

# **New rare earths processing facility announced in Appia Energy's backyard**

## **Government announcement is more good news following Appia's successful results and expansion**

Any mining company will tell you that success is the result of a combination of good decisions and good fortune, and Appia Energy Corp. (CSE: API |OTCQB: APAAF) ("Appia") has recently had both.

On August 28 the Saskatchewan Research Council ("SRC") and the Government of Saskatchewan announced their plan to develop a "first-of-its-kind" Rare Earth Processing Facility in Saskatchewan, Canada – essentially in Appia's Alces Lake high grade rare earths project's backyard. This is a highly significant announcement as it has enormous potential to benefit Appia down the track, as they can potentially leverage of what is already provided by the local government. The facility is planned to be fully operational in late 2022 and will be capable of processing both hard rock ores (monazite and bastnaesite), and converting them into saleable individual rare earth oxides. This matches perfectly with Appia's shorter term needs and would be North America's first rare earths processing facility.

Speaking exclusively to InvestorIntel, Appia President and CEO, Tom Drivas, welcomed the news. "Appia congratulates the Saskatchewan Research Council and the Government of Saskatchewan for their initiative to develop a first-of-a-kind rare earth processing plant in Saskatchewan, Canada," he told InvestorIntel. "Appia is very pleased and excited to learn

that the Saskatoon rare earth processing plant will be up and running by the end of 2022, especially since it is in such close proximity to Appia's high-grade critical rare earth Alces Lake project. Having the SRC plant in the same province as our project will substantially benefit Appia and its shareholders. Appia's Alces Lake project's rare earths are hosted in monazite, which the SRC plant will be processing. Appia has a well-established working relationship with SRC."

This comes on the heels of a recent string of exploration and other news for Appia. In July 2020 Appia reported a 1.0 meter channel sample line grading 0.471 wt% total rare earth oxide ("TREO") at Appia's Loranger Property. Appia also found over 65 metres of continuous uranium mineralization at surface grading 0.018 wt%  $U_3O_8$  at their Eastside Property.

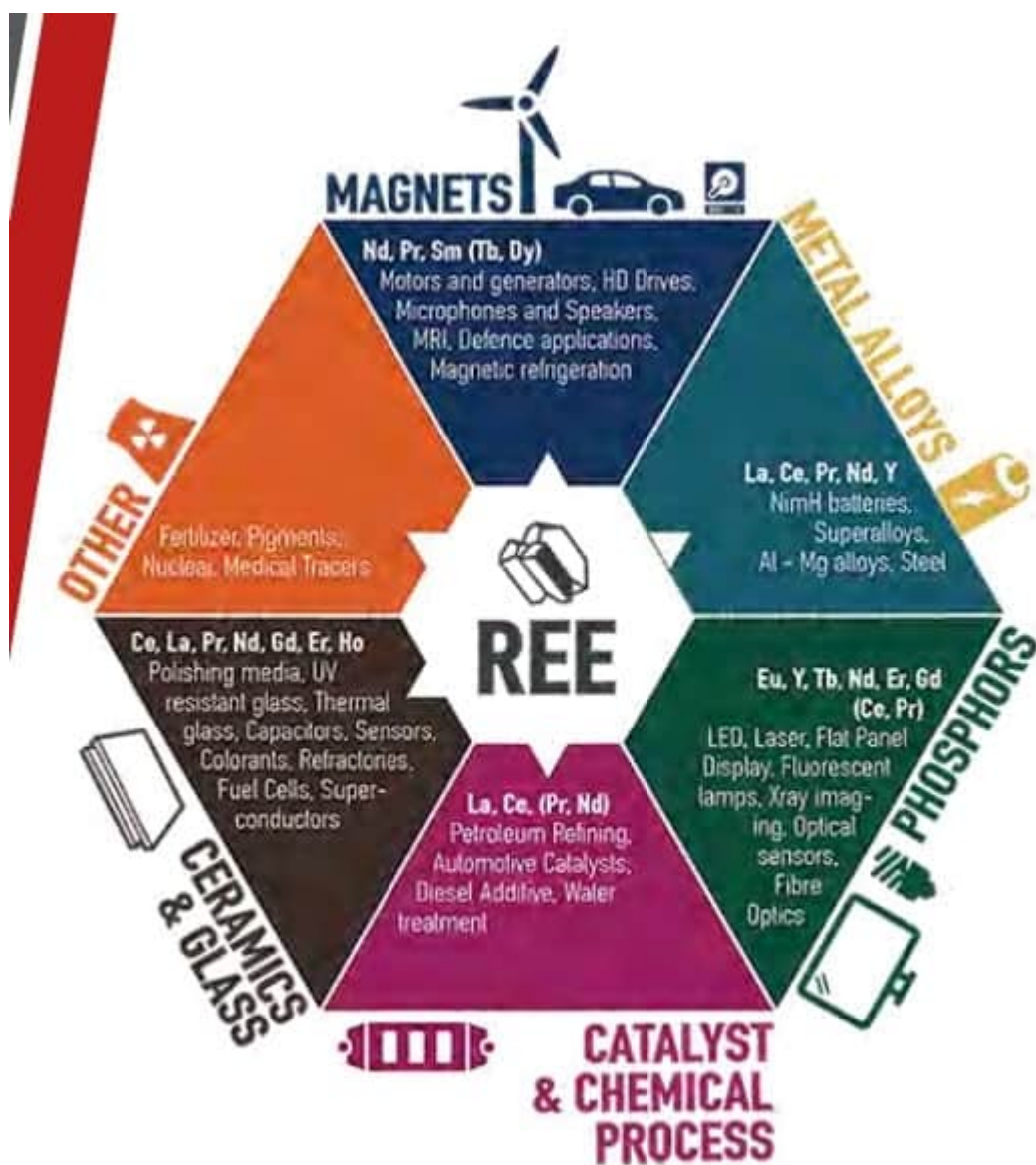
"The composite  $U_3O_8$  grades from Eastside are comparable to other world-class open pit uranium mines," said Appia Vice-President, Exploration and Development, James Sykes, "such as the Rössing and Husab uranium mines in Namibia. Based on historic assay results and those obtained from Line 3 of Area 51, we believe zones with higher uranium grades are possible on the Property. The Property remains underexplored."

On August 4 Appia announced that it had staked 8,014 additional acres at its high-grade rare earth Alces Lake Property, expanding the total property to an area of 17,577 hectares (43,434 acres). The new staking around Hawker ensures that all of the historic surface occurrences and potential geological trends are located within the Alces Lake Property. The two new land acquisitions now provide Appia with an additional 11 km of prospective trends to explore for additional high-grade rare earth element and uranium zones, bringing the total to 41 km along a continuous regional geological trend.

On August 6 Appia announced that they had discovered at least seven surface rare earth and uranium zones on the Alces Lake

Project. Mr. James Sykes said: “We continue to discover more of the REE mineral system at surface, and for many kilometers outside of the main area where we’ve been focusing exploration for the past couple of years. This suggests we’re looking at a very large system across the property and also at depth.”

### Some uses for rare earths and hence a strong decade ahead



Source

### The Alces Lake Property (100% owned by Appia)

The Alces Lake property has monazite ore that is enriched in valuable critical rare earth elements, particularly Neodymium (Nd), Praseodymium (Pr), Dysprosium (Dy), and Terbium (Tb).

These four elements account for between 23-25% of the TREO, or ~85% of the potential value at Alces Lake. Alces Lake hosts the 2nd highest average REE grade in the world. At a 4 wt% Total Rare Earth Oxides (TREO) cutoff, Alces Lake average grade is exceptionally high at 16.65 wt% TREO. The Alces Lake Project's rare earths are near surface and hence suitable for an open pit mine. Permitting should be smooth being in northern Saskatchewan Canada and the CapEx and OpEx should be reasonably low given the good grades and near surface resource. Finally the recent development by the Government of Saskatchewan to develop a "first-of-its-kind" Rare Earth Processing Facility in Saskatchewan is extremely promising for Appia.

**Appia Energy Alces Lake Project has one of the highest grade rare earths in the world with favorable monazite ore**

High-grade outcrops and drill hole intersections, on average, comprising **27% monazite**, locally up to **85% monazite (these are naturally pre-concentrated)**



Source

## Closing remarks

Appia Energy continues to expand their rare earths and uranium resource potential via a very significant neighboring land acquisition and further exploration in their Summer campaign. Phase 1 has already uncovered numerous targets and phase 2

plans 2,000 to 3,000m of new diamond drilling on their Alces Lake Project.

The announced new SRC Saskatchewan rare earths processing facility is a potential game changer for Appia. All the pieces of the puzzle are coming into place – very high grade rare earths, expanded land package with exploration upside and success, and finally a nearby processing facility. As the renewable energy and EV boom take off this decade the demand for a secure supply of western-made rare earths will intensify. It is starting to look like Appia Energy can be a significant player one day with continued good results and good fortune.

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## **Solvay's toll refining services redirect the downstream rare earth dream**

**First Come, First Served:** How much water can you pour out of an 8 ounce glass? Does that seem to be a trick question to you? It really isn't. The answer is 8 ounces.

✘ So now let's look at an analogous question: How much, in total output, of individual rare earths can Solvay's La Rochelle, France, separation plant with a total installed output capacity of 9,000 metric tons per year process? The answer is obviously that Solvay's LA Rochelle, France, **global rare earth** (a phrase I use to indicate that the plant can separate from each other and purify any and all of the rare earths plus scandium and yttrium) solvent extraction facility can process a total of 9000 metric tons per year. So why am I pointing out this obvious fact?



I believe that La Rochelle is now operating at about 50% of total capacity, so it has available the open capacity to process 4,500 tons per year. It is a very impressive operation with three stories each having some 600 mixer settler units. The last time I was there (in the Spring of 2013) around 1200 of the 1800 mixer settlers were in operation.

I am pleased that this facility has finally been "discovered" by many managers of the rare earth juniors, and I am pleased that Solvay has very recently decided to offer toll refining services to those whose metallurgy can produce a PLS that will be both legal to import into France (from a radioactive content perspective) and is amenable to the nitrate process used by Solvay, La Rochelle.

Now, back to where I started. If one assumes, for the sake of this article, that Solvay La Rochelle is now running at 50% of capacity. I then also assume that it is operating at least at or close to breakeven at that capacity utilization, and I am reasonably certain that it does not need to run at full capacity in order to be profitable. Note well that Solvay, La Rochelle is not simply a producer of separated rare earths but, in fact, supports two downstream rare earth dependent businesses in which Solvay is the world leader, the production of display and lighting phosphors, which are yttrium oxy compounds "doped" with heavy rare earths, such as, but not limited to terbium, and the production of the cerium doped alumina wash coats (24 different customer specified blends I was told) used to line the channels in the substrates for automotive exhaust emission catalysts and upon which the platinum group metal catalysts used are deposited. Solvay La Rochelle also produces and markets cerium salts used for glass "polishing." I think that it also produces high purity lanthanum for the production of optical glass.

Solvay, La Rochelle, is therefore not just a solvent extraction operation that produces and markets individual rare earth salts and blends for use by others. It is the anchor of

a totally integrated supply chain for phosphors and wash coats and fine chemicals. It is also, by the way, the world's longest running solvent extraction plant dedicated exclusively to processing (separating and purifying) the rare earths; it has run for 44 years.

It should be clear that any rare earth junior who says he is going to build a dedicated solvent extraction plant for his own PLS is NOT going to create an operation like La Rochelle in a short time. Nor is the junior going to enter any downstream markets for high tech products even if this type of arrogantly ignorant announcement is frequently made. Alain Levesque, the scientist who was responsible for much of La Rochelle's process chemistry development until his retirement last year (2013) told me in Toronto last year that it could take 10 years of operation before a new SX plant could routinely produce 99.99% pure individual separated rare earths. Like much of engineering trial and error is a common operation when a plant is started up. Success is a matter of luck as well as of well-honed and experienced skill.

I therefore applaud (and approve) of the recent move by many older and now wiser juniors to seek out a toll refiner. I note that the only two former juniors now in operation are vertically integrated downstream at least as far as through the separation of the light rare earths ( and in Molycorp's case through the capability to separate heavy rare earths in their subsidiary's Chinese facilities).

The Solvay people told me that when they announced at the Roskill Conference in Hong Kong in November of 2012 that Solvay had just then decided to look at toll refining their representatives were inundated with requests for meetings. They were surprised, I was told. I was not surprised, because I have observed the juniors walking around with blinders since the current rare earth bombast began in 2007. Most of the managers at first completely ignored the downstream aspects of rare earth production, and those that did learn of it sought

out Chinese technology vendors for advice. No one ever mentioned Rhodia (bought by Solvay recently with its rare earth processing and manufacturing business renamed as Solvay Rare Earth Systems just last year, 2013), but this could have been because Rhodia's La Rochelle and two Chinese facilities were company dedicated and not offering toll refining services.

I don't know if Rhodia, La Rochelle, has commenced toll refining services, because none of the public or even private juniors I am aware of has commenced production of a clean PLS. By clean I mean a PLS without radioactive or nuisance elements, such as uranium, thorium, iron, aluminum, fluorine (fluoride), and the like all and each of which impair solvent extraction efficiency or even efficacy.

I suspect that La Rochelle is now being offered feed stocks from off-the-books production in southeast Asia, but even these would have to meet the no radioactives and/or nuisance standards.

In any case Solvay La Rochelle is looking for revenues from toll refining and not necessarily for feed stocks for its own downstream businesses. And even where Solvay, as any other company in its situation, would like alternative sources for yttrium and the heavy rare earths its new demands will be relatively small, since it has been sourcing these materials for decades and in all likelihood has a good supplier base.

The point I want to make here is that Solvay, La Rochelle, has a finite open capacity; it will be tolling, not buying rare earths; it will work with whoever (and this could be more than one) can supply "acceptable" PLS and pay the tolling fees up to whatever portion of its open capacity it is allocating for tolling. It will be FIRST COME FIRST SERVED!

Look carefully then at the start-up of production dates for the juniors, before you decide that any association with



Solvay is a game changer or it means that the game is over.

Next week I'll comment on the latest comments by juniors on "marketing" their "products." (**Note from the Publisher:** Next week's commentary will be exclusive to InvestorIntelReport members only.)