



POWERPACK GROUPTM

1800 Diagonal Road, Suite 600
Alexandria, VA 22314
PH: 703-647-7539

**The Power Pack Group, LLC
Testimony Submitted for the Hearing Record
Committee on Energy and Natural Resources
United States Senate**

**"Efforts to Protect U.S. Energy Delivery Systems from Cyber
Threats"**

April 4, 2017

Chairman Murkowski and Ranking Member Cantwell, the Power Pack Group appreciates the opportunity to submit the following testimony for the record of this important hearing today. We believe that protecting the integrity of our energy resources from cybersecurity and other external threats is a matter of national security and cannot be ignored under any circumstances.

The Power Pack Group, LLC represents a partnership between **Kotuku Energy** and Vital Construction & Electric, LLC that manufacture LED lighting for outdoor and indoor venues. These companies are a Service Disabled Veteran Owned Small Business with master licenses in California, Oregon, Washington State, Virginia, Maryland, Utah, and Alaska. The company also has licenses to operate in 23 other states, including (MT, ID, WY, SD, NE, MN, OH, WV, KY, NC, TX, OK, NM, AZ, and NV). The company also has very extensive expertise in using solar energy technology and solar energy farms to power LED lighting technology.

The value of these resources is that part of a security system to protect our energy resources is in proper and appropriate lighting, whether the energy delivery system is an electric utility substation in the mountains of Montana or the Alaska pipeline. LED lighting technology is particularly suited for protecting energy delivery systems because unlike many other lighting resources, the **VCE-Kotuku** a high-tech specialty LED lighting technology that is blast resistant and can operate in temperature tolerances from - 40 degrees F to + 160 degrees F. When coupled with security cams reporting real time video feeds, the system could go a long way to preventing terrorist attacks on a pipeline such as the Alyeska pipeline or any electric utility substation anywhere in the United States. An attack upon our energy system is a major National Concern.



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As early as 2004, Congress has expressed concern about such an attack. According to a 2004 report from the Congressional Research Service entitled, "Electric Utility Infrastructure Vulnerabilities: Transformers, Towers, and Terrorism"

The U.S. electric power system has historically operated at such a high level of reliability that any major outage, either caused by sabotage, weather, or operational errors, makes news headlines. The transmission system is extensive, consisting mainly of transformers, switches, transmission towers and lines, control centers, and computer controls. A spectrum of threats exists to the electric system ranging from weather-related to terrorist attacks, including physical attacks, as well as attacks on computer systems, or cyber attacks. The main risk from weather-related damage or a terrorist attack against the electric power industry is a widespread power outage that lasts for an extended period of time. Of the transmission system's physical infrastructure, the high-voltage (HV) transformers are arguably the most critical component. Utilities rarely experience loss of an individual HV transformer, but recovery from such a loss takes months if no spare is available. Conversely, utilities regularly experience damage to transmission towers due to both weather and malicious activities, and are able to recover from this damage fairly rapidly. While occasionally causing blackouts, outages resulting from these attacks generally have not been widespread or long lasting.

While there are countless suggestions on how to guard against an attack on our energy systems, keeping these systems properly illuminated is a significant contribution to this solution. A substation or significant pipeline such as the Alyeska pipeline in Alaska is at a significant loss appropriate lighting is not available. LED lighting does not create high temperature like other lighting which in turn will provide extended life of product to minimum of 50,000 hours, eliminating maintenance costs for the duration of the warranty.

Several witnesses at the April 4 hearing suggested the importance of the Cybersecurity Risk Information Sharing Program (CRISP). As the Committee is well aware, The Cybersecurity Risk Information Sharing Program (CRISP) is a public-private partnership, co-funded by the U.S. Department of Energy's (Department) Office of Electricity Delivery and Energy Reliability (DOE-OE) and industry. The purpose of CRISP is to collaborate with energy sector partners to facilitate the timely bi-directional sharing of unclassified and classified threat information and develop situational awareness tools to enhance the sector's ability to identify, prioritize, and coordinate the protection of their critical infrastructure and key resources.



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From this perspective, we recommend that the Department of Energy ensure that DOE provide relevant cybersecurity information with industry stakeholders, such as the LED lighting industry if they are involved in providing security lighting for electric utility installations. The same practical advice should also be applicable to the Alyeska Pipeline.

On July 7, 2015, Alyeska Pipeline president Adm. Tom Barrett spoke at the Greater Fairbanks Chamber of Commerce luncheon Tuesday afternoon, July 7, 2015 at the Carlson Center. He said that aging infrastructure and declining oil flow are well-known challenges facing the trans-Alaska oil pipeline, but that cybersecurity threats present another critical danger. He said that Alyeska Service Co. is bombarded with thousands of attempted online intrusions each month. He said Alyeska devotes considerable resources to warding off such attacks. He was quoted, "You would be astonished at all the people who try to penetrate our systems from all over the world," He said the origin of such attacks is difficult to determine, but he doesn't believe Alyeska is being singled out. In sectors such as energy and banking, cyber attacks are frequently launched by everyone from casual hackers to sophisticated entities.

Barrett said Alyeska has been "highly successful" in repelling the attacks but acknowledged that some efforts aren't detected until they begin to cause problems. He said the attacks range from inconveniencing people ... to serious attacks by people who have malicious intent behind them.

Of the three primary threats that Barrett mentioned to the Chamber crowd, the other two are more familiar: The aging pipeline requires "significant upkeep," and decreasing flow is making it less efficient. He stressed the fact that to combat the decreased flow — the pipeline is carrying about one-third the amount of oil it was designed to transport — Alyeska is doing more research on how to prevent waxy buildup throughout the line. Barrett said that there also have been several recent reminders of potential problems with the aging pipeline, however, including a tiny leak discovered near Pump Station 10 last month. A landslide near the pipeline by the Yukon River also highlighted the dangers of melting permafrost, Barrett said. He continued by stating that Alyeska plans to spend \$330 million to renew and repair its infrastructure this year. He said spending varies, but about \$300 million is typical for its annual budget in those areas. He pointed to the fact that the pipeline was a brilliantly engineered line, but it is 38 years old.

It is important to realize that the physical integrity and of the pipeline could be enhanced through the use of high tech LED lighting technology.



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According to the Department of Energy LED lighting is a more energy efficient and less costly means of outdoor lighting protection of our energy resources. In a report issued in 2016, the DOE measured the energy and cost efficiency of LED lighting compared with other forms of outdoor lighting in a report issued by the Building Technologies Office in a Fact Sheet entitled "Caliber: Snap shot Outdoor Area Lighting, Lighting Facts (August 29, 2016)":

Outdoor area lighting is a major contributor to nationwide energy use, and the market segment has been an important player in the transition to solid-state lighting. Lately, the segment has also been making news based on concerns about the difference in spectrum between conventional and LED sources. Although LED Lighting Facts® does not capture data for products' spectral power distributions, which limits examination of these issues in this report, understanding the basic characteristics of available products is more important now than ever before. LED outdoor area luminaires now easily outclass conventional products, such as fixtures using high-pressure sodium (HPS) lamps, in terms of energy efficiency. Some LED products offer the same amount of light for one-third of the power of an HPS-based luminaire, more so for lower-output versions, such as 70 W HPS. At the same time, these LED products can provide superior color rendering, which can improve visibility. As the energy efficiency of LED outdoor area lighting has improved, there has also been a shift toward products with a warmer color temperature, which is perhaps a response to concerns about glare, light pollution, and health effects of nighttime lighting.

We hope that this testimony will be important in building a record of possible solutions to a national security issue that requires solid and practical solutions.

Thank you very much.