

# MILLENNIAL LITHIUM CORP.

## Update - Pilot Plant Commissioning Advancing

### EVENT

Millennial Lithium provided an update on the Company's flagship Pastos Grandes Project, Salta, Argentina. Commissioning its lithium carbonate pilot plant is ongoing with the production of battery grade lithium carbonate scheduled for Q1/2021.

### BOTTOM LINE

**Positive:** The pilot plant is a full flowsheet design for producing up to 3 tonnes per month (tpm) of battery grade lithium carbonate. Its operation will demonstrate and refine the commercial production process as well as provide product sample material for potential customers. This is a key de-risking step that will pave the way for project financing and construction. As a permitted, low-risk, long-life project, Millennial Lithium and its Pastos Grandes project remain attractive to both individual investors and corporates with medium-long term investment horizons. As ML closes in on another key milestone and investor interest has returned to the lithium space, we are increasing our target price to \$4.70/shr from \$3.80/shr based on a 0.6x multiple to NAV (was 0.5x). Our BUY rating remains unchanged. The stock is currently trading at 0.3x NAV.

### FOCUS POINTS

- **Advanced and Permitted Project:** A positive feasibility study (FS) completed in July, 2019 showed a 24,000 tpa lithium carbonate operation with an NPV<sub>8%</sub> of \$1,030M and an IRR of 24.2%. In mid-2020 the Company received permits for the full-scale operation.
- **Large Lithium Reserves & Resources:** The FS is based on a 943,000t lithium carbonate reserve that supports a 40-year project life but the M&I resource of 4.12Mt could support significant expansions.
- **Near Term Catalysts:** Key events that should act as positive catalysts for the stock price include: i) pilot plant testing and ii) project financing/partnering.

### Recommendation:

**BUY**

Symbol/Exchange:

ML-TSXV

Sector:

Metals & Mining

All dollar values in US\$ unless otherwise noted.

Current price:

C\$2.67

One-year target:

C\$4.70↑

Target return:

76%

52-week Range:

C\$0.61 - C\$3.18

### Financial Summary

Market Cap (C\$M)	222.6
Cash on hand (C\$M)	17.0
Debt (\$M)	0.0
Basic Shares O/S (M)	83.4
Fully Diluted Shares O/S (M)	95.8
Avg. Weekly Volume (k)	47

### Lithium Carbonate Reserve

Category	Period (Yrs)	Li Grade	LCE
		mg/l	tonnes
<b>Proven</b>	1-8	470	179,000
<b>Probable</b>	9-40	431	764,000
<b>P&amp;P</b>	40	439	943,000

### Lithium Carbonate Resource

Category	Volume	Li Grade	LCE
	Bm <sup>3</sup>	mg/l	Mtonnes
Measured	5.2	446	2.3
Indicated	3.8	406	1.9
M&I	9.0	427	4.1
Inferred	3.5	428	0.8
<b>Total MI&amp;I</b>	<b>12.5</b>	<b>427</b>	<b>4.9</b>



**Company Profile:** Millennial Lithium Corp is focused on developing its 100% owned Pastos Grandes Lithium Project, located in Salta, Argentina. The Company also owns a 100% interest in the Cauchari East Project, also located in Argentina. The Company is headquartered in Vancouver, British Columbia

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See disclosure and a description of our recommendation structure at the end of this report.

## PILOT PLANT COMMISSIONING ONGOING

Millennial Lithium provided an update on the commissioning of its lithium carbonate pilot plant at the Company's flagship Pastos Grandes Project. The pilot plant, located adjacent to the Pastos Grandes Salar, is a full flowsheet design for producing up to 3 tpm of battery grade lithium carbonate. Pilot ponds, filled with brine pumped from the central part of Millennial's Project and in operation from late 2018, have reached a feed source grade of 3.0% Li and brine is being directed to the pilot plant for processing. The initial processing stage, Solvent Extraction (SX), is designed to remove boron (B) from the brine. The first batch processed contained an initial boron concentration of approx. 120 mg/l, well below modeled levels for the impurity; after the SX treatment the boron had reduced significantly to less than 5mg/L to 6 mg/L, well within the design range for the production flow sheet and pilot plant, indicating the SX system is working very well. The main brine chemistry from the ponds, particularly B, K, Ca, Mg, and SO<sub>4</sub> concentrations are in line with the process and plant design parameters. Minor pre-operational design adjustments to the primary brine purification carbonation reactors, filtering systems, the main lithium carbonate precipitation reactor, and the CO<sub>2</sub> purification system are ongoing and resulted in the replacement of several components to optimize recoveries. Optimization of reactors and tanks is planned for completion by the end of Q4/2020 with the production of battery grade lithium carbonate now scheduled for Q1/2021.

### Exhibit 1: Evaporation Ponds and Site at Pastos Grandes



Source: Millennial Lithium

Millennial continues the pilot plant ramp-up with a significant staffing increase, including retaining experienced process engineers, supervisors and operators as well as additional lab staff and an expanded liming plant work force. As part of the Company's corporate initiative to develop people within the Company and the local communities, staff continue to train and educate operators and facilitate plant operation with the end-goal of providing fully qualified staff prepared for future commercial operation. A comprehensive Health, Safety and

Environmental protocol and training program has been implemented for all stages of the plant.

### **Exhibit 2: Pilot Plant Facility at Pastos Grandes**



Source: Millennial Lithium

The initial production from the pilot plant will be achieved in batch mode to further test and optimize the individual stage processes prior to more efficiently transitioning to continuous flow production. Its operation will demonstrate and refine the commercial production process as well as provide product sample material for potential customers to begin the qualification process. This is a key de-risking step that will pave the way for project financing and construction.

### **PASTOS GRANDES SUMMARY - ROBUST PROJECT**

In July 2019, Millennial Lithium Corp. reported positive results from its Feasibility Study (FS) on its Pastos Grandes lithium brine project in Salta Province, Argentina. The study sees Pastos Grandes ramping up over six-years to produce 24,000 tpa of battery grade lithium carbonate (>99.5%  $\text{Li}_2\text{CO}_3$ ), a key input for lithium ion batteries used in the rapidly growing electric vehicle industry. Based on a \$448.2 MM upfront capex requirement, ~\$3,400/t unit operating costs and long term average price assumption of \$13,199/t lithium carbonate over a 40-year project life, the study sees a NPV<sub>8%</sub> of \$1,030 MM and after-tax IRR of 24.2% from start of construction. Based on our more conservative long-term price assumption for lithium carbonate of \$10,000/t and discount multiple to NAV<sub>8%</sub> we value the project at \$714 MM with an IRR of 18% over the same period.

**Exhibit 3: Feasibility Study Highlights and Cantor Estimates**

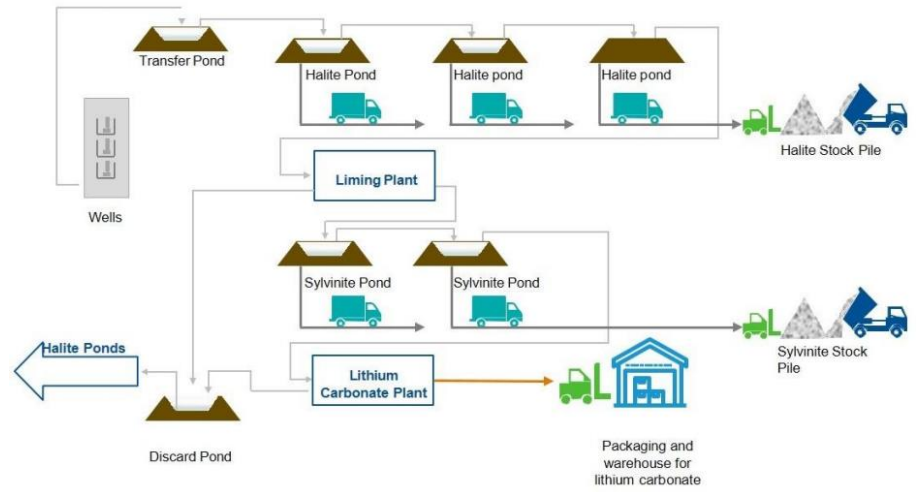
All amounts in \$US unless otherwise noted

<b>Company Project</b>		<b>Millennial Lithium</b>	
		Pastos Grandes	
Study		<b>Cantor Est.</b>	<b>2019 DFS</b>
<b>Resource</b>			
Resource Category		Reserve	Reserve
Resource Estimate	Mt LCE	943,000	943,000
Li content	mg/l	439	439
<b>Operation</b>			
First Production		2022	2022
Ramp-Up	years	6	6
LOM	years	40	40
Annual Production	LCE tpa	18,000 - 24,000	18,000 - 24,000
Unit Cost	\$/t LCE	3,400	3,388
<b>Capital</b>			
Capex	\$M	450	448
Sustaining Capex	\$M	102	102
Capex/t LCE	\$	18,667	18,667
<b>Economics</b>			
Li <sub>2</sub> CO <sub>3</sub> Price	\$/t LCE	10,000	13,199
NPV8%	\$M	714	1030
NPV10%	\$M	515	729
IRR	%	18.0%	24.2%

Source: Cantor Fitzgerald, Millennial Lithium

**Operating Plan – Proven Technology:** The operation plan for the Pastos Grandes Project is based on extraction of the lithium-rich brine by a conventional well field and long-term production pumping, and proven processing techniques. Brine is to be pumped to the surface from up to 30 wells at an average rate of 20 liters per second (l/s) per well and directed to a series of evaporation ponds where, by crystallizing, sodium and potassium salts are removed while simultaneously concentrating the remaining lithium in the enriched brine. In addition, a facility will be provided that allows the removal of the majority of the magnesium and sulphate in the brine by precipitation by the addition of lime. When lithium concentrations reach approximately 3%, the brine will be directed to the lithium carbonate plant where remaining trace impurities including mainly magnesium, boron and calcium are further removed via solvent extraction, two phases of carbonation and ion exchange methods. This is followed by the main carbonation stage with the addition of higher concentration soda ash solution which drives the lithium precipitation as lithium carbonate. To ensure that the operation produces as pure a product as possible, Millennial has now included an additional purification stage using CO<sub>2</sub> to upgrade technical grade lithium carbonate to battery grade purity. The Company is currently not planning on producing potassium chloride at the operation. The processing facility for any production of the lithium carbonate would be done at the Project site. Technical and battery grade lithium carbonate would then be transported to a port for shipment overseas.

**Exhibit 4: General Flow Sheet**



Source: Millennial Lithium

**Permits in Place:** In June of this year the Company received its Declaracion de Impacto Ambiental (“DIA”) from the Environmental and Mining Authority in Salta approving the construction and operation of a 24,000 tonne per year battery grade lithium carbonate production facility at its Pastos Grandes lithium carbonate project. This is the key permit required to advance the project. Once a production decision is made, additional and relatively minor local and provincial permits for water and construction will be required as well as a federal export permit.

**Valuation:** Based on our model for the 100%-owned Pastos Grandes brine operation outlined above, the lithium operation would generate an average of ~\$97 MM of free cash flow annually over a 40-year life for an NPV<sup>8%</sup> of \$484M or C\$645 MM (discounted to today) based on a long-term lithium carbonate price of \$10,000/tonne. For its other lithium assets, primarily Cauchari East, we apply a nominal C\$5 MM value. Corporate adjustments include long-term corporate G&A, current cash of C\$17 MM, and project spending of \$5 MM over the next 12-months. Our resultant NAV<sup>8%</sup> is C\$665.2 MM or C\$7.80 per diluted share (Exhibit 4). We continue to account for the development stage and unfinanced status of the full project by applying a discount multiple to NAV in-line with other resource development companies at a similar stage. However, as the Millennial closes in on project financing (expected in H1/2021) and interest has returned to the lithium sector, we are increasing our discount multiple to 0.6x NAV from 0.5x NAV previously. As a result our NAV based target increases to C\$4.70 from C\$3.80 per share. We note that at a long-term lithium carbonate price of \$13,199/t as used in the FS, our target would be C\$8.20/shr and at current spot prices our target would be C\$1.10/share, demonstrating the significant leverage to higher lithium carbonate prices (Exhibit 6).

**Exhibit 5: NAV Summary for Millennial Lithium**

(C\$ million, unless otherwise indicated)

Mining Assets	Ownership	Valuation	NAV	
			(\$MM)	\$/sh
Pastos Grandes	100%	DCF <sub>8%</sub>	645.3	7.57
Cauchari	100%	nominal	5.0	0.06
Total Mining Assets			650.3	7.63
<b>Financial Assets</b>				
Pro-forma working capital <sup>1</sup>			14.9	0.17
Long-Term Debt			0.0	0.00
Net Financial Assets			14.9	0.17
Net Asset Value			665.2	7.80
Target Multiple				0.6x
<b>Target Price per Diluted Share</b>			<b>4.70</b>	
Basic shares outstanding (MM)				83.4
Diluted shares outstanding (MM) <sup>1</sup>				85.3
Fully diluted shares outstanding (MM)				95.8

<sup>1</sup>Includes current cash, 12-mo ITM options & warrants and expected expenditures.

Source: Cantor Fitzgerald

**Exhibit 6. Price and Cost Sensitivity Table**

0.6x NAV		LT Lithium Carbonate Price (\$US)										
		\$7,000	\$8,000	\$9,000	\$10,000	\$11,000	\$12,000	\$13,000	\$14,000	\$15,000	\$16,000	\$17,000
Opex (US\$/LCE)	\$4,600	-\$0.10	\$1.00	\$2.20	\$3.40	\$4.60	\$5.80	\$7.00	\$8.20	\$9.30	\$10.50	\$11.70
	\$4,400	\$0.10	\$1.30	\$2.40	\$3.60	\$4.80	\$6.00	\$7.20	\$8.40	\$9.50	\$10.70	\$11.90
	\$4,200	\$0.30	\$1.50	\$2.70	\$3.80	\$5.00	\$6.20	\$7.40	\$8.60	\$9.80	\$10.90	\$12.10
	\$4,000	\$0.50	\$1.70	\$2.90	\$4.00	\$5.20	\$6.40	\$7.60	\$8.80	\$10.00	\$11.20	\$12.30
	\$3,800	\$0.70	\$1.90	\$3.10	\$4.30	\$5.40	\$6.60	\$7.80	\$9.00	\$10.20	\$11.40	\$12.50
	\$3,600	\$0.90	\$2.10	\$3.30	\$4.50	\$5.70	\$6.80	\$8.00	\$9.20	\$10.40	\$11.60	\$12.80
	\$3,400	\$1.10	\$2.30	\$3.50	\$4.70	\$5.90	\$7.00	\$8.20	\$9.40	\$10.60	\$11.80	\$13.00
	\$3,200	\$1.30	\$2.50	\$3.70	\$4.90	\$6.10	\$7.30	\$8.40	\$9.60	\$10.80	\$12.00	\$13.20
	\$3,000	\$1.50	\$2.70	\$3.90	\$5.10	\$6.30	\$7.50	\$8.70	\$9.80	\$11.00	\$12.20	\$13.40
	\$2,800	\$1.80	\$2.90	\$4.10	\$5.30	\$6.50	\$7.70	\$8.90	\$10.10	\$11.20	\$12.40	\$13.60
\$2,600	\$2.00	\$3.20	\$4.30	\$5.50	\$6.70	\$7.90	\$9.10	\$10.30	\$11.40	\$12.60	\$13.80	

Spot

Cantor

2019 FS

Source: Cantor Fitzgerald

**NEXT STEPS**

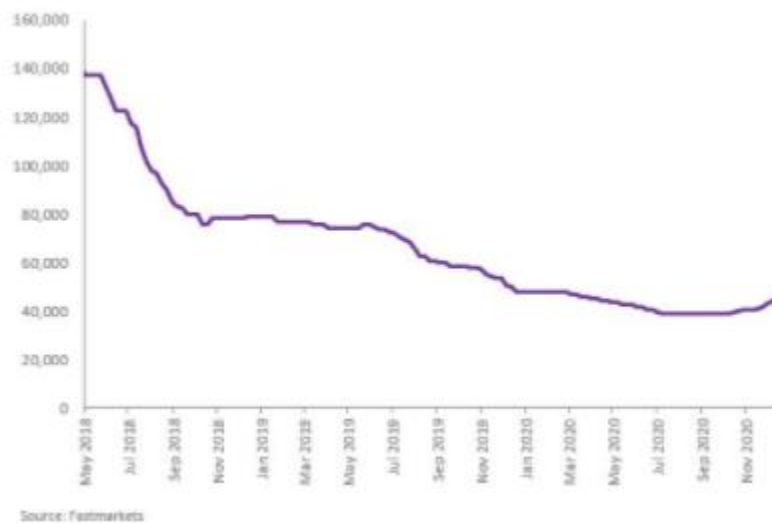
**Pilot Plant:** Millennial is currently commissioning the pilot plant which will produce 3 tonnes per month of LCE. Its operation will provide pilot studies to support detailed engineering estimates and product sample material for potential customers to begin the qualification process.

**Project Financing Solution:** Millennial maintains a strong cash position with about C\$17 MM and is now moving the project into the next development stage, including seeking full funding for construction. Current strategic investor Golden Concord Group Ltd (17% interest, one of the largest integrated energy services providers in China that specializes in clean energy) remains supportive but we understand the Company is talking to several potential partners and strategic investors as well as financial lenders. We expect a series of announcements in Q1/2021.

**LITHIUM MARKET OUTLOOK POSITIVE**

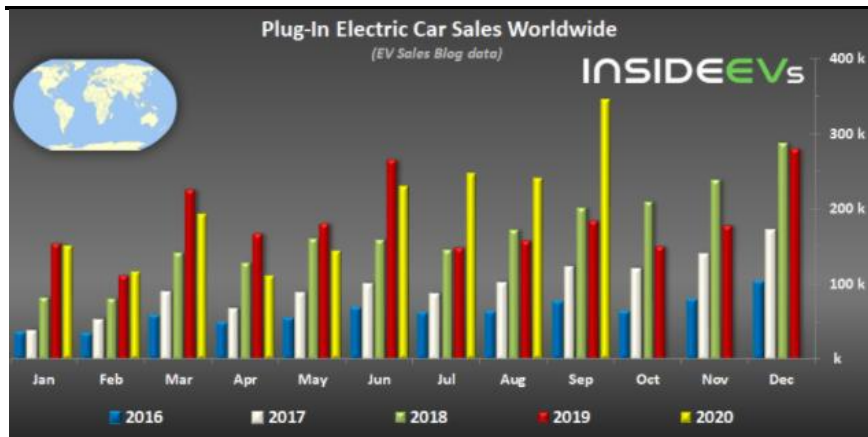
Spot lithium carbonate prices have slid significantly since the May 2018 highs of close to \$20,000/tonne to today’s spot price of ~US\$7,000/tonne. Lithium stockpiles have remained high as the COVID-19 crisis has impacted downstream users, battery makers and car makers as well. While major producers note unclear pricing visibility in the near-term, spot prices have risen slightly and expectations of increases in demand over the longer-term remains intact as EV demand picked up in the latter half of the year. Industry participants see demand (and pricing) normalizing by mid 2021 assuming no other shocks. As for pricing, we maintain our long term lithium carbonate price assumption of \$10,000 per tonne.

**Exhibit 7. Li<sub>2</sub>CO<sub>3</sub> 99.5% battery grade spot prices ex domestic China, yuan/tonne**



Source: Fastmarkets.com

**Exhibit 8. Global EV Sales**

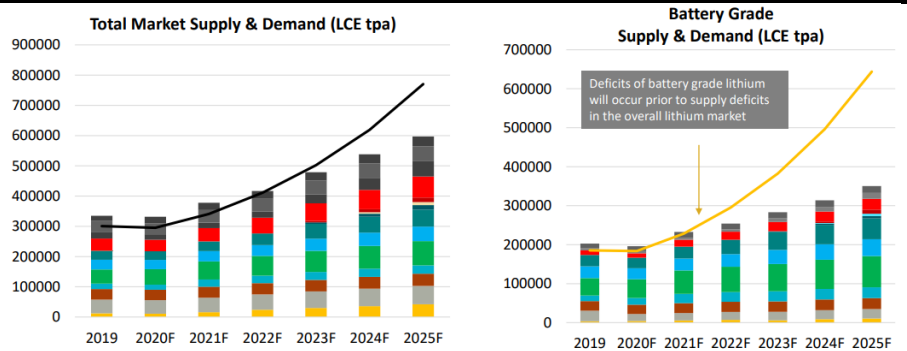


Source: insideevs.com

**Tesla Remains Bullish:** In September Tesla Inc. (TSLA-NYSE, not covered) held its “Battery Day” where it went through its battery technologies and view of

the future EV market. Of note, Elon Musk, CEO sees the global EV market growing to 30MM vehicles per year or ~30% by 2030 from about 2.5MM in 2020e or 2.5%; a 12x increase. So while battery demand currently comprises ~57% of current lithium supply, at the current EV penetration rate, it should be closer to 80% by 2025, far outstripping anticipated incumbent production (Exhibit 9). Note too that supply of battery grade material should be out of balance sooner; as early as 2022 according to Orocobre (ORE-ASX, not covered).

**Exhibit 9. Incumbent Market Supply & Demand (Tonnes LCE)**



Source: Orocobre Ltd.



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The analyst responsible for this report *has* visited the material operations of Millennial Lithium Corp. No payment or reimbursement was received for related travel costs.

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**BUY (Speculative):** The stock is attractively priced relative to the company's fundamentals, however investment in the security carries a higher degree of risk.

**HOLD:** The stock is fairly valued, lacks a near term catalyst, or its execution risk is such that we expect it to trade within a narrow range of the current price in the next 6 to 12 months. The longer term fundamental value of the company may be materially higher, but certain milestones/catalysts have yet to be fully realized.

**SELL:** The stock is overpriced relative to the company's fundamentals, and we expect it to decline from the current price over the next 6 to 12 months.

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