

Someone steal your catalytic converter? Call Canadian Palladium.

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Have you heard in the news about a rash of thefts of catalytic converters from vehicles, either in your neighbourhood or all over the country? The reason for that is simple, the value of the components inside these exhaust emission control devices. Catalytic converters contain Platinum, Palladium and Rhodium, amongst other materials, and these minerals are now some of the most expensive materials on the planet. Palladium is trading at over US\$2,600/oz while Rhodium trades at an eye-popping [US\\$26,000/oz](#).

Seems like there might be more demand than supply for something to be trading at these kinds of prices! That's what makes the East Bull Palladium deposit of [Canadian Palladium Resources Inc.](#) (CSE: BULL | OTCQB: DCNNF) so exciting. On Tuesday, the company announced the [latest drilling results](#) from the East Bull property, located 90 km West of Sudbury, Ontario. Those results are summarized in the table below:



Notably, the company is still awaiting the Rhodium results and with the above pricing, Rhodium becomes the second most important contributor to Palladium equivalent (PdEq) at East Bull after Palladium itself. For context, generally speaking, palladium grades from 1.5 g/t to 5 g/t are considered medium grade and anything above 5 g/t is considered high grade (23.5 grams = 1 ounce).

An [NI 43-101](#) compliant technical report from early 2019 shows a resource estimate of 11.1 M tonnes of ore at a grade of 1.46 g/t PdEq for a total of 523,000 ounces of Palladium at East Bull. Since then the company has reported 13 additional sets of drilling results extending the Valhalla zone from 1.5 kms to almost 3 kms today. Needless to say, an updated NI 43-101 would likely show a lot bigger number.

Additionally, the East Bull property benefits from close proximity to the city of Sudbury and is accessible by an all-weather road extending north from Highway 17 at Massey, Ontario. Sudbury is home to the fully integrated base and precious metal mining, processing, smelting and refining complexes of Vale Canada Limited and Glencore PLC. The availability of this infrastructure not too far away means Canadian Palladium could achieve initial production with lower initial CapEx, as they would only have to mine and crush rock on-site before shipping to Sudbury for processing.

As with most junior exploration companies, Canadian Palladium is in the raise cash/drill cycle meaning an investor has to be patient and watch the shares outstanding continue to drift higher. However, with the results the company is achieving and the steady increase in the underlying commodity prices, someone is likely to take notice of the East Bull Palladium development and validate management's and shareholder's belief that this could be a significant deposit.

Can the palladium market continue to defy gravity?

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Palladium prices have risen from US\$316/oz in January 2016 to US\$2,329/oz today, representing an impressive 637% gain in just under 5 years. The big question investors want to know is where will the prices go from here? To get a feel for the answer, today I look at palladium supply and demand and what the industry expects.

Palladium prices have had an impressive rally since January 2016 up 637%



[Source](#)

2020 palladium supply vs demand forecast

Palladium supply decreased in 2020 due to COVID-19 related supply disruptions from South Africa, but palladium demand also weakened in 2020 due to a slowdown in conventional car sales due to COVID-19.

According to the world's largest palladium producer, Norilsk Nickel, 2020 global palladium supply is [forecast](#) to fall 14% and demand is forecast to fall 16%. Effectively balancing a market that was previously in deficit. This forecast suggests that palladium prices should remain relatively high in 2020, especially if auto demand continues to pick up in Q4, 2020.

Palladium (Pd) supply estimated to fall 14% and demand to fall an estimated 16% in 2020



[Source](#)

Mid term palladium demand continues to look strong as tightening auto-emissions rules are requiring larger volumes of palladium in exhaust systems ([75%](#) of palladium demand comes from catalytic converters). By 2030 onward 100% battery electric vehicles (EVs) may be taking significant market share that palladium auto demand begins to decline. At that point the EV and battery metals such as lithium, cobalt, copper, nickel, manganese and graphite should be doing very well as EV sales start to dominate.

In the mid term new palladium supply is expected to continue to be slow to come online as palladium is usually mined as a by-product of nickel or platinum mining. In the long term high palladium prices will most likely lead to more supply and some price reductions for palladium.

Best palladium performers on Sept. 30, 2020 from InvestorIntel's Palladium Watchlist



[Source](#)

A palladium company we have been watching lately is [Canadian Palladium Resources Inc.](#) (CSE: BULL | OTCQB: DCNNF | FSE: DCR1). Canadian Palladium is an exploration stage company that has a 100% interest in the East Bull Palladium Property in the Sudbury Mining Division in Ontario, Canada. The company recently found [high grade palladium](#) at their East Bull Palladium Property. Canadian Palladium also owns the Tisova Copper/Cobalt Project which gives them exposure to the EV metals market in the longer term. You can click the link below to read more.

- [Canadian Palladium strikes high grade palladium at their East Bull Project](#)

The palladium market continues to perform very well in 2020 despite COVID-19 related supply and demand issues. In the short term palladium demand should continue to recover as global auto sales recover. In the mid term palladium demand is expected to remain strong due to tightening emission standards globally. Norilsk Nickel [forecasts](#) the medium term outlook for palladium as neutral and the long term outlook as positive. Longer term, by 2030, palladium demand should begin to fall as we move faster to EVs and conventional internal combustion Engine (ICE) car sales decline rapidly.

Canadian Palladium strikes high grade palladium at their East Bull Project

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Palladium's bull market is rising faster than gold

Many people are surprised when they hear that palladium (Pd) is more valuable than gold. Gold may get all the attention from investors, but palladium is currently having an ever bigger bull market than gold thanks to the push to reduce vehicle emissions and the need for palladium in catalytic converters. Palladium is up a staggering [4.2 fold](#) (a 320% gain) over the past 5 years,

compared to gold which is up [1.8 fold](#) (an 80% gain).

The good news for palladium is that the world continues to tighten emission standards which means more demand for palladium, and likely continued strong prices. Analysts agree that palladium will remain in supply deficit [for at least 7 years](#). Junior miners who can successfully build up a resource of palladium can potentially do as well as those finding gold.

Palladium is up a staggering 4.2 fold (320%) in the last 5 years – Palladium US\$2,185



Source: [Trading Economics](#)

One palladium junior miner of note has just struck good grades of palladium in Canada and is in the process of expanding their resource. [Canadian Palladium Resources Inc.](#) (CSE: BULL | FRANKFURT:DCR1 | OTCQB:DCNNF) is an exploration company focused on palladium. In 2019 Canadian Palladium acquired an option agreement to acquire a 100% interest in the 992 hectare East Bull Palladium Property in the Sudbury Mining Division in Ontario, Canada. The Project has good logistics and infrastructure from being in a very mining friendly location near Sudbury.

This week Canadian Palladium [announced](#) their latest drill results at their East Bull Palladium Property. The results include several high-grade palladium intersections with significant platinum (Pt), rhodium (Rh), gold (Au), and copper (Cu) with associated nickel (Ni) and cobalt (Co). The best drill holes were:

- Hole EB20-01 with 4.0 m at **8.15 g/t** palladium equivalent (Pd-Eq).

- Hole EB20-03 with 3.0 m at 6.29 g/t Pd-Eq, as part of 15.0 m at 2.69 g/t Pd-Eq.
- Hole EB20-07 with 3.0 m at 7.47 Pd-Eq, as part of 24.0 m at 2.14 g/t Pd-Eq.

Back in June 2020, the Company [reported](#):

- Hole EB – 20-12 with 2.68 g/t over 3 .0 metres and 2.28 g/t over 3.0 metres within a broader interval of 1.32 g/t over 20 metres.

The East Bull Palladium Project has a 43-101 compliant inferred resource estimate of 1.1m tonnes at a grade of 1.46g/t Pd Eq for a total of [523,000 ounces palladium \(Pd\) Equivalent \(Eq\)](#), with significant upside potential.

43-101 compliant inferred resource estimate for the East Bull Palladium Project



Source: [Company investor presentation](#)

The Project has been drilled over a 1.8 km strike length to maximum depth of 120 m, however the mineralized zone is [3.6 km](#) in length and open at depth. The latest drill results reinforce the company's belief that there is significant exploration upside potential for the deposit.

"Canadian Palladium is pleased with the results from the initial holes in this program," said company director Garry Clark, P.Geo. "These intersections report complete assay results that include palladium, platinum, rhodium, gold, copper, nickel and cobalt. High-grade palladium intersections are rare and these results have exceeded our grade expectations based on Canadian Palladium's 2019 Inferred Mineral Resource Estimate of 523,000 oz Pd-Eq at a grade of 1.46 g/t Pd-Eq for East Bull. We look

forward to releasing additional results on this exciting Project.”

Recent magnetotelluric (MT) survey results [announced](#) in July on the East Bull Palladium Project identified two new, shallow drill targets that are adjacent to the Valhalla Deposit palladium resource.

Canadian Palladium believes the East Bull PGM deposit has considerable resource expansion potential



Source: [Company investor presentation](#)

Canadian Palladium also has a second project called the [Tisova Copper-Cobalt Project](#) located on the Czech/German border and has recently sold their Turner Lake property in Canada for [one million common shares](#) in Pacific Cascade Minerals Inc. plus a 1% NSR royalty with a buyout value of C\$1m.

Closing remarks

It is a great time to be exploring for and finding both palladium and gold as well as other associated valuable metals such as rhodium, platinum, cobalt, nickel, and copper. Canadian Palladium has all of these metals in one deposit at their East Bull Palladium Project.

With an already robust inferred resource, Canadian Palladium thinks they can continue to grow the resource with additional exploration. Given the Company trades on a market cap of just C\$16.7m there is plenty of potential upside left for investors should they succeed.

Search Minerals expands their rare earths discovery with critical materials' zirconium and hafnium

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As the West looks to establish a non-Chinese [source of supply](#) of critical rare earth elements, one Canadian company has been successfully expanding its rare earths project, as well as discovering some additional valuable metals like zirconium (Zr) and hafnium (Hf).

[Zirconium dioxide](#) (ZrO_2) is used in laboratory crucibles, metallurgical furnaces, as a refractory material, and in ceramics (including use in dental ceramics); because it is mechanically strong and flexible. Zircon (ZrSiO_4) and the cubic zirconia (ZrO_2) are cut into gemstones for use in jewelry. Ceria-zirconia is widely used as a component in current three-way [catalytic converters](#).

Zirconium is used in ceramics, jewelry, dentistry, and catalytic converters



[Hafnium](#) is a good absorber of neutrons and is used to make control rods, such as those found in nuclear power plants and submarines.

Hafnium is used in some superalloys for special applications such as jet engine turbines in combination with niobium, titanium, or tungsten. Hafnium oxide is used as an electrical insulator in microchips, filaments and electrodes.

Hafnium is used in superalloys, nuclear rods in nuclear submarines, microchips, and jet engine turbines



Search Minerals discovers zirconium and hafnium

[Search Minerals Inc.](#) (TSXV: SMY) recently [announced](#) that they have discovered zirconium and hafnium, in addition to their existing valuable rare earths dysprosium (Dy), neodymium (Nd), praseodymium (Pr), terbium (Tb) and yttrium (Y). The discovery was made at their Silver Fox Deposit.

With regards to the Silver Fox discovery Search Minerals [stated](#): “This surface expression is significantly longer, but thinner, than the surface expressions of the nearby and related **FOXTROT** and **DEEP FOX** Resources. The mineralization is similarly hosted by peralkaline volcanic rocks and contains slightly lower grades of the REE magnet materials (Nd, Pr, Tb and Dy) but significantly higher grades of Zr and Hf.”

Dr. David Dreisinger [commented](#): “The objective of metallurgical testing of the **SILVER FOX** (and other deposits) will be to recover a high grade zirconium by-product for sale with minimal processing cost and complexity. Search is engaged with our technology advisor, SGS Canada, to identify process flowsheet options.”

Search Minerals expands the mineralized zone at Fox Meadow

Search Minerals also recently [announced](#) that they have successfully expanded the critical rare earth element

mineralized zone at Fox Meadow. The Company [stated](#): "The trenching/channelling programs at **FOX MEADOW** have outlined a mineralized zone of up to 123.6 m wide and at least 500m in strike length; mapping and airborne magnetic anomalies suggest that the zone is up to 650m long. In contrast, both the **DEEP FOX** and **FOXTROT** mineralized resources are about 350-450m long and up to 40m thick."

About Search Minerals

Search is focused on finding and developing critical rare earth element mineral assets in Labrador, Canada. The Company controls properties in three distinct areas of this region; the Port Hope Simpson (PHS) Critical Rare Earth Element District in SE Labrador; the Henley Harbour Area in Southern Labrador; and the Red Wine Complex located in Central Labrador.

Within the Port Hope Simpson District, Search's main discoveries are the [Foxtrot Resource](#), [Deep Fox](#), [Fox Meadow](#), and Silver Fox deposits which contain rare earths including dysprosium (Dy), neodymium (Nd), praseodymium (Pr), terbium (Tb) and yttrium (Y).

The flagship Foxtrot Resource covers a 70 km long and 8 km wide belt. At Foxtrot the Total Indicated Resource is [7.392 million tonnes](#) with grades of neodymium oxide (1,732ppm), neodymium (1,485ppm), praseodymium (397ppm), and dysprosium (191ppm).

The 14 year LOM Foxtrot Project offers an IRR of 16.7% on an after tax NPV10% of [\\$48 million](#), with a CapEx of \$152 million.

Investors should note the NPV quoted above is only for the Foxtrot Project, so once the other projects are combined into a bigger project the NPV should improve materially.

Closing remarks

Search Minerals is both expanding their existing very promising

rare earths project as well as finding other valuable metals zirconium and hafnium. Investors will need some patience, as more exploration work needs to be done to further grow the resource and improve on the economics.

Combined with an excellent management team, and strong Government and local support, the Company continues to advance their Port Hope Simpson District project at a steady pace. Rare earths expert Jack Lifton recently [stated](#) about Search Minerals: "I think it may well be Canada's first commercial rare earth producer."

With a market cap of just C\$9 million there is plenty of potential upside ahead for investors if Jack is right.