

LITHIUM  
AMERICAS

# LITHIUM AMERICAS CORPORATION

## SALT FLAT BATTERIES



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*Large and small scale electricity storage is at the heart of a new green economy: by 2016 it will demand quantities of lithium not currently available, putting a fair wind behind Lithium Americas Corporation as it positions itself to exploit the salt lakes of northern Argentina*

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Demand for lithium continues to increase

Just a year ago, the CEO of Lithium Americas Corporation Dr Waldo Perez predicted that in a few years' time, more of the world's lithium carbonate supply would be going into batteries than into all other applications put together. This common but hard to obtain metal has a number of established uses and is valuable as a flux for glass and ceramics manufacture. Lithium salts are used in a host of other process including HVAC, dyes and pigments, aluminum processing, lubricants and plastics. Demand for lithium has continued to increase over the last year, and though it may be some time before batteries account for more than half of world demand, 2011 saw this application move ahead of glass and ceramics to take the number 1 spot. "Not many metals are growing at more than ten percent per annum!" Dr Perez points out.

The average annual growth rate of lithium carbonate use in China alone stands at around 25 percent, mainly driven by mobile phones and other electronic devices. China, in common with the USA, Japan and Europe is also putting huge efforts into developing efficient batteries for cars and commercial vehicles. This research has some way to go and is currently restricted by recharging infrastructure which exists in only a few pilot areas, but it's interesting to note that between 20 and 30 million electric bicycles are sold every year in China

– of these only three percent currently use lithium batteries.

Demand has been driven to date by the uptake of mobile devices and hand held power tools, says Perez. However, batteries used in vehicles already account for six percent of global lithium supply – a significant amount – and when you consider that a single car battery contains around 1,000 times as much lithium as an iPad, the potential is plain. He also points to the development of smart grids in cities around

the world, with China again a major player, relying on large scale rechargeable batteries to smooth demand flow. The entire rechargeable battery market has been predicted to grow to \$54 billion by 2020, by which time the current relatively high cost of manufacturing lithium-ion cells will have dropped below competing systems.

**\$54  
BILLION**

Prediction for the  
rechargeable battery  
market by 2020

Analysts agree that lithium, already in tight supply, is going to become a very sought after commodity over the next ten years. Companies that have large resources they can exploit at low cost will benefit from that, and Lithium Americas Corporation is an outstanding example, with its 64,572 hectare property at the Cauchari and Olaroz salt lakes (or salars as these mineral rich brine deposits are called) in the Argentine, the third largest lithium bearing brine deposit in the world. Additionally the company has licenses to explore a further 82,200 hectares on three further salt lakes

on the Puna Plateau in the northwest corner of the country.

When we last reported in March 2011 the company was preparing to complete its preliminary economic assessment as a prelude to a full scale feasibility study, and planning to set up a pilot plant that would test the process. When compared with hard rock mining of lithium, brine beneficiation is a very simple and low cost process, involving digging a large, shallow pond, filling it with brine, waiting for the solids to settle and the water to evaporate (it's not quick) and then concentrating the lithium.

The pilot plant, which is now in Argentina, is a much scaled down version of the plant that will commence construction later this year, producing approximately 30 kilograms a day of battery grade lithium carbonate at 99.5 percent purity. "While other brine companies have been able to produce lithium carbonate at lab scale, production at pilot plant scale is more complex and requires having significant evaporation ponds on-site in order to produce the necessary volume of lithium concentrate to feed the pilot plant, as well as having the technology to perform the lithium extraction process and obtain a product with the parameters required by the battery and automotive industries.



Every technical and process eventuality is tested

The completion of the pilot plant is a major achievement and further demonstrates our leadership position within the industry."

The pilot system is approximately a thousand times smaller than the lithium operation will be, but produces quite a bit less than a thousandth of the projected output for the big mine. It is being deliberately run at a pace that allows fine tuning of every stage of the process – by the time the big

plant is up and running in 2014 every technical and process eventuality will have been tested.

2012 is a very important year for Lithium Americas Corporation. A full feasibility study will be published in the second quarter, allowing the financing to be tied

up with existing business partners and investors. As we reported last year, Lithium Americas Corporation already has offtake agreements with the global automotive supplier Magna and Mitsubishi Corporation and the completion of the FFS will pave the way for other interested parties to advance their stake in a sustainable and dependable

**20,000  
TONNES**

.....  
Projected production  
for 2014

source of lithium carbonate.

And make no mistake, they will need it. Eighty five percent of world lithium supply is in the hands of four producers, and for three of those lithium is a by-product representing less than 20 percent of their total revenues. These companies

are expected to invest in expansion programs as demand grows, but the writing is on the wall for the oligopoly, Perez believes. "I think local producers like ourselves, coming into production in 2014 and ramping up through to 2020 will gain a significant proportion of the market." There will be other new entrants he concedes, but not a large number,

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Grande Salinas, salt flats, in the Andes Mountain Range, Argentina

## “LOCAL PRODUCERS LIKE OURSELVES, COMING INTO PRODUCTION IN 2014 AND RAMPING UP THROUGH TO 2020 WILL GAIN A SIGNIFICANT PROPORTION OF THE MARKET”

and with prices expected to steady around the \$6,000 level, the brine producers will be the winners, able to bring in high volumes of lithium carbonate at low cost.

Lithium Americas Corporation’s projected contribution is 20,000 tonnes per annum from 2014, rising to 40,000 in 2016 with the construction of phase 2 of the Cauchari-Olaroz project making it a major player. As an additional upside, significant quantities

of potash can be recovered from the solids that settle out before the brine is evaporated. “Potash is a by-product but a very attractive one: we can obtain around 100,000 tonnes of potash a year, at 99 percent purity from a simple flotation plant.” There’s a real need for potash in Argentina, he adds. At present this vital material for fertilizer has to be imported from Chile. Potash could contribute around 15 percent to Lithium Americas Corporation’s

bottom line, and this contribution will be included in the FFS. Boron is another potential by-product, but for the moment quantities are not sufficient to justify its inclusion in the projections, he says.

Like any form of mining, brine processing is disruptive to the indigenous people of the area. Best practice in dealing with the impact on local people is enshrined in the so-called Ecuador Principles, and Lithium Americas Corporation has signed long term land use agreements with the five local communities which traditionally own the land. Under these agreements an initial fee is paid, plus annual fees over the next 30 years. The company will give employment priority to the people of these communities, provide training programs and establish

schemes to monitor the impact on the environment. By doing things the right way the company gets the benefit of a positive relationship with these vital stakeholders and the government of Argentina.

Waldo Perez is convinced that lithium presents a unique opportunity. “We are moving to a new green economy that relies on materials that are neither widespread nor well known. Lithium is one of those metals that are driving a significant proportion of the new economy. I encourage people to research these trends and invest early!” **BE**

For more information about  
Lithium Americas Corporation visit:  
[www.lithiumamericas.com](http://www.lithiumamericas.com)

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