Permitted and Production ready, the Sunday Mornin' Mine is Comin' Alive to Mine Saleable Uranium

It's been a wild ride for uranium stocks over the last few months. From mid-August into September there was a tremendous, across the board, rally on the back of bullishness brought about by the Sprott Physical Uranium Trust (TSX: U.UN) and its purchase of uranium that helped prop up spot prices. Then, as the Sprott Uranium fund raised even more cash to continue buying physical uranium, you had additional optimism that nuclear would be a prominent theme at COP26 as a zero carbon energy source. However, it would appear that for the time being that early to mid-November was the top of the impressive rally in uranium stocks as they seem to be in a bit of a slump of late. With that said, there seems to be plenty of optimism out there that spot uranium buying by Sprott and its peers, have perhaps set a new base for uranium prices and this should serve to benefit virtually all uranium producers.

This could make the current weakness in uranium stocks a buying opportunity, but as I've noted before, I might be the worst market timer ever when it comes to uranium names. So today we'll simply discuss a Colorado based uranium and vanadium conventional mining company focused on low cost near-term production of uranium and vanadium in the western United States – Western Uranium & Vanadium Corp. (CSE: WUC | OTCQX: WSTRF). Then you can decide whether this is a good time for you to jump on the uranium bandwagon.

Probably the most critical aspect for an investment in Western Uranium is its Sunday Mine Complex (SMC), which is now back in pre-production development. On October 12, 2021, the Company

stated that active mine development operations had resumed at the Sunday Mine Complex, and the project is already producing strong results. Development ore is being stockpiled underground, with full production of the GMG ore body potentially beginning within six months. The ore body is projected to be significantly larger than indicated by the previous limited surface drilling and the location of ore-grade material is within thirty feet of the existing mine workings. The Company followed up on November 16th to report that in only three working days, over 300 tons of very high-grade uranium/vanadium ore was mined from the drift estimated at 1.5%+ uranium U_3O_8 content. At present market prices, this mined ore has a uranium/vanadium ore value of approximately US$1 million. I'd say that's a pretty good 3 days at the office.

It's important to note that the Sunday Mine Complex is already permitted and production ready. 2019/2020 exploration and development have enabled Western to quickly restart operations at the SMC where the infrastructure has been recently upgraded and the mine workings rehabilitated. This is a huge advantage relative to other players in the uranium space given that growing a resource, feasibility studies, and permitting can take many years or longer. Western is one of the few North American small-cap uranium producers that have the ability to mine saleable uranium today. In theory, this should give Western a better correlation to uranium price movements than an explorer with indicated or inferred resources or possibly not even that advanced. Western is actually stockpiling a resource it could sell tomorrow.

At present, Western is well-financed to continue operations having finished September with $4.4 million in cash (excluding restricted cash). Additionally, there are roughly 10.7 million warrants outstanding with an average strike price of C$1.60 versus yesterday's close of C$1.83, which represents an additional C$17 million of potential funding. All this makes

Western Uranium's market cap just under C$70 million. If you are better at figuring out what's going to happen next with uranium prices than I am, then you can decide if this is a steal of a deal or not. What I do know is that Western Uranium & Vanadium Corp. should react positively to any good news on the uranium front going forward.

COP26 focuses investor interest on the critical materials required for a cleantech global vision

COP26 is now completed and the changes will impact the cleantech sector in the years ahead. Some came away disappointed at the lack of commitment from the 197 participating countries at COP26; however, there were many positive steps as outlined below.

The major outcomes from COP26

- The "Glasgow Climate Pact" was introduced. It aims to limit global warming to 1.5 °C. It calls for a more ambitious climate response on cutting emissions, climate management finance, and pledging to double adaptation finance, and funding for loss and damage already being caused by warming. Countries were asked to "revisit and strengthen" their climate pledges by the end of 2022.
- New transparency rules to ensure countries report sufficient information to determine whether or not they are meeting their pledges.
- The first ever COP decision to explicitly target action

against fossil fuels, calling for a “phase-down” of unabated coal and “phase-out” of “inefficient” fossil-fuel subsidies.

- COP26 finalised rules for global carbon trading; however under the rules, the fossil fuel industry will be allowed to “offset” its carbon emissions and carry on polluting.
- Record-breaking pledges of US$365 million to the Adaptation Fund. This was a tripling of the amount raised last year, with first time contributions from the USA and Canada.

Note: The Adaption Fund is set up to help developing countries build resilience and ‘adapt’ to climate change.

Sectors and companies to benefit from the COP26 changes

The renewable energy sector will continue to be a beneficiary. In particular, solar, wind, hydro, and geothermal energy. So too will nuclear energy benefit. The push for a global warming increase limited to 1.5 °C, and the focus for countries to revisit and strengthen their climate pledges by the end of 2022, should also be a positive catalyst going forward for renewables and nuclear energy.

Carbon capture and storage (“CC&S”) should also continue to benefit. The “phase-down” (not “phase-out”) of coal means CC&S can continue to play a role to reduce carbon emissions.

Zero-emission vehicles such as electric vehicles (“EVs”) indirectly got a boost with the COP26 decision to phase down “inefficient” fossil-fuel subsidies. If implemented fossil fuels would become relatively more expensive making EVs relatively more attractive.

Those companies working in the cleantech sector will benefit from the renewed COP26 push to reduce emissions.

Many InvestorIntel member companies set to benefit

When you look over the list of InvestorIntel member companies the standout feature is that many are involved, either directly or indirectly, in the cleantech and green related sectors. For example, Carbon Streaming Corporation (NEO: NETZ) invests into **carbon credits**, Cielo Waste Solutions Corp. (TSXV: CMC | OTCQB: CWSFF) turns polluting **waste into renewable fuel**, dynaCERT Inc. (TSX: DYA | OTCQX: DYFSF) **reduces emissions** from vehicles, H2O Innovation Inc. (TSXV: HEO | OTCQX: HEOFF) uses technologies to **create clean water** and treat wastewater, Ideanomics, Inc. (NASDAQ: IDEX) is investing in and **supporting the EV industry**, Nano One Materials Corp. (TSX: NANO) works to develop and commercialize **better and cheaper cathodes** for lithium ion batteries, and NEO Battery Materials Ltd. (TSXV: NBM) is **developing silicon anodes for lithium ion batteries.**.

The mining companies that produce or are working to produce the raw materials that go into solar and wind energy, as well as electric vehicles, batteries, and other energy storage products, stand to benefit. This includes the **rare earths** (Appia Rare Earths & Uranium Corp. (CSE: API | OTCQB: APAAF), Search Minerals Inc. (TSXV: SMY | OTCQB: SHCMF), USA Rare Earth, LLC, Vital Metals Limited (ASX: VML); **lithium** (Avalon Advanced Materials Inc. (TSX: AVL | OTCQB: AVLNF), Critical Elements Lithium Corporation (TSXV: CRE), Neo Lithium Corp. (TSXV: NLC); **cobalt** (CBLT Inc. (TSXV: CBLT), Global Energy Metals Corporation (TSXV: GEMC); **graphite**; **nickel** (Nickel 28 Capital Corp. (TSXV: NKL); **manganese**; **copper** (Kodiak Copper Corp. (TSXV: KDK), Murchison Minerals Ltd. (TSXV: MUR); **vanadium** and **scandium** (Imperial Mining Group Ltd. (TSXV: IPG), Scandium International Mining Corp. (TSX: SCY). Another is the rare earths' **magnet materials** maker Neo Performance Materials Inc. (TSX: NEO).

Finally, a phase-down of coal is a positive for the smart nuclear sector and hence the **uranium miners** and explorers such as Energy Fuels Inc. (NYSE American: UUUU | TSX: EFR), Ur-

Energy Inc. (NYSE American: URG | TSX: URE), Western Uranium & Vanadium Corp. (CSE: WUC | OTCQX: WSTRF), Fission 3.0 Corp. (TSXV: FUU | OTCQB: FISOF), Appia Rare Earths & Uranium Corp. (CSE: API | OTCQB: APAAF), and Azincourt Energy Corp. (TSXV: AAZ).

Closing remarks

COP26 was perhaps more successful than what some are reporting. The phase-down of coal is a good achievement, with India joining this for the first time. The new transparency rules are underappreciated, given currently that there are no penalties for not following the climate change targets (only naming and shaming). New rules for global carbon credits trading are also a positive step forward. Also, the tripling of pledges to the Adaptation Fund to help developing companies is welcome.

Investors could look through the list of InvestorIntel members and select the companies that they think best align with the COP26 changes and the massive trend towards reducing emissions and producing green energy and technology this decade.

See you next time for COP27 in November 2022, this time in Egypt.

Copper, Lithium, and a Presidential Election in Chile, why does it matter?

Now that COP26 has concluded perhaps some other items will begin to show up in the news cycle. However, unless you dig

deep you may not be aware that on November 21st Chileans go to the polls to elect a new president. You may be wondering why I picked an election in Chile as something to pay attention to given all the things going on in the world today. I have to admit that I'm a little concerned about the build-up of Russian troops on the Ukrainian border in response to complaints of increasing NATO activity in the region. And you just never know what's going to happen when the Chinese and U.S. get together to discuss economic and military tensions. Yet despite all that I think the Chilean election could have greater global ramifications depending on the outcome…or it could be a non-event.

The reason for having a look under the hood at Chile's election is two-fold. One is that the leading candidates in the polls are currently from the far left and the far right, neither are from Chile's mainstream political parties. The second is Chile's contribution to two very top-of-mind commodities at present: copper and lithium. Has this information started to pique your curiosity? If it hasn't then it should and here's why.

In today's economic reality, as we move towards a cleaner, greener world with less carbon emissions, we are going to need a lot of copper to build out all the electrical infrastructure and of course lithium has been termed as the gasoline of the future. We've covered the macro necessity of both these commodities enough at InvestorIntel, so I won't get into the weeds on everything regarding copper and lithium. However, I will say that Chile is the world's largest miner of copper by a long shot. Mine production in Chile is approximately 28% of all copper mined in the world and the country is estimated to contain 23% of global copper reserves. Those are the kind of numbers copper investors need to pay attention to.

As for lithium, it's almost as impressive with Chile being part of the renowned Lithium Triangle. The Lithium Triangle is

a lithium-rich region in the Andean southwest corner of South America, spanning the borders of Argentina, Bolivia, and Chile. Roughly 58% of the world's lithium resources are found in these three countries, according to the 2021 USGS Mineral Commodity Summary. Although Chile only accounts for an estimated 11% of global lithium resources, they are currently the world's second-largest producer with approximately 22% of the world's lithium production. Again, this is enough material so that any sort of disruption to order or rule of law could have serious ramifications that ripple around the world.

As much as I like to brag about Canada being rich in commodities, Chile is knocking it out of the park when it comes to copper and lithium. Hence the reason I'm paying attention to this election given the importance to a nation's commerce of an orderly transfer of power.

Now let's take a closer look at the background heading into this election. This is the first election since widespread protests over inequality rocked Chile in 2019. Some of those protests turned violent, with riots, arson attacks, looting and violent clashes with police, all sparked after the government increased public transportation fares. Things were bubbling below the surface for a while and this was the ignition point. Needless to say Covid impacts to the economy and its people further exacerbated these issues. This led to Chileans voting in a referendum in October, 2020 to rewrite Chile's constitution which appeared to be the writing on the wall for the center-right coalition government that is currently in power. Then in May of this year, Chileans voted again in an election for delegates who would rewrite the constitution. The ruling coalition failed to pick up the one-third of seats necessary to block radical changes to the constitution. Meanwhile, the center-left, which has dominated politics since the end of Augusto Pinochet's 1973-1990 military dictatorship, garnered less support than leftists who have been pushing for wholesale change to the 'Chilean model'

that has been credited with fomenting growth, but also with deep inequality.

That’s the macro reasoning but layered on top of that are a couple of micro issues that investors should also be aware of. The country is debating a controversial mining royalty bill which could sharply hike tariffs on the sector. The royalty bill, under discussion in Congress, could shut down the country’s private miners by slapping a 3% royalty on sales of copper with a sharp escalator as copper prices rise. As well, there is a new glacier protection law, which could impact some key mines.

The people of Chile want change and it looks like they will get it with the polls being led by far left hopeful Gabriel Boric and ultra conservative front-runner, Jose Antonio Kast. Thus far both candidates have kept their powder dry on mining during the campaign. Left-wing candidate Boric has discussed royalties while Kast has proposed vague changes to mining property law to rev up the sector, including opening up state miner Codelco to more private investment. At this point, it’s difficult to understand what either candidate could mean to Chile’s future as a mining powerhouse. Nevertheless, investors should be putting this election on their radar as there is potential for a lot more downside than upside, in my opinion. With that said, my hope is that this election is a non-event and results in an orderly transfer of power from one democratically elected party to another.

It should be noted that if no candidate gets a simple majority this coming Sunday, the top two will compete in a head-to-head ballot on Dec. 19. The polls suggest this is likely the next date you’ll have to mark in your calendar if you feel, as I do, that it could be important to know who is the next President of Chile.

The Post-COP26 World Looks To Australia For Future Non-Chinese Rare Earths Production

To achieve U.N. climate change management goals the world needs to shift rapidly to clean energy, and that means we need to build or secure, reliable sources of rare earths. While the USA and Canada have made some progress in this direction, Australia will also be needed to play a key role.

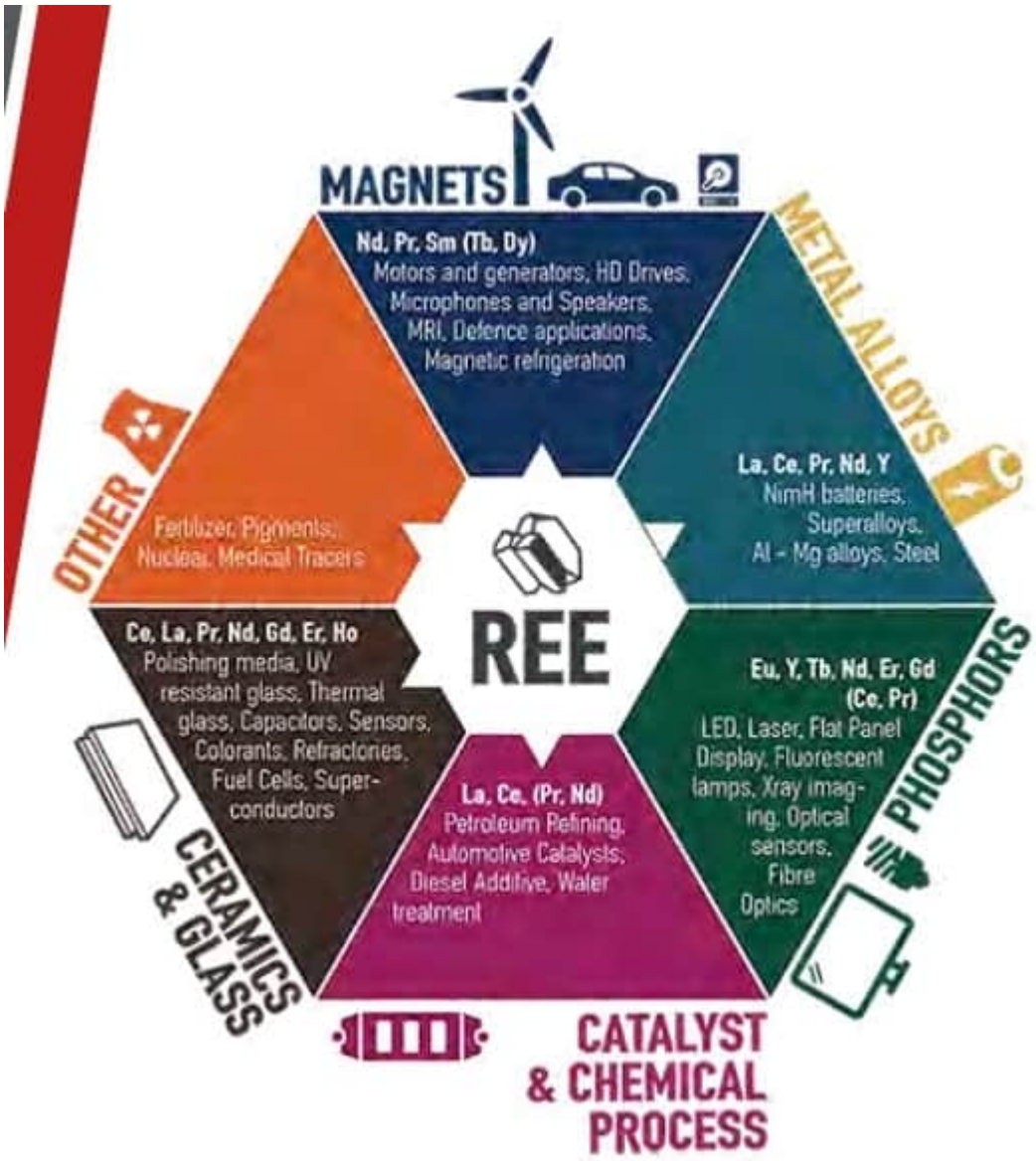
When looking at a chart of rare earths reserves by country, China shows the largest reserves followed by Vietnam, Brazil, Russia, India, and Australia, in that order. The USA is ranked 8th and Canada is outside of the top ten. Given Australia's stellar track record as a reliable supplier of raw materials, it should not be surprising to know that the West is looking towards Australia to step up production of rare earths, especially those needed to support the surging cleantech sectors of electric vehicles, wind energy, and solar energy.

ClearWorld.us says it well, stating:

"Renewable energy development relies upon sufficient quantities of rare earth minerals, specifically neodymium, terbium, indium, dysprosium, and praseodymium. These are used in the production of solar panels and wind turbines. **If the world is to meet the greenhouse gas emissions targets sought in the Paris Climate Agreement the availability of these minerals must increase by 12 times by 2050**."

(Emphasis by the author.)

Rare earths are key elements in the cleantech revolution



Australian listed rare earths companies:

Producers

Lynas Rare Earths Limited (ASX: LYC) ("Lynas")

Lynas is the second largest neodymium and praseodymium ("NdPr") producer in the world. Lynas owns the Mt Weld rare earth mine, which is one of the world's highest grade rare earths' mines, and the Mt Weld ORE Concentration Plant, both located in Western Australia. Lynas also owns the Lynas Advanced Materials Plant (LAMP), which is an integrated manufacturing facility, separating and processing rare earths'

materials in Malaysia. The Lynas 2025 growth strategy encompasses plans to build the Kalgoorlie Rare Earths Processing Facility (cracking and leaching) in Australia and an LRE/HRE separation and specialty materials facility in the USA. Lynas trades on a market cap of A$7.3 billion.

Iluka Resources Ltd. (ASX: ILU) (“Iluka”)

Iluka is a relatively new (April 2020) producer of rare earths at their Eneabba Project in Western Australia. Iluka intends to ramp to selling 50,000 tpa of a 20% monazite-zircon ore concentrate for further processing offshore. Iluka has an offtake agreement for 50,000 tpa. Iluka is working on developing a Phase 2 of the Eneabba Project which involves investigating techniques to beneficiate and purify the monazite to an 80% concentrate for sale further down the value chain. Iluka is mostly known for being an Australian heavy mineral sands, zirconium and titanium, producer. Iluka trades on a market cap of A$3.5 billion.

Vital Metals Limited (ASX: VML) (“Vital”)

Vital recently began mining ore at its Nechalacho’ Mine in Canada’s Northwest Territories (NWT), with commencement of ore processing at Vital’s, under construction, Saskatoon cracking and leaching facility expected to begin in 2022. The Nechalacho Mine is a high grade, light rare earth (bastnaesite) project with a world-class resource of 94.7Mt at 1.46% REO (measured, indicated and inferred). Nechalacho’s North T Zone, which is being mined by Vital, hosts a high-grade resource of 101,000 tonnes at 9.01% LREO (2.2% NdPr). Vital has a non-binding MOU with Ucore Rare Metals Inc. for the supply to it of a mixed rare rare earth carbonate, beginning H1 2024. Vital Metals trades on a market cap of A$250 million.

Explorer/Developers (in alphabetical order):

Arafura Resources Limited (ASX: ARU) (“Arafura”)

Arafura 100% own the Nolan's Bore rare earth project 135kms from Alice Springs in the Northern Territory, Australia. Arafura states: "The Project is underpinned by low-risk Mineral Resources that have the potential to supply a significant proportion of the world's NdPr demand. It is a globally significant and strategic NdPr project which, once developed, will become a major supplier of these critical minerals to the high-performance NdFeB permanent magnet market."

The deposit contains a JORC 2012-compliant Mineral Resources of 56 million tonnes at an average grade of 2.6% total rare earth oxides (TREO). 26.4% of the total rare earths contained are NdPr. The Project is supported by Export Finance Australia (EFA), and the Northern Australia Infrastructure Facility (NAIF), via non-binding letters of support for a proposed senior debt facility of up to A$200 million and A$100 million respectively. Arafura is looking to raise further funds to get the project started. Arafura recently stated: "The momentum with offtake discussion has enabled engagement to expand to include the options for strategic investment as part of the Nolan's project funding." Market cap is A$379 million.

Australian Rare Earths Limited (ASX: AR3) ("AREL")

AREL is progressing in the exploration of a significant deposit of valuable 'clay-hosted' rare earth elements, located at their Koppamurra Project spread over ~4,000km^2 of tenements in South Australia and Victoria. Past exploration of the Koppamurra region has shown it contains mineralization containing the rare earth elements neodymium, praseodymium, dysprosium and terbium. The Koppamurra Project is an 'ionic clay' rare earth opportunity with a 2021 JORC Inferred Mineral Resource of 39.9Mt @ 725ppm TREO. AREL trades on a market cap of A$98 million.

Australian Strategic Materials Ltd. (ASX: ASM) ("ASM")

ASM owns the Dubbo Rare Earths Project in NSW, Australia. The Dubbo Project is a 100% owned 'construction ready' poly-metallic and rare earths project with potential to become a key global supplier of specialty metals and rare earths. ASM's goal is a "mine to metal" strategy to extract, refine and manufacture high-purity metals and alloys, supplying directly to global technology manufacturers. Market cap is A$1.92 billion.

Northern Minerals Limited (ASX: NTU)

Northern Minerals own the Browns Range heavy rare earth minerals project in Western Australia. Northern Minerals has built a pilot plant to test a number of deposits and prospects that contain high-value dysprosium and other Heavy Rare Earths (HREs) such as yttrium, hosted in xenotime mineralization.

The Company states: "Northern Minerals is positioned to become the world's first significant producer of dysprosium outside of China. Accounting for 60% of the Browns Range Project's (the Project) revenue, dysprosium is the key value driver of the Project and is at the core of Northern Minerals' marketing strategy. With a high value, high purity, dysprosium rich product, the Company is set to become a long term and reliable supplier of dysprosium and other critical heavy rare earths to world markets." Market cap is A$339 million.

Peak Resources Limited (ASX: PEK)

Peak Resources 75% owns the Ngualla Tanzania rare earth project, which the Company states is one of the world's, largest and highest grade, undeveloped rare earth projects. The Ngualla Project has ore reserves of 18.5 million tonnes at 4.8% REO; 22% of the total mineral resource is NdPr, with an expected 26 year life of mine. The Project is currently at the funding stage having completed a BFS in 2017. The BFS summary details are here. About 90% of the Project's revenues will be coming from NdPr. Peak Resources state: "Operating cost of US$

34.20/kg NdPr* Oxide, demonstrating potential to be the world’s lowest-cost fully integrated rare earth development project.” Market cap is A$135 million.

Closing remarks

With rare earths demand set to grow strongly this decade as the world moves towards cleaner energy and technology, investors would be wise to take a second look at the rare earths sector.

Australian critical minerals projects were recently in the news after the Government announced that they would receive an A$2 billion boost (via a loan facility), to support the sector. This bodes well for the Australian rare earths junior miners to join Lynas as producers. Stay tuned as this sector looks set to shine this decade.

Nano One Strives For Sustainability and a Total Domestic North American Lithium Ion Battery Supply Chain

My biggest takeaway from COP26 is not so much climate action and emission reduction, but the message of sustainability. Without focusing on the importance of sustainability one risks thundering down a path of unintended consequences. What do I mean by this? Several years ago I read that if we could convert all coal fired power generation to natural gas it

would achieve the Kyoto emission target. I can't confirm if this is completely accurate or not, regardless it would have been a large step in the right direction (despite still being a fossil fuel based solution). At the time it would also have been achievable with existing, available resources and bought the world some time to continue building out renewable resources, which is the ultimate end game. However in 2021, with the lack of energy investment over the last several years due to a combination of factors, that isn't the case today, and we are starting to see parts of the world where renewables haven't developed enough by themselves to even keep people warm this winter. Meanwhile, the fossil fuel alternatives aren't any longer as readily available as backup and may still not even provide enough for home heating. I understand the urgency of eliminating coal fired power, but if there aren't enough alternative power options to keep people warm then who knows what happens next.

That's why I think in order to successfully green our economy and reduce our global carbon footprint, the focus has to be on how to do it sustainably. One company that has to be at or near the top of the list in the transition to clean energy in a sustainable way is Nano One Materials Corp. (TSX: NANO). Nano One is a clean technology company with a patented, scalable and low carbon intensity industrial process for the low-cost production of high-performance lithium-ion battery cathode materials. The technology is applicable to electric vehicle, energy storage, consumer electronic, and next generation batteries in the global push for a zero-emission future. Nano One's One-Pot process, its coated nanocrystal materials, and its Metal to Cathode Active Material (M2CAM) technologies address fundamental performance needs and supply chain constraints while reducing costs and carbon footprint.

Another facet of sustainability that is very applicable today is the supply chain. Currently, the cathode supply chain is long and complex. Nano One manufactures its cathode materials

directly from nickel, manganese, and cobalt metal powder feedstocks rather than metal sulfates or other chemical salts. The metal powders used are one fifth of the weight of metal sulfates, avoiding the added costs, energy, and environmental impact of first converting to sulfate and then the shipping and handling of waste. The manufacturing process for all of its Cathode Active Material (CAM) uses lithium feedstock in the form of carbonate rather than of (lithium) hydroxide, which is costly, corrosive and harder-to-handle. The process is feedstock flexible which enables improved optionality of sourcing of raw materials. Nano One's technology aligns it with the sustainability objectives of automotive companies, investment communities and governmental infrastructure initiatives.

On Tuesday, November 10, 2021, Nano One announced the goal of building a fully integrated and resilient battery supply chain in North America, which must include responsible mining of battery metals, onshore refining, environmentally favorable cathode material production, and recycling. The Company believes there is a once-in-a-generation opportunity to create a secure and cost competitive supply chain that is domestically integrated with a low environmental footprint. Accordingly, Nano One is shifting its LFP (lithium-iron-phosphate) cathode material strategic direction to large emerging markets outside of China, starting in North America, and has ceased joint development activities with Pulead Technology Industry.

LFP production is free from the constraints of nickel and cobalt, and although its origins are deeply rooted in Canada, its growth over the last decade is almost entirely based in China. Recent LFP cell-to-pack innovations have driven costs down and enabled greater EV range, setting the stage for EV pioneers to shift to LFP. The need has never been greater for a sustainable, responsible, and secure supply of LFP materials and batteries, to be established and supported in North

America and Europe, proximal to where the EV's are manufactured. Canada has clean energy assets, responsibly sourced critical minerals, and a rich history in LFP technology and manufacturing. By leveraging these opportunities with the Company's simplified low-cost approach to cathode production, Nano One seeks to create a resilient value-added North American LFP supply chain in a collaborative ecosystem with a smaller environmental footprint.

There you have it. A company that sees the bigger picture and embraces sustainability in an effort to advance clean technology while reducing both costs and the overall carbon footprint. If this were a video, at this point I would simply drop the mic and walk away. Since it's an article and I need a conclusion I'll finish off by saying Nano One has the potential to have its technology in every EV built in North America and Europe, and that's going to be a pretty big number in the not too distant future.

Is Imperial Mining Group the real scandium play?

When I first started looking into scandium, I found out that it was used in bicycle frames, aluminum alloy baseball bats and some fishing rods, which was good enough for me to be interested. However, improving the strength, corrosion resistance, and reducing the weight of those items isn't going to raise an eyebrow at COP26 nor is it likely to dramatically improve demand for scandium. That's why it probably makes more sense to talk about how a scandium-aluminum alloy is used in weight reduction applications in the high volume automotive, aerospace, fuel cell, and defense sectors. In fact, scandium

can reduce our carbon footprint by making commercial aircraft and vehicles lighter and more fuel efficient thus lowering emissions. In EVs, scandium is used in light weighting vehicle components to extend battery range and improve fuel cell efficiency. Airbus SA has patented scandium-aluminum alloys for welding of aircraft structures in place of rivets for assembly, which reduces weight by 20%. With all the bad press emissions from air travel have gotten the last couple of days out of Glasgow, this could become a very important issue for the future of plane manufacturers.

Now that we've determined scandium is a good thing and could possibly be on the upswing as a commodity in demand, perhaps we'll discuss a North American source given that there isn't a whole lot to choose from currently. Scandium is a moderately abundant element, although it tends to be spread out throughout the earth rather than concentrated in a few places. Currently, in North America, the only notable possible production comes as a by-product of planned niobium mining at NioCorp Developments Ltd.'s (TSX: NB) Elk Creek project in Nebraska. This makes the Crater Lake scandium-REE project of Imperial Mining Group Ltd. (TSXV: IPG | OTCQB: IMPNF) a unique find. It's the only hardrock scandium deposit in the world and happens to be in the mining friendly jurisdiction of Quebec, close to hydroelectric capacity and Quebec's aluminum metal production where 90% of Canada's "Green" aluminum is produced. That's already a lot of boxes ticked and we haven't even gotten into the grades of the Crater Lake project.

But first a little about Imperial Mining Group. Imperial is a Canadian mineral exploration and development company focused on the advancement of its Crater Lake scandium-Rare Earth property. The company is led by an experienced team of mineral exploration and development professionals, who have a strong track record of mineral deposit discovery in numerous metal commodities. The Company also has a pair of gold prospects, Opawica and La Ronciere all in Quebec.

As for the Crater Lake project, in September Imperial received the inaugural NI 43-101 Technical Report for the Crater Lake TG Zone Mineral Resource Estimate.

43-101 COMPLIANT RESOURCE ESTIMATE TABLE

Category	Cut-off NSR ($/t)	Tonnage (Mt)	NSR total ($/t)	Sc_2O_3 (g/t)	Dy_2O_3 (g/t)	La_2O_3 (g/t)	Nd_2O_3 (g/t)	Pr_2O_3 (g/t)	Tb_4O_7 (g/t)
Indicated	110.8	7.3	413	282	66	606	596	160	12
Inferred	110.8	13.2	386	264	62	569	573	154	11

Source: Imperial Mining Group Ltd. press release Sep 23, 2021

The results of the Resource Estimate for the Northern Lobe of the TG Zone far exceeded the minimum threshold resource Imperial internally set for a 20-25-year notional mining operation, based on a 10 million ton lift. And the good news is that mineralization remains open laterally and at depth, demonstrating the potential to increase the mineral resource with additional drilling. Imperial will soon commence work on an NI 43-101 Preliminary Economic Assessment (PEA).

Another strategy that sets Imperial apart is that it is actively collaborating with partners to further the development of strategic scandium marketing activities to projects that require important weight and carbon footprint reductions. A great example is their work with Eck Industries to begin prototyping components while concurrently looking to maximize weight savings for the transportation sector. They recently showed that the material properties for EV battery box requirements, as specified by a major North American automotive manufacturer, have been met or exceeded. Last month the Company was awarded, along with its partner FusiA Groupe, C$2.6 million for a scandium-aluminum material R&D project. The project will focus on the industrialization and the development of a vertically integrated supply chain for a scandium-aluminum alloy for 3D printing. I’m impressed by the fact that Imperial is increasing the awareness and demand for

their product before they've put their project into commercial production.

Unless you've been living under a rock for the last few months, we all know the impact that the interruption of supply chains has had on virtually everything. The manufacturing world is learning the hard way that it might be time to "on-shore" critical parts of their supply chain if they want to complete their product manufacturing, let alone compete. So, to be one of the best grade scandium resources in the world and be located on mining friendly, North American, soil means we should all probably pay a little closer attention to Imperial Mining.

US based rare earths processor, Energy Fuels announces a very robust third quarter

With COP26 just past its middle mark today, the stock rallies jettison around critical materials such as rare earths, cobalt, and lithium for electric battery materials, we at **InvestorIntel.com** are being deluged by interest from investors due to our editor in chief Jack Lifton's reputation as a renowned authority. Add in uranium, which is finally getting some attention it deserves with greater education in place on the value of nuclear energy as a leading cleantech solution, Obama's speech at COP26 that astutely draws attention to the global pollutant leaders, China coming in at a strong #1, and yes, the USA – we are #2.

In this drive to clean up the planet, however, let us draw attention to a global leader as the world forges ahead to a Net Zero economy in the next 20-30 years – Energy Fuels Inc. (NYSE American: UUUU | TSX: EFR).

North America's only processor of rare earths, Energy Fuels provided a very robust third quarter report earlier last week. The company owns the White Mesa Mill in southeast Utah, which is also the US's only commercial licensed processor of radioactive materials.

Energy Fuels has a strong balance sheet and ended the quarter with US$100.8 million in cash and marketable securities as well as $29.3 million of inventory, which has a current estimated value of $46.9 million, made up of 691,000 pounds of uranium and 1,672,000 pounds of high-purity vanadium, both in the form of an immediately marketable product.

Mark Chalmers, Energy Fuels' President and CEO, said it best: "Energy Fuels continues to make rapid progress toward positioning our White Mesa Mill as America's "Critical Minerals Hub," by maintaining the Mill's key uranium and vanadium production capabilities while further diversifying our portfolio to include rare earth elements production – an exciting and strategically important move both domestically and for the Company. We also continue to watch the uranium markets closely in order to best evaluate our opportunities to capitalize on recent price increases and market improvements."

The company also has been focusing its asset base on the sale of non-core, conventional uranium projects located in the United States in late October. The sale included cash on closing, shares in the purchasing company, future potential processing revenue as well as future potential payments based on new production from these assets.

The strategic positioning of Energy Fuels should not be underestimated by anyone following this sector. The global

drive to Net Zero requires a massive amount of “clean energy”. This clean energy is destined for millions of new electric motors in wind turbines, electric vehicles and the never-ending consumption of small, strong permanent magnets in personal electronic devices. The demand so far outstrips the current supply that it is an almost inconceivable problem as the Western world seeks to eliminate the Chinese supply chain for critical materials.

Energy Fuels currently has the only facility in North America that is on track to start meeting this demand. They successfully delivered rare earth carbonate to Neo Performance Materials Inc.‘s (TSX: NEO) rare earths separation facility in Estonia. The company has a supply agreement for monazite sand from a United States supplier and is receiving multiple inbound expressions of interest for rare earths processing from potential suppliers around the globe.

The indisputable fact is that the clean energy economy will cost trillions of dollars and require resources that are not even in existence. We pledge as leaders in news and information on the critical materials sector to continue regular coverage of companies in the capital markets that are making a real difference.

Note from the Publisher: Tracy Weslosky is long Energy Fuels and Neo Performance Materials.