

## Feature Report Electric Vehicle

NOT RATED

Industry Research

### China EV – Rising Tide to Lift All Boats

#### China EV Market Survived the COVID-19 Pandemic Intact

Having survived the COVID-19 pandemic intact for now, China's EV market has recovered fully from doldrum amid the cut in subsidies last June and on track to enjoy good time ahead. New energy passenger vehicles sales in October went up 113% YoY, in sharp contrast to sluggish growth of the overall China automobile market that went up only 9.3% YoY.

#### Tesla Model 3 the Sure Bet and Hongguang MINI EV the Dark Horse

Tesla is driving the mid-end market by ramping up production in its Gigafactory 3 and cutting the price of its flagship Model 3 to under RMB250k after subsidies. And the winning dark horse is Hongguang MINI EV by SAIC GM Wuling Automobile, with its minimal specifications and RMB28.8k incredible price.

#### Government Policies Setting Direction to 2035

Three documents issued by the China government and followed up by industry association set the policy direction of the EV industry for the 15-year planning horizon to 2035, and the EV industry eclipses the much talk about semiconductor chips industry.

#### LFP Chemistry Deployment in Shorter Range and Lower Price

Market players are deploying battery with LFP chemistry in mass scale. Yet the Tesla Model 3 is not extending mileage range, instead just cutting price and squeezing other players, particularly BYD Han EV. We are yet to see development in the key long mileage range segment deploying LFP chemistry. Let's see if Tesla succeeds in this segment before China EV makers or the other way round, and we keep an eye on ENEV Hengchi.

H. C. Kwan  
(852) 2159 – 4506  
kwan.hc@hooraysec.com.hk

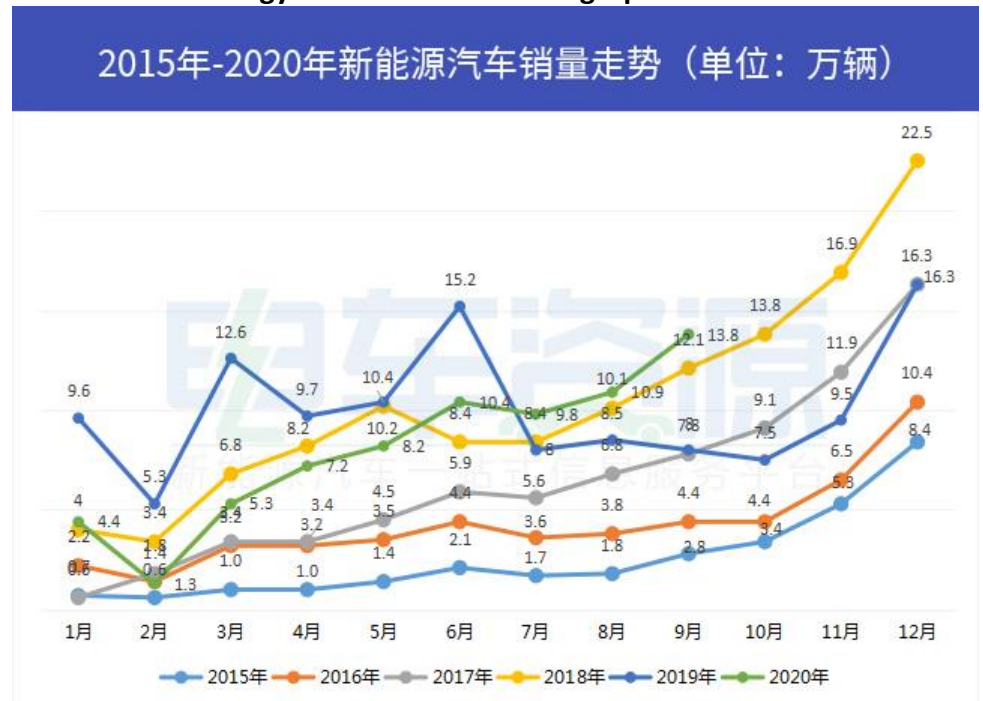
SEPT 8, 2020	Closing Prices	Mkt Cap (US\$ bn)
TSLA US Tesla Inc. 特斯拉	US\$585.76	US\$555.2
NIO US NIO Inc. 蔚来汽车	US\$54.00	US\$73.6
XPEV US XPeng Inc. 小鹏汽车	US\$64.28	US\$47.2
LI US Li Auto Inc. 理想汽车	US\$39.48	US\$33.0
1211 HK BYD Company 比亞迪股份	HK\$186.90	US\$69.6

### Overview

China’s Electric Vehicle (EV) market staged a strong recovery in past few months. According to statistics released by the China Association of Automobile Manufacturers (CAAM), new energy passenger vehicles sales in October reached 148k unit, up 113% YoY. Of which EV sales reached 122k units, up 128.8% YoY. This is in sharp contrast to sluggish growth of the overall China automobile market with passenger cars sales of 2.11mn units, up only 9.3% YoY.

Despite passenger EV sales year-to-date is still down 7.2% YoY, on strong 2019H1 versus weak 2020H1, we see strong recovery in the 2020H2 with strong product offering from both Tesla and local players. Tesla is driving the mid-end market by ramping up production in its Gigafactory 3 and cutting the price of its flagship Model 3 to under RMB250k after subsidies. Pure plays are also ramping up production rapidly while beefing up product portfolios at the same time. A dark horse is winning and it is the Hongguang MINI EV by SAIC GM Wuling Automobile.

**Exhibit 1: New Energy Vehicle Sales Trending Up in 2020**



Source: evpartner.com

### Domestic Player Winning the Top Spot

Among pure plays, NIO is taking a distant lead and the runners-up are in close pack, with the last two positions further lagged behind. The leading ones are listed in the U.S. and with funds just tapped from stock offerings, they are in strong financial position. Apparently, such ranking will be stable for a while as there are no disruptive products in offer among this group.

OPINIONS AND INFORMATION PRESENTED IN THIS DOCUMENT HAVE BEEN OBTAINED OR DERIVED FROM SOURCES BELIEVED BY HOORAY SECURITIES LTD. (HOORAYSEC) AS RELIABLE, BUT HOORAYSEC MAKES NO REPRESENTATION AS TO THEIR ACCURACY OR COMPLETENESS. HOORAYSEC ACCEPTS NO LIABILITY FOR LOSS ARISING FROM THE USE OF THIS DOCUMENT WHERE PERMITTED BY LAW AND/OR REGULATION.

**Exhibit 2: Domestic Pure Plays with Sales Doubling YTD to October**

排名	车企	10月销量 (辆)	1-10月总销量 (辆)	同比增长
1	蔚来汽车	5055	31430	100.1%
2	理想汽车	3692	21852	—
3	小鹏汽车	3040	17117	229%
4	威马汽车	3003	16889	46%
5	哪吒汽车	2056	11302	108.5%
6	零跑汽车	1743	5484	—

Source: [evpartner.com](http://evpartner.com)

We see a dark horse – Hongguang MINI EV – by SAIC GM Wuling Automobile taking the top spot with its ultra-low pricing, starting from RMB28.8k, despite its very minimal specifications. It is selling fast in third tier cities and below as a replacement to electric tricycles. It may have a few years of good time ahead before cannibalizing its own older vehicles. Yet it is unlikely to challenge mainstream EV in bigger cities, in our view, unless there is a major shift in policy turning to favour small to micro vehicles.

BYD is doing well with its Han EV and winning the credential for its blade battery, which is tested to survive the nail penetration experiment, amid the cases of autoignition fire of some EVs. So is Tesla Model 3, also featuring the lithium iron phosphate (LFP) battery pack and a cut in price tag to under RMB250k after subsidies.

**Exhibit 3: Hongguang MINI EV – Dark Horse Outselling Tesla Model 3**

2020年10月新能源车销量排行		电车资源
排名	车型	销量 (单位: 辆)
1	宏光MINI EV	20631
2	特斯拉Model3	12143
3	欧拉R1 (欧拉黑猫)	6269
4	比亚迪汉EV	5055
5	奇瑞小蚂蚁	4745
6	广汽新能源 Aion S	4630
7	比亚迪唐DM	3718
8	理想ONE	3692
9	比亚迪秦EV	3526
10	科莱威 CLEVER	3054

Source: [evpartner.com](http://evpartner.com)

## Quick Fitting into the SEPT Framework

Politics and policy will be the centre issue in this report. We see the issuance of three documents, namely the New Energy Vehicle Industry Development Plan 2021-2035 by the State Council, 14th Five-Year Plan (2021-2025) for National Economic and Social Development and the Long-Range Objectives Through the Year 2035, and Energy-Saving and New Energy Vehicle Technology Roadmap 2.0 by the Society of Automotive Engineers of China, in defining the long-term policy direction of the EV industry.

From what is said and what is not, we can infer that the EV industry is getting more attention than the much talk about semiconductor industry. In addition, a planning horizon of 15 years to 2035 will be another strong indication of policy direction.

## Social Aspect of SEPT Framework

Infrastructure building has been a key factor in driving the EV industry. China Electric Vehicle Charging Infrastructure Promotion Alliance (EVCIPA) released statistics showing that there are 1.498mn charging poles installed by end of October, up 30.9% YoY. Such high growth rate is expected to sustain in order to hit the target of 150mn units in 2030 as stipulated in the newly released Energy-Saving and New Energy Vehicle Technology Roadmap 2.0.

The China EV market is driven by low end models, with four of the top 10 best-selling models are under RMB100k in October. In addition, eight of them are new models launched after July, including the new Tesla Model 3 featuring the new LFP battery with reduced kWh capacity. These new models and major revamps of existing models will be subject to the test of time for driving experience is also an important factor to consider in owning a car and more importantly, in buying the next car, and foreign brands are doing much better in this regard.

While the Hongguang MINI EV pricing at under RMB30k may be spared from scrutiny, the Tesla Model 3 should be. It has cut the mileage range with the smaller kWh capacity LFP battery pack, and also curb weight by 100kg lighter. The lower energy density battery pack together with lighter weight should affect the centre of gravity and driving control, not on safety but on handling, feeling and experience. News are circulating that the new Model 3 comes with earlier version of software and Tesla is hoping to gain back the price cutting via software upgrade fee. Or the new version of software is not yet fully debugged, wild guess.

## **Economics Aspect of SEPT Framework**

We saw interesting developments in the past few months in the China EV market. On one hand, we saw Tesla cutting the price tag on its new Model 3, and on the other hand we saw records set by both pure plays and new models.

### **Duel – Tesla Model 3 versus BYD Han EV**

The talking point is definitely the lowering of after subsidies price of Tesla Model 3 to under RMB250k, which features a smaller LFP battery pack at lower costs. This is putting pressure on domestic players and encroaching their turf with that pricing and mileage range. This is a frontal attack on BYD Han EV which is equipped with blade battery technology for a mileage range of 605 km, at close pricing yet with smaller kWh LFP battery pack and 150km shorter mileage range.

In short, Tesla is leveraging on its brand equity. The sad fact is that Model 3 outsold the BYD Han EV by more than 2:1 in October, despite the ratio was narrowing from that in September.

We are yet to see any long mileage range EV featuring LFP battery pack from domestic players, despite we see Tesla going down the value chain and attacking the low end of EV product range.

### **Hongguang MINI EV Out Selling Tesla 2:1**

We see domestic players breaking out in the even lower end of EV offering. SAIC GM Wuling Automobile debuted the Hongguang MINI EV with a price tag starting from RMB28.8k, with a battery pack of 9.3kWh for mileage range of only 120km. Its sibling with better specifications is selling at only RMB38.8k.

---

**Exhibit 4: Hongguang MINI EV Selling at RMB28.8k**

Source: [evpartner.com](http://evpartner.com)

---

It is selling fast and topped 20k units a month, almost doubles that of the runner-up Tesla Model 3. The modest specifications fitted the replacement market for electric tricycles in third tier cities and lower.

**Pure Plays Setting Records**

The pure plays are also making good progress. NIO rolled off 5,000<sup>th</sup> vehicles from its production line for the month on October 29, just in time to break monthly production record. XPeng was also celebrating its 10,000<sup>th</sup> P7 model rolling off its production line in record 160 days in October. Of course, the best records are their share prices and market capitalization.



---

**Exhibit 5: NIO Rolling Off 5,000<sup>th</sup> Vehicles for the Month**



Source: [evpartner.com](http://evpartner.com)

---

**Exhibit 6: XPeng Celebrating 10,000<sup>th</sup> P7 Model**



Source: [evpartner.com](http://evpartner.com)

---

**XPeng Follows Suit on NIO's Battery as a Service**

Following the step of NIO's Battery as a Service, XPeng is offering similar services with the RMB60k battery pack for lease at RMB780 per month, for a yield of 15.6% yield, a bit cheaper than NIO's 16.8% yield to car buyers. It



may be just too soon for government policies to follow up on the 20% EV and/or NEV sales shares target. See what is up in the sleeve for EV financing, especially those selling to car rental and taxi market. The rental scheme can help such buyers to lower their capital costs.

## **Politics Aspect of SEPT Framework**

The key focus since our last report is the politics and policy aspect of our SEPT framework. Three important documents are released recently.

### **New Energy Vehicle Industry Development Plan 2021-2035**

On October 20, State Council issued the New Energy Vehicle Industry Development Plan 2021-2035, which stipulated that pure electricity drive will be the strategic direction. The vision will be, by 2025, newly made pure electric passenger vehicle energy consumption will be lowered to 12.0kWh per 100km and sales of new vehicles powered by new energy will account for about 20% of all new vehicle sales. These are the two quantified hard targets.

Other softer yet quantified targets are in the field of public transportation, rental, logistics in country level environment pilot area and atmospheric pollution prevention area, new energy vehicles (NEV) will account for 80% of newly acquired or replaced vehicles.

In addition, highly automated driving in specific districts and under specific scenarios will be commercially deployed, and charging and battery pack swapping services will be significantly more convenient.

On technology front, pure electric, plug-in hybrid, and fuel cell vehicles will be the three vertical pillars. And automotive battery and management systems, driving motors and power electronics, networking and intelligence will be the three horizontal beams.

Semiconductor chips and vehicle operating system will be high in agenda as well. They are integrated into wireless communication network using cellular technology for vehicle-to-vehicle and vehicle-to-machine interaction among traffic lights, road signs and road marks, intelligent roadside equipment.

### **Energy-Saving and New Energy Vehicle Technology Roadmap 2.0**

Following in close pace, Society of Automotive Engineers of China, under the guidance of the Ministry of Industry and Information Technology (MIIT), issued the Energy-saving and New Energy Vehicle Technology Roadmap 2.0 on October 27.

The roadmap emphasises the battery electric drive development strategy: by 2035, the market share of new energy vehicles will exceed 50%, the car parc of fuel cell vehicles will reach about 1 million, energy-efficient vehicles will be fully hybrid, and the automotive industry will achieve electrified transformation.

On the build-up of charging infrastructure, the roadmap calls for 150mn units of slow charging poles and 1.46mn units of the fast version, to support 150mn vehicles with charging needs, by 2035.

It further defines the construction of China's intelligent connected vehicle technology system and the new industrial ecology. It puts forward that by 2035, all kinds of intelligent connected autonomous-driving vehicles will be widely applied in China. China's intelligent connected vehicles will be deeply integrated with intelligent energy, intelligent transportation and intelligent cities.

#### **14th Five-Year Plan (2021-2025)**

New energy vehicle is also mentioned in the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and the Long-Range Objectives Through the Year 2035 which was announced on November 3, together with information technology, biotechnology, new energy, new material, high-end equipment, green environment protection, aerospace, ocean equipment and other industry.

#### **Two Weeks, Three Documents**

So, in a short span of two weeks, China released three documents regarding new energy vehicles, from the national level 14th Five-Year Plan setting the framework, to State Council setting forth specific directives, to industry association echoing the same.

A quick review of [www.gov.cn](http://www.gov.cn) news and policy portal will reflect China government's emphasis on NEV. The only industry specific development plan is on animal husbandry which was issued two months ago. Other development plans are on regional and city level.

#### **Semiconductor Chips in the NEV Development Plan**

There is nothing to follow up on the much talk about semiconductor chips, though there were news about trillion yuan level investments across the supply chain just weeks ago. This can be a side view on the importance of NEV in state level decisions and directives. It is good that semiconductor chips are mentioned in the NEV development plan in supportive roles.

#### **15-Year Long Planning Horizon with Easy Target**

Comparing to the eight-year planning horizon of its predecessor, the newly released New Energy Vehicle Industry Development Plan 2021-2035 have the time horizon almost doubled to 15 years. It also comes with energy

consumption target of 12kWh per 100km for newly made pure electric passenger vehicle by 2025, which is already achieved in current mainstream EVs. For targets such as 20% share of vehicle sales and 80% share for specific applications, they can be achieved via further favourable policies and administrative measures.

### **Hongguang Mini EV at 8kWh per 100km versus Model 3 at 11.7kWh**

A look at the recently launched Hongguang Mini EV will illustrate the point. From technical perspective, this vehicle comes with two versions, one with larger battery pack of 13.9kWh for a mileage range of 170km and 705kg car body, and the other with lighter body at 665kg, smaller battery pack at 9.3kWh for 120km mileage range. And the energy efficiencies of the two versions are already better than 12kWh per 100km, just around 8kWh, with exceptional light car body weight.

For comparison, the newly launched Tesla Model 3 fitting 55kWh LFP battery pack for a mileage range of 468km, or 11.7kWh per 100km, just better than the benchmark. It should be noted that the Shanghai made Model 3 is already 100kg heavier than the version using Lithium Nickel Manganese Cobalt Oxide (NMC) battery pack.

So the easy target may not be on green environment side, rather it is making room for climbing up the value chain towards high end EVs.

### **Securing Supply of Key Metals – Lithium, Cobalt, Nickel, and Platinum**

Yet the mass deployment of EVs will strain the supply of key metals in battery chemistry, especially lithium, cobalt, nickel, and platinum. Some research indicates that global demand for lithium up to 2050 will account for one-third of land-based lithium resources, and we are yet to see if technology advancement can keep pace for better recovery, both from mines and recycling, and dispel the 40-year crude oil reserve myth.

The NEV development plan calls for securing the supply of lithium, cobalt, nickel, and platinum, which is a key catalyst used in hydrogen fuel cell, thru recycling efforts and technology advancement to improve material efficiency. Together with earlier policies on recycling of used EV components and recycling of disassembled EV batteries, recycling business will be a key part in the value chain.

### **Fuel Cell – One of the Three Vertical Pillars**

Comparing to pure electric and plug-in hybrid variants, fuel cell vehicle (FCV) will be an even more distant target. From catalyst in fuel cell stacks, in-vehicle hydrogen storage systems, to fuelling stations infrastructure, FCV is slower in advancement than the other two pillars.

Toyota is going to debut its second general hydrogen FCV with major improvements over its predecessor version in December. With mileage

range over 400 miles or 650km, range advantage of FCV over EV is obvious. Yet the early stage of advancement of FCV can be reflected in the latest scandal on Nikola Motor. Too high an expectation and too much betting on hope than concrete products are known to be the warm bed for scandals. We have seen quite some regarding semiconductor chips in China in the past and hope that none will be here for FCV and related technologies.

## **Technology Aspect of SEPT Framework**

We have seen the mass deployment of LFP battery chemistry in Tesla Model 3 and BYD Han EV equipped with blade battery technology. Also, the shipment of Model 3 made in Gigafactory 3 in Shanghai for export to Europe was reported in October and set the stage for future growth in overseas markets.

There were quite some cases of autoignition fire in EVs and suspicions, without proof yet, that the culprit is NMC 811 high nickel chemistry. Such cases were not limited to China battery makers and major recalls were made in overseas market as well. Safety is still an issue for EV.

Without the hindrance of white list, LG Chem, Panasonic, and Samsung SDI are expected to take on Contemporary Amperex Technology (CATL) in the China market. Indeed, LG Chem has overtaken CATL in global market share lately.

## Conclusion: Rising Tide to Lift All Boats

Having survived the COVID-19 pandemic intact for now, China's EV market has recovered fully from doldrum amid the cut in subsidies last June and on track to enjoy good time as in 2018. Pricing at as low as RMB28.8k helps boost unit sales and grab media headline, yet if enough profit it can make at this price point to fund continued R&D will be dubious. European EV market is staging a comeback and may steal the limelight down the road. It is of interest to learn how the two markets work and prosper.

The talk of the month will definitely be the three documents issued by the China government and followed up by industry association. With a 15-year planning horizon to 2035, the EV industry ought to enjoy state level attention in coming years, yet there are no concrete policies on subsidies and favorable treatments so far. Anyway, the EV industry eclipses the much talk about semiconductor chips in the latest long-term planning. Indeed, semiconductor industry is not mentioned directly at all.

Strong sales and favorable stock market buoy the pure play EV makers. With newly raised funds from share offerings by the top three players and news of IPOs for the rest, their financial standings are sound and in good prospect. Yet those underdogs are still under financial pressures, in our view. The weight of ENEV Hengchi is yet to be felt directly for now. There are news around that it has installed robots by thousands in its new plants.

For the key long mileage segment deploying LFP chemistry, so far there is no news on advancement. The Hongguang MINI EV with 120km ultra short mileage range is selling well in the third-tier cities niche and may temporarily distract media attentions. Tesla Model 3 is not extending mileage range with the LFP chemistry, instead it is going the other way round by just cutting price and squeezing other players, in our view. Yet the truth is still there: the dead end on short mileage range, the inherent deficiency of LFP chemistry, and the potentials in combining the cheaper manufacturing costs of LFP chemistry and long mileage range EV. Let's see if Tesla succeeds in this segment before China EV makers or the other way round, and we keep an eye on ENEV Hengchi.



**ANALYST CERTIFICATION**

THE RESEARCH ANALYST, H. C. KWAN, WHO IS PRIMARILY RESPONSIBLE FOR THE CONTENT OF THIS RESEARCH REPORT, IN WHOLE OR IN PART, CERTIFIES THAT WITH RESPECT TO THE SECURITIES OR ISSUER THAT THE ANALYST COVERED IN THIS REPORT: (1) ALL OF THE VIEWS EXPRESSED ACCURATELY REFLECT HIS OR HER PERSONAL VIEWS ABOUT THE SUBJECT SECURITIES OR ISSUER; AND (2) NO PART OF HIS OR HER COMPENSATION WAS, IS, OR WILL BE, DIRECTLY OR INDIRECTLY, RELATED TO THE SPECIFIC VIEWS EXPRESSED BY THAT ANALYST IN THIS REPORT.

BESIDES, THE ANALYST CONFIRMS THAT NEITHER THE ANALYST NOR HIS/HER ASSOCIATES (AS DEFINED IN THE CODE OF CONDUCT ISSUED BY THE HONG KONG SECURITIES AND FUTURES COMMISSION) (1) HAVE DEALT IN OR TRADED IN THE SECURITIES COVERED IN THIS RESEARCH REPORT WITHIN 30 CALENDAR DAYS PRIOR TO THE DATE OF ISSUE OF THIS REPORT; (2) WILL DEALT IN OR TRADED IN THE SECURITIES COVERED IN THIS RESEARCH REPORT 3 BUSINESS DAYS AFTER THE DATE OF ISSUE OF THIS REPORT; (3) SERVE AS AN OFFICER OF ANY OF THE HONG KONG LISTED COMPANIES COVERED IN THIS REPORT; AND (4) HAVE ANY FINANCIAL INTERESTS IN THE HONG KONG LISTED COMPANIES COVERED IN THIS REPORT.

**RECOMMENDATION DEFINITIONS**

BUY: SHARE PRICE EXPECTED TO APPRECIATE 20% OR MORE IN THE NEXT 12-MONTH  
 HOLD: SHARE PRICE EXPECTED TO APPRECIATE BETWEEN 5% AND 20% IN THE NEXT 12-MONTH  
 SELL: SHARE PRICE EXPECTED TO APPRECIATE LESS THAN 5% IN THE NEXT 12-MONTH  
 NOT RATED: NO SPECIFIC SHARE PRICE ESTIMATIONS ARE MADE

**DISCLOSURES OF RELEVANT BUSINESS RELATIONSHIP**

HOORAY SECURITIES LIMITED (THE "HOORAYSEC") AND ITS AFFILIATE HOORAY CAPITAL LIMITED (TOGETHER THE "HOORAY GROUP") ARE LICENSED CORPORATIONS UNDER THE SECURITIES AND FUTURES ORDINANCE (THE "SFO"), MAY, UNDER CIRCUMSTANCES PERMITTED BY LAW, PARTICIPATE IN THE OFFERINGS OF SECURITIES MENTIONED IN THIS REPORT.

HOORAY GROUP MAY, TO THE EXTENT PERMITTED BY LAW, OWN OR HAVE A POSITION IN THE SECURITIES OF (OR OPTIONS, WARRANTS OR RIGHTS WITH RESPECT TO, OR INTEREST IN, THE SHARES OR OTHER SECURITIES OF) THE COMPANY MENTIONED IN THIS REPORT. HOORAY GROUP MAY ADD TO OR DISPOSE OF ANY SUCH SECURITIES OR MAKE A MARKET OR ACT AS A PRINCIPAL IN ANY TRANSACTION IN SUCH SHARES OR OTHER SECURITIES. HOORAY GROUP MAY FROM TIME TO TIME PROVIDE INVESTMENT BANKING, UNDERWRITING OR OTHER SERVICE TO, OR SOLICIT INVESTMENT BANKING, UNDERWRITING, OR OTHER BUSINESS FROM THE COMPANY.

HOORAY GROUP HAS NO MORE THAN 1% FINANCIAL INTERESTS IN THE COMPANY AS AT NOVEMBER 27, 2020.

HOORAY GROUP DOES NOT ACT AS A MARKET MAKER FOR THE COMPANY ON NOVEMBER 27, 2020.

NO EMPLOYEE OF HOORAY GROUP SERVES AS AN OFFICER OF THE COMPANY AS AT NOVEMBER 27, 2020.

HOORAY GROUP ACTS NO INVESTMENT BANKING ROLES FOR THE COMPANY WITHIN THE PAST 12 MONTHS.

**DISCLAIMER**

THIS DOCUMENT IS STRICTLY CONFIDENTIAL TO THE RECIPIENT, AND MAY NOT BE DISTRIBUTED TO THE PRESS OR OTHER MEDIA, AND MAY NOT BE REPRODUCED IN ANY FORM, AND MAY NOT BE TAKEN OR TRANSMITTED INTO THE UNITED STATES OR PROVIDED OR TRANSMITTED TO ANY U.S. PERSON (WITHIN THE MEANING OF REGULATIONS UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED), INCLUDING ANY BRANCH OR AGENCY OF A NON-U.S. PERSON(S) LOCATED IN THE UNITED STATES. FAILURE TO COMPLY WITH THIS RESTRICTION MAY CONSTITUTE A VIOLATION OF UNITED STATES SECURITIES LAWS. THIS REPORT MAY NOT BE SENT INTO CANADA OR TO ANY CANADIAN PERSON. THIS REPORT MAY NOT BE SENT INTO JAPAN. THIS REPORT MAY NOT BE DISTRIBUTED OR PASSED TO ANY PERSON OTHER THAN A PERSON WHOSE ORDINARY BUSINESS IS TO BUY OR SELL SHARES OR DEBENTURES, WHETHER AS PRINCIPAL OR AS AGENT. THE DISTRIBUTION OF THIS REPORT IN OTHER JURISDICTIONS MAY BE RESTRICTED BY LAW, AND PERSONS INTO WHOSE POSSESSION THIS REPORT COMES SHOULD INFORM THEMSELVES ABOUT, AND OBSERVE, ANY SUCH RESTRICTIONS. BY ACCEPTING THIS REPORT, THE RECIPIENT AGREES TO BE BOUND BY THE FOREGOING LIMITATIONS.

THIS REPORT HAS BEEN PREPARED BY HOORAY GROUP TO PROVIDE BACKGROUND INFORMATION ABOUT THE COMPANY. IT HAS BEEN PRODUCED INDEPENDENT OF THE COMPANY, AND THE FORWARD-LOOKING STATEMENTS, OPINIONS, AND EXPECTATIONS CONTAINED HEREIN ARE ENTIRELY THOSE OF HOORAY GROUP AND ARE GIVEN AS PART OF ITS NORMAL RESEARCH ACTIVITIES AND NOT IN CONNECTION WITH ANY OFFERING OF SECURITIES OR AS AN AGENT OF THE COMPANY, ITS SHAREHOLDERS OR ANY OTHER PERSONS. THE READER IS CAUTIONED THAT ACTUAL RESULTS MAY DIFFER MATERIALLY FROM THOSE SET FORTH IN ANY FORWARD-LOOKING STATEMENTS HEREIN. WHILE ALL REASONABLE CARE HAS BEEN TAKEN TO ENSURE THAT THE FACTS STATED HEREIN ARE ACCURATE AND THAT THE FORWARD-LOOKING STATEMENTS, OPINIONS AND EXPECTATION CONTAINED HEREIN ARE BASED ON FAIR AND REASONABLE ASSUMPTIONS, NONE OF HOORAY GROUP, ITS ASSOCIATES INCLUDING HOORAYSEC, AND THE COMPANY HAS INDEPENDENTLY VERIFIED ANY OF THE INFORMATION HEREIN. IF THE COMPANY SHOULD AT ANY TIME COMMENCE AN OFFERING OF SECURITIES, ANY DECISION TO INVEST IN ANY SUCH OFFER TO SUBSCRIBE FOR OR ACQUIRE SECURITIES OF THE COMPANY MUST BE BASED WHOLLY ON THE INFORMATION CONTAINED IN THE FINAL OFFERING MEMORANDUM ISSUED OR TO BE ISSUED BY THE COMPANY IN CONNECTION WITH ANY SUCH OFFER AND NOT ON THE CONTENTS HEREOF. THIS IS NOT AND SHALL NOT BE TREATED AS AN OFFER (OR SOLICITATION OF AN OFFER) TO BUY OR SELL THE SECURITIES/INSTRUMENTS MENTIONED. HOORAY GROUP DOES NOT REPRESENT THIS IS ACCURATE OR COMPLETE AND WE MAY NOT UPDATE THIS. ACCORDINGLY, NONE OF THE COMPANY, ANY UNDERWRITER OF SECURITIES OF THE COMPANY, OR ANY OF THEIR RESPECTIVE DIRECTORS, OFFICERS OR EMPLOYEES, SHALL IN ANY WAY BE RESPONSIBLE FOR THE CONTENTS HEREOF, OR SHALL BE LIABLE FOR ANY LOSS ARISING FROM USE OF THIS REPORT OR OTHERWISE ARISING IN CONNECTION THEREWITH. BY ACCEPTING THIS REPORT, THE RECIPIENT AGREES TO BE BOUND BY THE FOREGOING LIMITATIONS.

© 2020 HOORAY SECURITIES LIMITED ALL RIGHTS RESERVED

NO PART OF THIS MATERIAL MAY BE REPRODUCED OR REDISTRIBUTED WITHOUT THE PRIOR WRITTEN CONSENT OF HOORAY SECURITIES LIMITED.

## Contact

H. C. Kwan – Head of Research	kwan.hc@hooraysec.com.hk	(852) 2159 – 4506
Research Department	research@hooraysec.com.hk	(852) 2159 – 4500
Hooray Securities Limited 1/F Guangdong Investment Tower 148 Connaught Road Central Hong Kong		
Main :		(852) 2159 – 4500
Customer Services :		(852) 2159 – 4515
Dealing Hotline :		(852) 2159 – 4511
Facsimile :		(852) 2110 – 4044