



北京将建设成为电动汽车

Beijing Will Be a Benchmark in Nationwide

全国示范应用的新标杆

Demonstration Application of EV

文/ 阿茵 Text/A Yin

2014年6月16日，北京市人民政府颁布《北京市电动汽车推广应用行动计划（2014-2017年）》（简称《行动计划》）。《行动计划》是北京市深入贯彻落实国务院《大气污染防治行动计划》，全面落实《北京市2013-2017年清洁空气行动计划》的重要举措，要切实做好电动汽车推广应用工作，努力实现北京市大气污染防治目标，努力将北京建设成为电动汽车全国示范应用的新标杆、应用规模全球领先的新高地。

On June 16, 2014, the Beijing municipal people's government promulgated "The Beijing electric vehicle application action plan (2014-2017)" (hereinafter referred to as "action plan"). "Action plan" is an important measure for the in-depth implementation of the action plan for prevention and control of atmospheric pollution which is promulgated by the state council, and the full implementation of clean air action plan of Beijing in 2013-2017. This measure is aimed to do a good job in the electric vehicle application, achieve the target for the control of air pollution in Beijing, and build Beijing into a new benchmark for the electric car nationwide demonstration application and a new height in the application scale of the world.



《行动计划》紧紧围绕首都城市战略定位

《行动计划》紧紧围绕首都城市的战略定位，坚持市场导向和政府推动相结合，以政策服务创新为牵引，以重点应用示范为突破，以市场全面开放为动力，以基础设施建设为支撑，营造全社会共同关注创新，共同支持减排的良好氛围，努力将北京建设成为电动汽车全国示范应用的新标杆、应用规模全球领先的新高地。

《行动计划》确定了公交、出租、电动汽车分时租赁、末端物流、公务领域、环卫车、私人领域、充电设施建设、政策等9个方面的重点任务，立足纯电驱动，推广电动汽车技术不断进步、创新商业模式、加快基础设施完善，推动公共领域率先示范，有序培育私人市场。计划在今后4年间提供17万辆电动小客车指标，有序推进单位及个人购买使用电动汽车。到2017年建设一万个快速充电桩，公交、出租领域，共用充电设施将建立充电设备。

《行动计划》将充分发挥新能源汽车联席会议制度的作用，加强资金和用地保障，加大科技创新支撑、鼓励商业模式创新，强化企业主体责任、倡导公众全面参与、加大宣传监督力度，形成共同维护电动汽车良好发展态势和局面的协同创新格局。

《行动计划》全力以赴推进公交电动化

《行动计划》将全力以赴推进公交电动化。将电驱动公交车的推广应用与交通体系深化改革相结合，使技术创新与商业模式创新相协调，因线制宜，实现换电、场站集中充电、在线充电、停靠站分散补电等多种供电模式的有机协同和车辆、供电、营运之间的有效匹配。以公交电动化为突破口，聚焦主要线路和重点区域，大力推进公交电动化。2014年，投运电驱动公交车不低于900辆。到2017年，投运电驱动公交车不低于4500辆。

行动措施一

按照“一线、一环、四放射”的发展思路，在城区范围内推进重点公交线路及全部城市快速公交线路（BRT）电动化。

The action plan is closely around the strategic positioning of Beijing

The action plan closely around the capital city of strategic positioning, adhere to market-oriented and government to promote the combination of policy, service innovation, for traction, with emphasis to demonstrate the application as the breakthrough, driven by market fully open, supported by the construction of infrastructure, create a common focus on innovation, the whole society to support good atmosphere to reduce emissions, efforts will be in Beijing construction become the new benchmark for electric car nationwide demonstration application, the application scale of the world's leading new heights.

The action plan assigns a key task in the following nine fields: public bus, taxi, electric car time-divided leasing, end logistics, public area, sanitation, private sector, charging infrastructure construction, policy and etc. It roots in the pure electric drive to promote the EV tech progress, innovate the business mode, facilitate the improvement of the infrastructure, promote the demonstration in the public domain, and cultivate the private market. It is expected that in future 4 years, 170000 electric cars will be provided, and collective and private purchases of EV will be encouraged. By 2017, 10000 rapid charging piles will be built, and charging devices will be set up in the public charging facilities.

The action plan gives full play to the role of the system of joint conference for new energy vehicles, strengthens capital and land security, increases scientific and technological innovation support, encourages business model innovation, strengthens enterprise's main body responsibility, advocates public participation, intensifies propaganda supervision, in order to form a collaborative innovation pattern which can jointly maintain the electric car good development situation.

The action plan goes all out to promote public transportation electrification

The action plan goes all out to promote public transportation electrification. The promotion in the application of electric buses is combined with the transportation system deepening reform, in order to harmonize the business model innovation and the





目前北京已在四惠、北土城、祁家豁子、西黄庄电动公交场站运营190辆纯电动公交车以及280辆双源无轨电车，包括81路、84路、90路、102路、109路、127路、455路、496路等多条线路，车型涵盖12米换电式、12米直充式、12米双源无轨等多种车型，线路覆盖长安街、东西二环、平安大街、四惠、西直门周边等多个重点区域。下一步将继续在长安街沿线加大纯电动公交车推广应用力度，并在1路投运18米纯电动铰接公交车。

目前，三环路300路内外环线采用的是传统柴油发动机的18米铰接公交车，计划将该线路的车辆全部更换为18米纯电动驱动公交车。

针对北京现有的4条城市快速公交BRT线路，也将全部更新为电驱动公交车。其中，2014年重点启动南中轴快速公交线路首批40辆电驱动公交车的更新工作，后续车辆将逐步更换为电驱动公交车。

——四惠换电场站。四惠电动公交车换电场站于2013年初正式投入使用，是四惠交通枢纽的重要配套设施之一，位于枢纽东侧，总建筑面积2708平方米。四惠电动公交车换电场站可同时为4辆电动公交车换电，每天可满足160辆电动公交车的换电需求，整车综合换电时间约8分钟/辆。

市公交集团针对四惠电动公交场站安排的线路主要包括455、468、495、496、506、553路等6条公交线路，涵盖通州新城、双桥、东坝、姚家园、常营等地区，目前首批40辆纯电动公交车已在455和496路上进行示范运营。

四惠电动公交换电场站目前运行车辆为12米换电式纯电动公交车。

——西黄庄充电站。西黄庄公交充电站位于南坞公交场站，充电区域占地约1500平方米，西黄庄公交充电站共配备10台100千瓦直流充电机，每天可满足30辆电动公交车的充电需求。针对直充式电动公交车的运行特点，西黄庄公交充

technology innovation. Power supply modes include electricity change, online charging, concentrated charging, and so forth. Public bus electrification is taken as a breakthrough point, focusing on the main line and key areas, and vigorously promoting electrification in the field of public transportation. In 2014, more than 900 electric public buses will be put into use. By 2017, not less than 4500 electric public buses will be put into use.

Action 1

In accordance with the development ideas (i.e. one line, one ring, and four radiations), electrification will be made in key public lines and BRT lines in urban areas.

At present, 190 pure electric public buses and 280 dual-source trolleybuses are operated in Sihui, Beitucheng, Huang Zhuang QiGuHuoZi, involving lines 81, 84, 90, 102, 109, 127, 455, 496 and so forth. Bus models are 12-m battery change, 12-m direct charging, 12-m dual-source trackless. Lines cover key areas, including Changan Avenue, Xizhimen, West Ring, and East Ring, Pingan Avenue, Sihui, and etc. The next step will continue in changan avenue along the intensify pure electric bus application, and hinged at 18 m 1 road was put into pure electric bus.

At present, 300 sanhuan road inside and outside the circle is the traditional diesel engine of 18 m articulated buses, will plan the route vehicles all replacement for 18 m pure electric bus.

In 4 existing BRT lines, a full use of electric public buses will be used. Of which, a focus is to start the transit into the use of first 40 electric public buses in the semi-axis of the south in 2014. The sequent electric buses will be gradually used.

– Battery change terminal at Sihui. This battery change station was put into used in early 2013, and is one of important auxiliary facilities for Sihui as a transportation hub. It is located in the hub on the east side. The total construction area is 2708 square meters. This station can change the battery for four electric public buses at the same time, and total 160 electric buses each day. The integrated battery change time is eight minutes.

In the public bus terminal, bus lines are 455, 468, 495, 496, 506, 496 and so on, covering Tongzhou New Town, Shuangqiao, Dongbai, Yaojiayuan, Changying and so forth. At present, first 40 pure electric public buses have been into the demonstration run in lines 455 and 496.

Now the pure electric public buses of 12-m battery change are running in this public bus terminal.

– Xihuangzhuang Charging Station. It is located in Nanwu Public Bus Terminal. The charging area covers about 1500 square meters. This station has 10 100 kw dc charging machines, and can meet the demand of 30 electric buses every day. According to the characteristics of direct charge type electric buses, this station mainly serves bus lines 121 and 114 so forth. These buses running on these lines are 12 meters direct-charge type pure electric buses.

Bus rapid transit system. It is called BRT, and is a new public

电站安排的线路主要包括121路及114路等公交线路。西黄庄公交充电站目前运行车辆为12米直充式纯电动公交车。

——快速公交系统。快速公交系统（Bus Rapid Transit）简称BRT，是一种介于快速轨道交通（Rapid Rail Transit，简称RRT）与常规公交（Normal Bus Transit，简称NBT）之间的新型公共客运系统，是一种大运量交通方式，通常也被人称作“地面上的地铁”。它是利用现代化公交技术配合智能交通和运营管理（集成调度系统），开辟公交专用道路和建造新式公交车站，实现轨道交通模式的运营服务，达到轻轨服务水准的一种独特的城市客运系统。

——12米电动公交车。目前在北京投运的12米纯电动公交车分为整车直充式和电池快换式两种。其中直充式电动公交车装备130.5千瓦时电池，可在1至2个小时内完成充电。最大载客80余人，单次充电最大续驶里程120公里。快换式电动公交车装备138.7千瓦时电池，可在8至10分钟内完成整车换电。最大载客80余人，单次充电最大续驶里程150公里。

——18米电动公交车。18米铰接式纯电动公交车为电池快换式。装备215千瓦时电池，可在8至10分钟内完成整车换电。最大载客138人，单次充电最大续驶里程150公里。

passenger transport system between the RRT and NBT. It features a big traffic. It is often referred to as Metro on the ground. It uses the modern public traffic tech and smart transportation and operation management (integrated scheduling system). It can realize the rail transport mode service. Thus, it is a unique urban passenger transport system.

— 12-meter public electric buses. These pure electric bus are divided into direct-charge type and quick battery change type. The front buses are equipped with 130.5 KWH batteries which can be charged within 1 to 2 hours. Their maximum capacity is more than 80 passengers, and the mileage 120 kilometers per charge. Those buses of quick change type have 138.7 KWH batteries which can charged in 8 to 10 minutes. Their maximum capacity was more than 80 passengers and the mileage 150 kilometers after each charge.

— 18-meter electric buses. 18-meter hinged style pure electric bus is of quick battery change type. It is equipped with 215 KWH battery. Battery change can be completed in 8 to 10 minutes. Maximum capacity is 138 passengers, and the mileage after a single charge is 150 kilometers.

Action 2

Beijing will strengthen the rail transport interchange to realize the electrification of microcirculation lines in the rail transportation.

At present, Bus Group has opened 71 microcirculation lines and



行动措施二

加强轨道交通接驳，实现全部轨道交通接驳微循环线路电动化。

目前公交集团已开通轨道交通接驳微循环线路71条，配备402辆单机车。今后将逐步替换现有线路并在新增线路全部采用6至8米的电驱动公交车，方便百姓出行并扩大服务运营区域，深入社区商圈等区域。2014年重点在6条以上微循环线路投运电驱动公交车不低于100辆。

——微循环线。微循环线网是支线网的补充，主要承担客流规模、道路通行能力达不到开行常规公交条件的区域内短途出行需求。线路行驶道路以支路、小区路为主，线路长度在5至10公里左右，结合道路网循环条件，可考虑环线布设，提高运输效率。在规模较小的居住和商务区，线路连接到主要出口，在规模较大的居住和商务区，线路引入功能区。采用小站距，灵活设站，线路终点站或折返点应选择地铁站或干路辅路，具备临时驻车、掉头条件的地点就近停靠。线路使用小型化公交车型。

——6米微循环电动公交车。计划投运的6米纯电动公交车主要服务于5至10公里左右的社区及商圈地铁接驳线路。车辆装备41.4千瓦时电池，采用多元复合锂电池，可在10分钟内完成充电，实现快速充电。最大载客36人，单次充电最大续驶里程150公里。

has 402 buses. In the future, 6- to 8- meter type electric buses will be gradually used to broaden the service areas, including business and community circles so on. In 2014, more than 100 electric buses will be used in six microcirculation lines.

— Microcirculation lines. Microcirculation lines are a supplement to the regional network. They can meet the short-distance travel demand in the area where the routine public traffic conditions are not mature. These lines are main in the resident zones and 5 to 10 kilometers in length. They can be ring-shaped to improve the efficiency of transportation. In smaller residential and business districts, these lines are connected to the main exit. In the large business district, these lines can have functional areas. In these lines, the stop stations can be set up flexibly and their terminal points or return points can be at the subway and the supplementary lane in the trunk road. These lines can use the minibuses. — 6- m electric buses in microcirculation. These pure public buses are mainly used in the feeder lines 5 to 10 kilometers long for the community and business circles, which are linked to the subways. They are equipped with 41.4 KWH battery which is a multivariate composite lithium battery. It can be charged in 10 minutes. The maximum capacity is 36 passengers. The mileage is 150 kilometers after a single charge.

Action 3

Micro public transportation can solve problems from the resident zone. For the convenience of community residents, Beijing plans to cover





行动措施三

微公交破解社区百姓最后一公里出行难题。

为方便社区居民的出行，实现社区公共交通覆盖，通过探索尝试新的公共交通运营模式，破解居民小区最后一公里出行难题，目前北京已在大兴黄村及亦庄开通微公交接驳车，经过近两个月的试运营，取得了好效果，为大兴的康乃馨小区、兴康家园、康泰园、马赛公馆等小区内52栋居民楼、3.3万名百姓的出行提供了便利。下一步根据社区需求进一步开通线路并提高车辆技术性能，在实现绿色出行的基础上，做到社区与地铁的无缝衔接，让更多的百姓主动选择公交出行方式。

微公交接驳车。针对社区到地铁站、公交场站的具体路线，开行社区微公交接驳线路，线路长度普遍小于5公里，采用北汽威旺307EV电动小客车，装备36千瓦时三元锂电池。最大载客9人，最大续航里程150公里。

行动措施四

开拓定制商务班车满足细分市场。

目前公交集团已开行103个方向的定制商务班车，共计配车95辆。下一步将在此基础上逐步开展纯电动商务班车示范运营，计划初期投运12辆，目前已选定线路，正在进行充电基础设施建设等工作。

——定制公交商务班车。定制公交商务班车是指依托定制公交平台而设计的一种多样化公交服务方式。在对广大乘客进行出行调查的基础上，根据调查结果设计定制公交商务班线路，并在定制公交平台上招募乘客、预订座位、在线支付，根据约定的时间、地点、方向开行。定制公交商务班车可以走公交专用道，具备优先通行的优势；采用一人一座、一站直达、优质优价的服务方式；使用配备空调和车载Wi-Fi的公交车，为广大乘客提供安全、快捷、舒适、环保的公交出行服务。

more communities by the micro public transportation. At present, at Huangcun, and Yizhuang, Daxing, the minibus line has been set up. After two years of pilot operation, the good effect is shown. The minibus line covers 52 resident buildings including Kangnaixing Resident Zone, Xingkangjia Resident Zone, Kangtai Garden, Masai Zone and etc; these resident zones have 33000 residents who have been provided with travel convenience. The next step is to use vehicles having better technical performance. On the green travel basis, the resident zone can be linked to the subway in a seamless manner. Also, more and more people have more choice among travel modes.

Shuttle-purposed minibuses: The shuttle buses are from the community to the subway and public bus terminals. Their lines are less five km long. 307EV minibus is used, which has 36 KWH ternary lithium batteries, maximum capacity of 9 passengers, and mileage of 150 kilometers.

Action 4

Customized business bus to meet the demand of the market segment. At present, the public transportation group has run business buses which are customized. A total of 95 buses are running. The next step is to gradually deploy the pilot run of pure EV business line. At the start, 23 pure electric buses will be put into use. Now, the lines have been selected, and the work regarding the construction of charging infrastructure and so forth is being done.

— Customized business bus. Customized bus business is a kind of diversified bus service which is based on the public transportation platform. According to the result of the investigation on the passengers, we can design a customized business bus line. Also, we can design the seat reserved, online payment, and so forth. The business bus runs according to the agreed time, place, and direction. The customized business bus can run along the public transportation line, and features one seat per passenger, one-stop arrival, and high quality etc. It also is equipped with the conditioner and Wi-Fi, so giving a safe, fast, comfortable, environmentally friendly service in public transit for passengers.

— 12-meter electric business bus. This kind of business bus is equipped with 198 KWH battery which can be charged in two to three hours. The maximum capacity is 69 passengers, and the

——12米纯电动商务班车。12米纯电动商务班车装备198千瓦时电池，可在两至三小时内完成整车充电，最大载客69人，单次充电最大续驶里程240公里。

行动措施五

推动新城城区主要公交线路电动化。

结合郊区新城的整体发展需求和规划，新城城区内主要公交线路全部采用电驱动公交车。2014年重点在怀柔亚太经济合作组织会议（APEC）会址、亦庄新城、昌平未来科技城等区域的主要公交线路投运电驱动公交车60辆。

亦庄新城将以轨道交通站点、住宅区、工业区等为核心，逐步实现电动公交、微循环、微公交、出租等一体化电动公共交通体系。

北京经济技术开发区拟在开发区及其配套协作区范围内大力推广电动车，以轨道交通及公交站点、住宅区、工业区等为核心，按照不同运营里程开行公共交通线路，涵盖12米电动公交车、6至8米电动公交车和社区微公交接驳车，在开发区范围内形成完善的区域多层次公共交通网络。首先，开发区逐步完成6条公交线路、共计60辆新能源车更替传统动力公交车的工作；其次，逐步推动新能源微公交接驳车作为区内三至五公里短途接驳之用，以有效缩短亦庄就业人员点对点通勤时间，提高区域交通效率，目前已开通荣京街地铁站-北工大软件园和经海路地铁站-数字工场两条线路，下一步预计开通旧宫地铁站-物美超市旧宫店和鹿鸣苑-东晶国际-听涛雅苑-林肯公园-万源街地铁站两条线路；最后，拟开通从小区到地铁的电动微循环接驳车，线路运营里程五至十公里，预计开通的线路为三羊里-文化园地铁站和南海家园-荣昌街地铁站。

mileage 240 kilometers after a single charge.

Action 5

Beijing to promote electrification of public bus line in new urban area. According to the overall development demand and plan of new urban areas, their main public bus lines will be electrified. In 2014, 60 electric public buses will be used in main public bus lines in APEC avenue at Huairou, Yizhuang New Town, Changping Future Tehn Town and etc.

Yizhuang New Two takes as a core the rail transit site, residential zone and industrial area the like, in order to realize a public transportation system in which electric public transporation, microcirculation, and rent so forth as a whole.

The economic and technological development zone in Beijing plans to promote the application of electric vehicles. The core is in the rail transit, public transportation terminal, resident zone, industrial zone and so forth. The public bus line covers 12m, 6m and 8m electric public buses and minibuses. The development zone will form a diversified public transportation network. First, the development will gradually use 60 new energy buses in 6 public bus lines, which replace the fuel buses. Second, the new energy minibuses are used as shuttle means in the short-distance (3-5km long) so as to improve the regional traffic effectiveness. Now two lines have been opened: Tongrong Jingjie subway station - Beigongda Software Park, and Jinghai Road Subway Station - Digital Worksite. The next step is to open the following two lines: Jiugong Subway Station - Wuwei Mall Jiugong Shop; and Luming Garden - Dongjing International - Tingtao Garden - Linken Park, Wanyuan Subway Station. Finally, it plans to run minibuses from the resident zone to the subway station, and this line is five to ten km long. The expected lines are Sanyangli - Wenhuiyuan Subway Station; and Nanhai Home - Rongchangjie Subway Station.

Action6

Beijing to promote electrification of airport vehicle.

The capital airport will update vehicles or add new ones. In this





行动措施六

推动机场运营车辆电动化。

首都机场更新或新增各类运营车辆、摆渡等旅客保障车辆全部采用纯电动汽车。2014年完成首批17辆电动接驳车示范运行，规划建设配套充电站。

——在飞行区域内，重点推动推广使用新能源汽车。目前，首都机场飞行区内运营车辆3420台，多为行李牵引车及客货运输车，作业面积7.8平方公里。按照“统一标准、统一准入、统一调配”的原则，制定飞行区清洁能源车辆准入及运行管理制度。新增运营车辆及要客、头等舱旅客保障车辆一律采购清洁能源汽车，争取在APEC会议期间使用清洁能源车辆接送各国代表。

——在公共区域内，重点推动楼间电动摆渡车。首都机场公共区域现有运送旅客及工作人员的摆渡车、机场大巴及空港巴士共339辆。制定机场地区清洁能源车辆更新计划，推广电动摆渡车使用，年内完成清洁能源车辆的分步替代。

——在航站楼区域内，重点推广电动摆渡车。在3号航站楼率先启用电动摆渡车的使用，拟采购8辆电动摆渡车，专门用于运送T3D到T3C的旅客，目前已经与相关电动车制造厂商进行洽商。

——逐步推行电动机场巴士。根据车型技术特点并结合线路具体情况和需求，逐步实现机场巴士电动化，实现机场到市区的绿色便捷出行。

process, pure electric vehicles are fully used. In 2014, first 17 electric shuttle vehicles will put into the pilot run, and a plan is to construct the supporting facilities, i.e., charging stations.

– In the flying area, the key is to promote the use of new energy vehicles. At present, in the flight zone of the capital airport, there are 3420 vehicles, most of which are tractors for luggage and carriers for passenger and cargo. The operating area is 7.8 square kilometers. In accordance with the principle of "uniform standard, unified access, unified deployment," the management system for the access and operation of clean energy vehicles in the flying zone is developed. The clean energy vehicles are purchased. It is aimed to use the clean energy vehicle for delegates during the APEC meeting.

– In the public area, the key is to promote the use of electric vehicles between buildings. Now, there are 339 buses in the public area of the capital airport. The plan to use clean energy vehicles in the airport area is develop. It also plan to promote the use of electric shuttle buses. In the year, the replacement by clean energy vehicles step by step will be completed.

– In the terminal area, the key is to promote the use of electric shuttle buses. Terminal 3 is the first to use electric buses. 8 electric shuttle buses will be bought, which are specially used for passengers T3D to T3C. Now the negotiation is made with related electric vehicle manufacturers.

– The use of electric buses is gradually promoted in the airport. According to technical characteristics of the car models and actual conditions of the bus lines, the electrification of buses in the airport will be gradually realized. In addition, the green travel from the airport to the urban area will be achieved.