BYD'S 2 KEY BENEFITS

BYD offers State of Georgia 2 Key Benefits:

1. World-leading experience and support;
2. Superior technological innovation; and

BENEFIT 1: WORLD-LEADING EXPERIENCE & SUPPORT

We're changing the world. BYD is proud to have been named #15 on Fortune Magazine’s 2015 “Change the World List.”

BYD ("Build Your Dreams," also known as BYD Company Ltd.) is a global company with operations spanning North and South America, Europe, India, China and beyond. By capitalizing on the trend of emerging new energy industries, BYD is realizing its 3 Green Dreams: Solar Power, Energy Storage, and Electrified Transportation. BYD has become the global leader in the rechargeable-battery industry, as well as a rising star in the markets of solar power stations, electric-power storage systems, and electric vehicles.

In fact, BYD is the world's top electric bus manufacturer, with over 13,000 buses being delivered or in service, and over 10,000 on order worldwide (400+ in the U.S. alone).

BYD is also financially the strongest bus manufacturer, in revenue, growth, profit, and reserves. BYD has maintained an extraordinary growth rate — turnover growth that has increased 2000 times from the initial 20,000,000 CNY ($230,000 USD) investment in 1995 at the company launch. This growth has been unaffected by global economic fluctuations: during the 2007-2009 recession, BYD's growth continued to rise, and in the Chinese stock market's January 2016 downturn, BYD was the only company to still show substantial growth. What's more, BYD has remained profitable—something not many electric vehicle companies can claim—providing a 2016 revenue of $17 billion, with over $10 billion to our 60% U.S. investors.

BYD's greatest wealth, however, may be our 220,000 employees worldwide. These dedicated professionals include over 20,000 Research & Development engineers in energy and vehicle technologies, who are continually engaged in product improvement and new product development. BYD's strong vertical integration ensures that each product design rises through consecutive formal reviews, from local departmental through global executive levels—so the best rise to the top, and become the new standard.
BYD, founded by engineer Chuanfu Wang in 1995, began by designing and producing rechargeable batteries, and BYD today has the distinction of being the world’s top rechargeable-battery manufacturer as well as the top electric bus manufacturer. Our quest over the past 20+ years has been to build ever-safer and more environmentally friendly batteries. This quest has led us to our current vehicle battery, the BYD Iron Phosphate, or Fe, Battery—thermally stable, nontoxic, recyclable and exceptionally long-lived, this technology is the core of our Zero-Emissions platform for buses, trucks, utility vehicles, automobiles, and even our stationary energy-storage facilities.

BYD has been developing Electric Vehicles since 2004, and introduced the world’s first production plug-in electric hybrid vehicle in 2008. On our electric buses and taxis alone, we’ve accumulated over 327 million miles in revenue service, with equivalent CO2 emissions saved comparable to planting a forest of 581,678 trees. Worldwide, we have delivered more than 13,000 transit buses into revenue service and have another 10,000 orders being processed, with some 400+ orders in process in the U.S. There are BYD buses running on six continents; they are in service across the U.S. and China as well as in Australia, Austria, Brazil, Canada, Chile, Colombia, Denmark, Finland, Germany, Hong Kong, India, Israel, Italy, Japan, Korea, Malaysia, Mexico, the Netherlands, the Philippines, Singapore, South Africa, Spain, Taiwan, the U.K., and Uruguay.

Figure: BYD buses run smoothly, quietly, powerfully and efficiently in 27 countries in all possible environments.

BYD’s technological expertise, financial resources, and organizational depth allow us to continuously design, refine and manufacture world-class products for the global markets and local clients we serve.
BENEFIT 2: SUPERIOR TECHNOLOGICAL INNOVATION

BYD’s vision is ongoing technological innovation to continue realizing our “3 Green Dreams” (Solar Power, Energy Storage, and Electrified Transportation).

Our ultimate vision is an integrated cycle of the 3 Dreams: renewable and zero-emissions sunlight can be stored in older BYD long-life, safe green batteries, and used to charge newer BYD long-life, safe green batteries, which will power safe, Zero-Emissions transportation. This re-cycling is possible due to our patented battery’s uniquely long life: after our batteries are used in vehicles for 12+ years, their remaining 70%+ life can be devoted to solar or other energy storage to charge new batteries.

BYD’s Zero Emission Solution can remove reliance on polluting diesel, combustible CNG, and the grid.

In designing our Zero-Emissions vehicles we’ve developed additional pioneering vehicle technology—which, along with our battery, constitutes our 3 Green Vehicle Breakthroughs:

1. **BYD’s game-changing battery:** You could call it “The Battery That Won’t Die”—after 12 years, it will still have 70+% life, pretty much no matter what you do to it. Charge it, and run it as much and as often as you want, in any temperature—it’s non-thermally reactive, so it won’t heat up, and heat doesn’t hurt it. After 12 years, it can be repurposed for energy storage, and eventually recycled—though it’s actually biodegradable, and nontoxic, too (our CEO is on video drinking its formulation). All this means it’s safe for people, the planet, and your pocket.
**BYD's batteries are the safest, period:** nonflammable, non-combustible, nontoxic, and biodegradable.

### OUR SAFETY INNOVATION STARTS WITH OUR BATTERY

BYD's world-leading Iron-Phosphate Battery can withstand the toughest working conditions. No fire or explosion even when exposed to extreme conditions. No acid vapor released during the charging process. No thermal runaway hidden danger.

2. **BYD's top-efficiency motor:** Our twin Rear-Drive-Axle Wheel-Hub Motors offer bigger power and torque, and lower weight-to-power ratio, with high productivity and reliability (and reduced noise and vibration) through placement directly on each side of the drive axle—no drive train needed. Plus, fewer moving, breakable parts means your buses spend less time in the shop and more on the road.

3. **BYD's triple-function propulsion control system:** Our system integrates propulsion elements—and other systems. Our twin synchronized Motor Controllers/Inverters combine Propulsion System control, power transformation, and ECU service (multisystem control, programming upload, and data communication and download), for triple functionality.
1) **Motor Control:** The Controllers direct the 3-Phase AC Motors, while also controlling speed, continuous-motion acceleration/deceleration, traction, and energy efficiency—and collecting data.

2) **Battery Charge/Discharge Control:** The Controllers' power conversion and inversion options, with multi-direction power flow control, allow the widest range of charge/discharge options of any EV manufacturer:

   a. **Motor function:** The Controllers draw DC energy from the High-Voltage (HV) Battery System and invert it to power the 3-Phase AC Motors;

   b. **Charger function:** The Controllers initiate AC flow from a compact external Charger interface, convert it to DC, and send it to the HV Battery System. Charging is done on-board, which improves both the safety and installation ease of external charging stations.

   c. **V to G, V to V, and V to L functions:** The Controllers can invert DC power from the batteries into AC power to be sent outward from the bus:

      - **V to G:** To the grid through the external Charger;

      - **V to V:** To another Electric Vehicle/bus, so the first bus serves as a mobile charger.

      - **V to L:** To an outlet or external energy storage system, to allow off-peak or emergency powering of tools or facilities, so the bus serves as a mobile generator.

   c. **Regenerative Braking function:** The twin AC Motors' excess energy from throttle release is sent to the Controllers, then converted by the Controllers to DC to recharge the HV Battery System for later use.

3) **Electronic Control:** The Controller serves as an Electronic Control Unit (ECU), not only sending commands and sending and receiving data among the HV-powered systems, but also integrating with key low-voltage systems such as ABS and ATC, and the Multiplex System, to facilitate communication among systems of both voltages. This integrated communication includes display of diagnostic indicators for multiples systems on the BYD Electronic Dashboard, and programming and data upload/download through USB and/or Wi-Fi connections, onto tablets, laptops, phones, etc., using different hardware and software options.
These key breakthroughs and more, along with the lower life-cycle cost they mean to you, are why independent studies found BYD’s technology preferable not only to diesel and hybrid buses (and CNG by association), but also to other battery-electric systems. As noted previously, the relevant studies (the Clinton Climate Initiative’s C40 Cities Programs and the Electric Bus Feasibility Study for Canada’s Edmonton Transit, respectively), are included as Attachments to this Proposal, as listed at the end of this Introduction.

Figure: Portion of the Edmonton Electric Bus Feasibility Study done by MARCON, which found BYD buses to have much lower life costs than electric buses charged with overhead harnesses.

Some additional key technological advantages that BYD offers are:

- **We’re the only bus manufacturer to design our buses, drive system, and power source together.** Our pioneering and uniquely people-safe and planet-safe BYD Fe Battery has been honed to power our buses. Because the buses and batteries were designed together:
  - **We optimize integration, performance and key design elements,** such as passenger space, safety, vehicle weight, and accessibility for charging and maintenance; and
  - **We offer you direct warranties and support**—no “pass-throughs” on key propulsion or structural elements. We quickly service all such claims ourselves at your site, often within one business day.
Figure: BYD buses are charged on board, saving space + installation cost and time, and improving safety.

- **We're the only bus manufacturer to offer practically portable, problem-free charging.** Because charging is done on the bus by the Motor Controllers/Inverters, no hot, bulky transformer stations or big overhead chargers with attendant construction and permitting challenges are required. BYD’s compact conductive charger interfaces, with single-or-double fuel-pump-style cables, take up almost no space, and use a simple wired-pole-in-ground installation, which can be done inside or outside at a yard or deadhead location, since the units are weatherproof and vandal-resistant. Each charger will charge a bus to 100% State of Charge within two to four hours, and one Charger interface is provided **free with each bus.**

Because of these combined factors:
• **You'll likely have extra chargers to install elsewhere.** Since charging can be staggered on fewer chargers than you'll receive, you can place the rest wherever—at another yard; at a suitable deadhead location such as a Park-and-Ride, Metrolink station or transit hub; or even mounted on a mobile generator truck—to provide free added boosts to buses during the day. If your needs change, you can easily move the chargers to a new spot. This can make inductive charging a needless expense, and/or create possibilities for partnerships with colleges, malls/key businesses, or local government entities that could provide deadhead charging locations, as outreach/promotion for themselves and green energy.

• **You don't actually have to install the chargers.** Since you only need a 480V 3-Phase AC outlet, you can use one that's above ground, if you take suitable safety precautions for the large, heavy cables. UCLA chose to do this to create a portable "charge-bot" (or "BYD2") solution.

• **We're the only bus manufacturer to offer so many "planned redundancies."** Two motors, two Motor Controllers/Inverters, two battery packs with Battery Controllers, a reserve charge/“limp home” function, and Battery Thermal Management even though none is actually needed—we plan for every possible scenario to ensure continued safe performance in the event that one element malfunctions. Plus, driver control, including full steering and braking, will *always* be maintained even in the event of power failure, due to our underlying mechanical systems.

• **We're the only bus manufacturer to offer other charging, energy storage, and transportation solutions.** Not only can our batteries be repurposed for external energy storage, or used on board to send power to other buses, tools/facilities, or the grid, we also offer, through other U.S. businesses, a host of additional products we'd be happy to discuss with you, such as:

  • **Battery-electric forklifts** for your facilities, each capable of charging or being charged by any other BYD vehicle;

  • **Battery-electric trucks** for use as service vehicles, each also capable of charging or being charged by any other BYD vehicle;

  • **A monorail system**—an exciting addition debuting in 2017;

  • **Small-to-large scale solar and energy storage systems**, to substantially reduce grid reliance and/or allow for off-peak power use.

We don't rest on our laurels, either. **Continued technological innovation is a BYD core value.** We are always working to improve our products, by incorporating customer feedback, test results, technological improvements, and engineering “ahah” moments into regular design improvements every six months, backed by thorough design and feasibility reviews and testing.