historically strong industries such as construction and manufacturing, it has given rise to a new era of modern industries, most notably in the renewable energy sector. Along with the increasingly rapid growth and mainstream popularity that comes with it, a significant concern has emerged at the oversight of safety compliance on renewable energy projects.

As evidenced from a recently published OSHA accident investigation, in 2010, where workers were performing routine maintenance on a wind tower and were extremely injured.

During the maintenance procedure, one worker unexpectedly energized a transformer, causing an arc flash that directly exposed another worker. The injured worker suffered third degree burns to his neck, chest and arms, and second degree burns to the face. Stemming from the accident investigation, OSHA cited the company for failure to ensure that technicians working on the wind tower affixed their own energy isolation devices – also known as personal lock and tag devices – on the tower turbine switch gear at ground level. OSHA issued six citations for alleged willful safety violations with proposed fines totaling $378,000.

In a recent statement, Secretary of Labor, Hilda L. Solis was quoted as saying, "Green jobs are an important part of our economy, and sectors such as wind energy are growing rapidly. That growth comes with a continued responsibility for employers to ensure that the health and safety of workers is never compromised. Employers must not cut corners at the expense of their workers' safety."

OSHA's Focus Four Hazards

Falls, Electrical Hazards, Struck by and Caught in Between hazards, those four categories, at minimum, are clearly an evident concern prior to and during all photovoltaic, solar thermal and wind tower construction activities. Having personally consulted on hundreds of these residential and commercial projects, ClickSafety has increasingly witnessed a lack of proactive safety planning/job hazard analysis, availability of PPE/equipment, employee training and a host of other overlooked areas of safety compliance. OSHA has taken note of this as well, and they are effectively and justifiably educating their compliance officers on renewable energy hazards on a continuing basis. What's more, is the high profile visibility and allure that these popular and environmentally appealing projects can attract when installing solar panels on the roof of a building, or as the tower sections, nacelle and blade attachments of a wind tower are craned into place.

Qualified Renewable Energy Providers

Just as we experienced a rapid growth during the pre and post-Y2K era with telecommunications, many renewable energy providers, mostly being electrical contractors, are diving into the renewable energy sector. They learn quickly that from a quality and safety standpoint, there are significant safety differences from traditional electrical construction to renewable energy construction that they are not used to dealing with. Many of these projects are heavily funded by state run renewable energy credit programs as well as co-ops with local utility companies and municipalities that require endless paperwork checkpoints, and safety is an area that seems to get attention last. The importance of procuring competent and qualified providers on renewable energy projects with specific regard to safety compliance is crucial.

Pre-job Planning

This includes site specific safety plans, fall protection plans, PTSP's and AHA's, all phases of renewable energy projects are loaded with fall protection hazards. Although a variety of protective systems are available, they are seldom ever procured, utilized, or for that matter, mentioned. For flat roof tops, warning lines at 6' may be the popular and cost effective solution of choice, but are often the least effective at fall protection, especially when the 6' setback rule does not apply in this industry. Portable guardrails are by far the most effective and less restrictive solution. Many manufacturers and providers offer rent to own programs for this equipment. For all rooftop types, personal fall arrest and restraint systems also offer significant protection; however, employee training and feasibility are always a concern. And one will find that when it comes to personal fall arrest systems for PV, solar thermal and wind tower construction, there isn't a, one manufacturer and model fits all solution. Renewable energy

providers must take a serious look at the harnesses, specialized anchorage attachments, (such as mobile fall protection carts), associated equipment and employee training when planning for these projects. Electrical hazards are abundant as well. Most notably, how the new 2012 NFPA 70e standard directly applies when it comes to qualified person verification, written job hazard analysis, AC and DC arc flash and incident energy calculations, establishing correct flash boundaries, lockout tag out, PPE/equipment, labeling and design.

Lastly, when you take into account the high volume of equipment operating on these projects combined with the vast amount of employee and subcontractor personnel presence, struck by and caught in between hazards are of constant concern. Equipment operator training and certification, especially with regard to state equipment hoisting requirements is always a hot topic, and with the amount of crane activity always in progress, companies must get educated on OSHA's Subpart CC crane standard. Then of course, are the weather extremes these projects are commonly exposed to, and the associated worker risk hazards such as heat stroke and hypothermia, that go with it.

System Design

More and more renewable energy providers and EPC contractors, especially those engaged in photovoltaic installations are faced with an ongoing struggle in attempting to engineer fall hazards out of a project. Knowing that precious roof space is vital to a system's capacity, that option is not always feasible, which makes designing safety into a rooftop as-built is always a wise choice. Examples include keeping a 10-15' set back from all exposed roof edges, and including fall protection and skylight protection barriers would greatly and proactively assist project managers in preparing for these hazards. In addition, many inverter manufacturers have already begun to engineer smart safety designs into their equipment.

Estimating Safety Requirements

In the ongoing effort to establish an effective safety culture, the folks at the front of the project, such as estimators, must educate themselves and their clients on the need to include safety in their bids. An assumption that all work will be performed safely and with regard to compliance, and for that matter, even contractually, does nothing to ensure that safety will be priority number one for the project. Make sure that all competitive bids include safety equipment, and your clients fully understand the importance of having safety integrated into the bid. Not to mention helping them understand how any project incident or injury can both directly and indirectly impact them.

Subcontractor Management

This could be one of the biggest areas that if improved upon, would significantly reduce the occurrences of project incidents and injuries. Many renewable energy companies have now shifted to a subcontractor turnkey model for commercial projects, and have now found themselves engaged in one of two battles. The first is making the mistake of thinking that once a project is handed off to a subcontractor, your safety responsibility was handed off as well. For those who feel that is the case, I highly encourage them to review OSHA's Multiple Employer Worksite Citation Policy, especially regarding correcting and controlling employer responsibility. The second, and with respect to the first, is understanding the majority of these subcontractors are very inexperienced with renewable energy projects, and with regard to the focus and education of the associated safety hazards that exist on these projects, quality has become a direct link to the spike in project safety related incidents and injuries.

Quality/Service/Maintenance

These topics and bi-products of renewable energy construction have created a breeding ground for incidents and injuries to occur in alarming degree. How? Well, the very nature of quality itself demands that it be at a level acceptable to both the provider and client. And when that quality is compromised, which further emphasizes the need for proper subcontractor management training for project managers and lead installers, there is often a rush to correct what is incorrect, and in that haste, safety commonly takes a back seat. A similar pattern often occurs whenever service and maintenance are required. Examples are improperly trained and experienced technicians that interface live electrical systems and are subject to arc flash and incident energy hazards, lack of fall protection when inspecting and troubleshooting rooftop arrays and general oversight of conducting effective pre-job hazard analysis due to the very nature of 24-hour emergency calls and requests for service and maintenance.

In Summary

Renewable energy has raced its way into the mainstream, and has become the beacon of hope for clean energy solutions worldwide. However, please let us not forget that safety and its associated gamut of endless hazards does not turn a blind eye to any industry, no matter how politically or fundamentally popular in its application. The first word in renewable is renew, and renew is that exact ideology we must all apply toward safety compliance for each and every one of these projects going forward.

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