Lithium, New Tech and Pure Energy

Energy cannot be created or destroyed.

That one simple sentence, also known as the **Law of Conservation of Energy**, underpins every action we make, every song we hear, everything we touch. Your bicycle moves because you power it. You live because you digest food and convert its nutritional content to biologic energy. Baseballs curve, penicillin cures, sound carries, fires burn – all examples of energy changing form.

New technologies are vital to creating more efficient forms of converting energy, and as the wonderfully grumpy Jack Lifton pointed out, this is especially true when attacking a rare earth deposit. The old ways just don't work for the rare earths. As Lifton wrote, "Lithium production is almost a poster-child for the time it takes for 'new' technologies to become 'standard.' And in case you didn't notice all of this has been driven by an increase in demand."

One company that gets this concept is Pure Energy Minerals Ltd. of Vancouver (TSXV: PE), which is focusing on more efficient lifecycle solutions for lithium supply in North America. The flagship project is a lithium brine project in Clayton Valley, Nevada.

In the cities of Reno and Las Vegas, financial energy gets converted to fun and loss of memory. Located halfway between those two cities is Clayton Valley, which has hosted mining activity dating back to the 1860s. It is here that Pure Energy has over 8000 acres of placer mining claims contiguous to the only lithium production facility in North America. Pure Energy is looking to convert those claims into revenue for its shareholders.

Pure Energy sees Clayton Valley as being surrounded by lithium-enriched Tertiary rhyolitic tuffs, lithium-bearing sediments, and an active geothermal system. Geologically the lithium mobilized from these sources to be deposited into the groundwater. The dry climate concentrated the groundwater by evaporation into hypersaline lithium-rich brines which are hosted mainly within the more porous parts of the basin. Pure Energy's claim block extends for 12 kilometres to encompass the deepest sections of the valley, and is contiguous to the only producing lithium mine in North America.

A Clayton Valley cross section and gravity survey are here.

Conventional lithium extraction techniques are expensive, harmful, and inefficient. Too much energy is wasted in the process, resulting in higher costs and less margin for the shareholders. This old technology, developed in the 1960's, requires extensive evaporation ponds (4000+ acres) to concentrate the brines prior to processing, resulting in significant and valuable quantities of water being evaporated away into the desert atmosphere. These ponds are expensive to build, recover less than half of the available lithium, and require an 18-24 month process cycle to deliver product.

Pure Energy is embracing novel technologies that are potentially capable of producing customized high-grade lithium products at costs below that of hard rock, clay or existing brine facilities. These new processes are attractive because they are environmentally friendly, highly efficient (capable of extracting >99% of lithium from brine), weather-independent, and have a process time of hours not years.

Clayton Valley brine is currently being tested at POSCO's lithium research facility in South Korea and at Tenova Bateman's lithium research facility in Israel. Pure Energy expects that its lithium brines, coupled with recent technological advancements in processing, will outperform hard rock and clay sources on cost, sustainability and permitting.

Pure Energy has an experienced management team with backgrounds in finance, exploration, geoscience, lithium processing, permitting and construction. These varied backgrounds will be vital to helping Pure Energy convert its assets into a win for the shareholders.