

Towards Zero-Emission Mobility Workshop

Organizers:

Energy Foundation China

Innovation Center for Energy and Transportation (iCET)

Co-organizer:

China Clean Transportation Partnership (CCTP)



PANEL 1 第一小节

Global Fuel Economy and Zero-Emission Policies

全球燃料经济性与零排放汽车政策

PANEL 1

Global Fuel Economy and Zero-Emission Policies



Mr. Huiming Gong
*Transportation Program Director
Energy Foundation China*



Mr. Jinhua Zhang
*Executive Vice President &
Secretary General, China
Society of Automotive
Engineers*



Dr. Michael Nicholas
*Electric Vehicles and
Fuels Senior Researcher,
ICCT*



Mr. Liu Xiaoshi
*Deputy Secretary-
General
of China EV100*



Mr. Patrick Duan
*Vice President of
Operations,
BYD Motors*



Mr. Bob Ye
*VP of Business
Development,
Faraday Future*



Huiming GONG

Clean Transportation Program Director, Energy Foundation China

Mr. Huiming Gong is the Program Director of the Transportation Program, Energy Foundation China. Before joining the Energy Foundation in 2005, he served as the Program Officer of the Auto Project on Energy and Climate Change at the Global Environmental Institute. Mr. Gong received two Master's degrees, one from the University of California, Riverside, in Environmental Toxicology, and the other from Peking University in Environmental Sciences.

龚慧明先生

能源基金会中国 交通项目主任

龚慧明先生现为能源基金会中国交通项目主任。在2005年加入能源基金会之前，供职于全球环境研究所汽车能源与气候变化项目。龚慧明先生先后就读于北京大学环境科学中心和美国加州大学河滨分校空气污染研究中心，拥有两个理学硕士学位。



Jinhua ZHANG

Executive Vice President & Secretary General, China Society of Automotive Engineers

Mr. Zhang Jinhua is the Executive Vice President & Secretary General of the China Society of Automotive Engineers (China SAE). Since 2006 he's also acted as Deputy Director of *Energy Saving and New Energy Vehicle Key Project* under the National 863 Program. He previously held the positions of Director's Assistant, Deputy Director, and Chief Director at Automotive Technology Intelligence Research Institute, China Automotive Technology and Research Center (CATARC). The research areas of Mr. Zhang include government policy, strategy and development plan of the automotive industry, and strategic design of China's New Energy Vehicle development. He has conducted dozens of national-level automotive research projects.

张进华

中国汽车工程学会常务副理事长兼秘书长

2006年至今，兼任国家863计划节能与新能源汽车重大专项总体专家组副组长。张进华先生曾任中国汽车技术研究中心副主任，科技部十一五863“燃料电池客车设计与运行试验研究工作”课题负责人。主要研究方向：汽车产业发展战略、规划、政策和新能源汽车发展战略设计。主要研究成果有：“我国汽车产业科技创新体系研究”、“下一代高性能纯电动轿车动力系统技术平台研发”、“节能与新能源汽车技术政策研究”、“电动汽车产业发展战略研究”、“节能与新能源汽车产业发展规划（2012-2020）研究制定”、“中国制造2025”等数十项国家级汽车研究课题，《中国汽车技术发展报告》，《中国汽车产业发展报告编制工作》等。



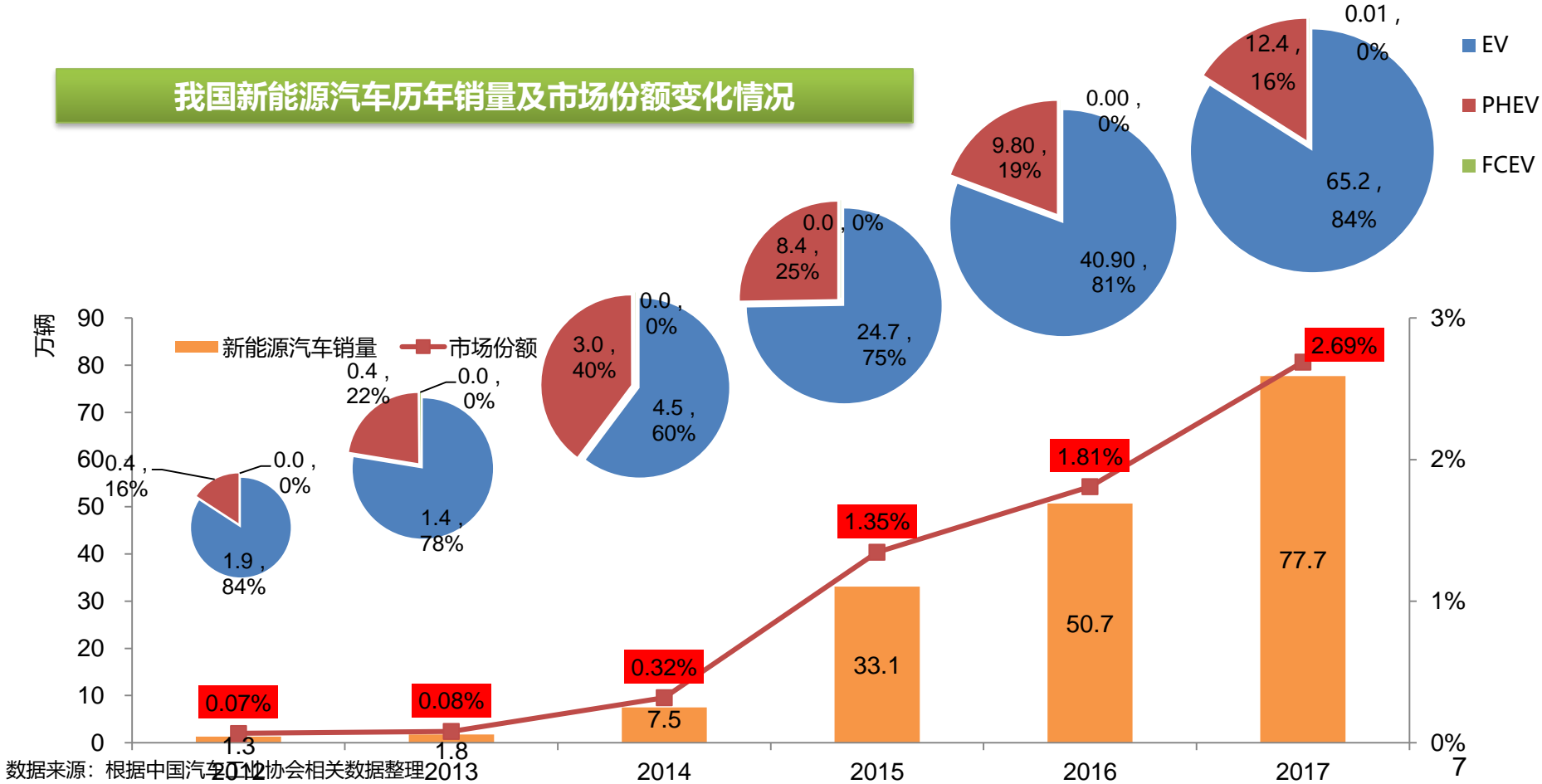
中国汽车工程学会
China Society of Automotive Engineers

中国新能源汽车产业发展现状和 政策趋势

中国汽车工程学会
2018年9月

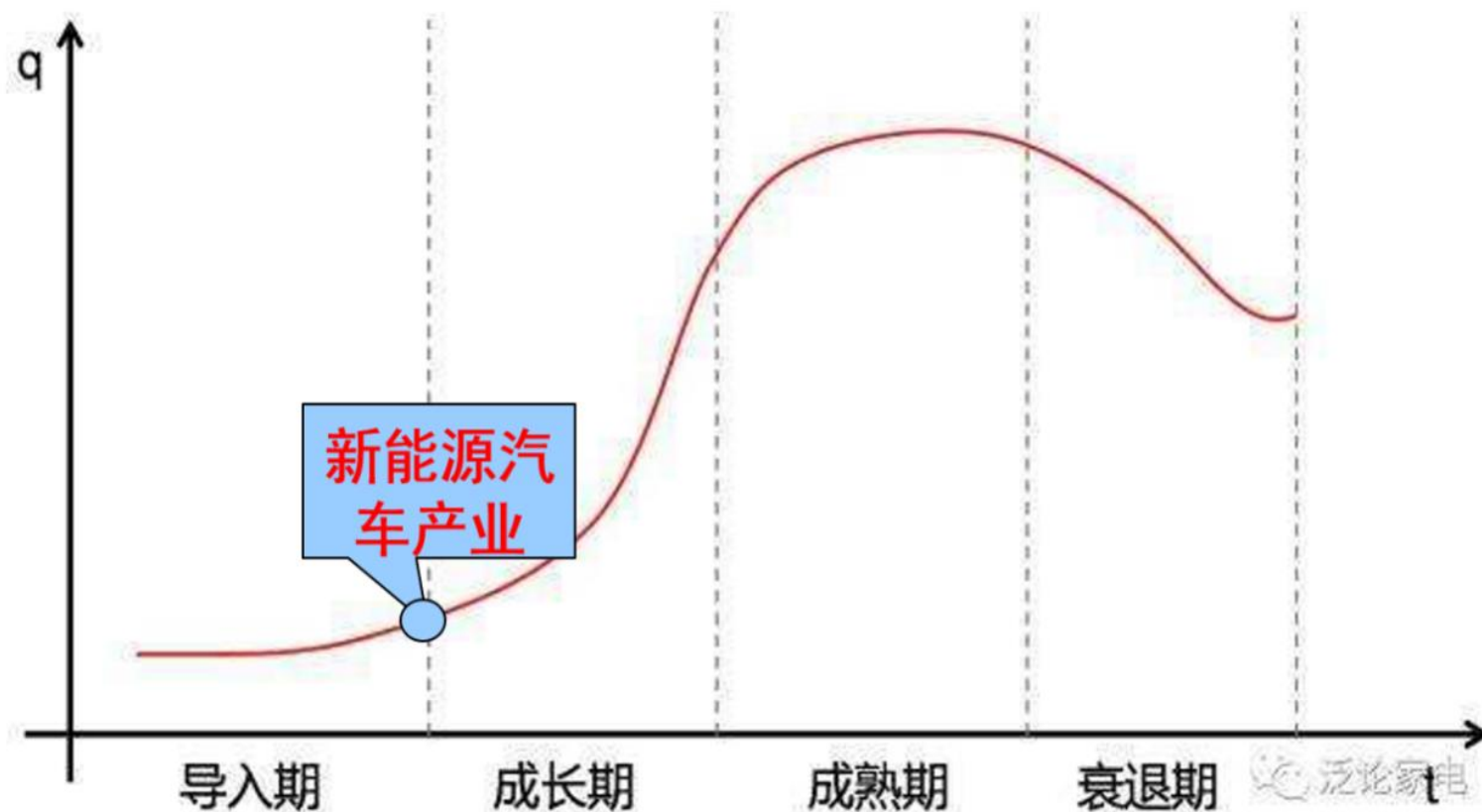
我国新能源汽车销量快速增长，纯电动车型占主导地位

- 新能源汽车销量在2013-2015年**4倍增长**的情况下，2016-2017年仍然保持了**50%左右**的高增长
- 纯电动汽车占市场主导地位，从2014年**60%**的基础上，新能源汽车中占比逐年增长到2017年的**84%**。



对当前中国新能源汽车产业发展阶段的判断

——导入期向成长期过渡的关键阶段

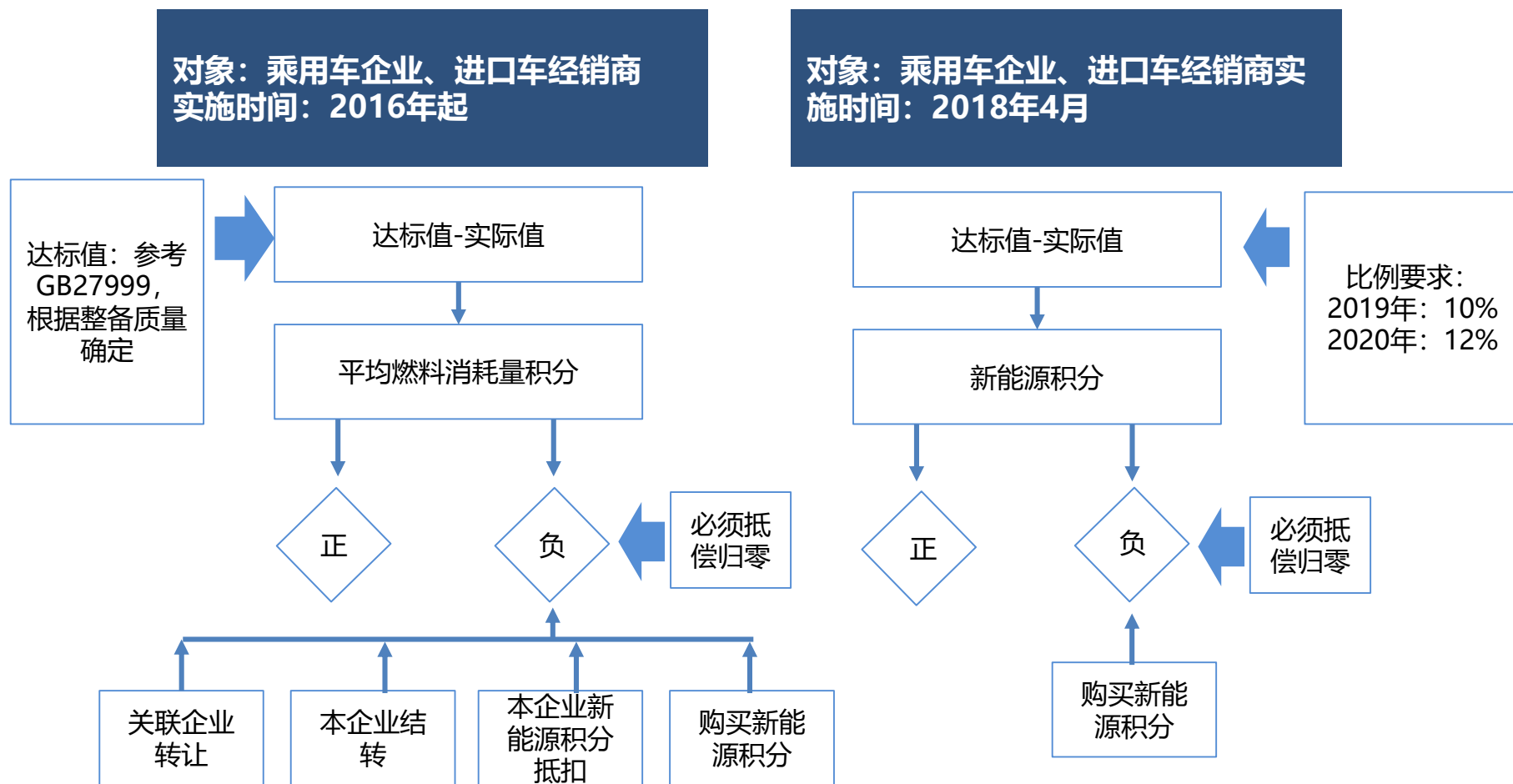


导入期特征：公司/竞争者少、普遍亏损、市场增长率高、技术变动较大、产品价格高、市场壁垒低

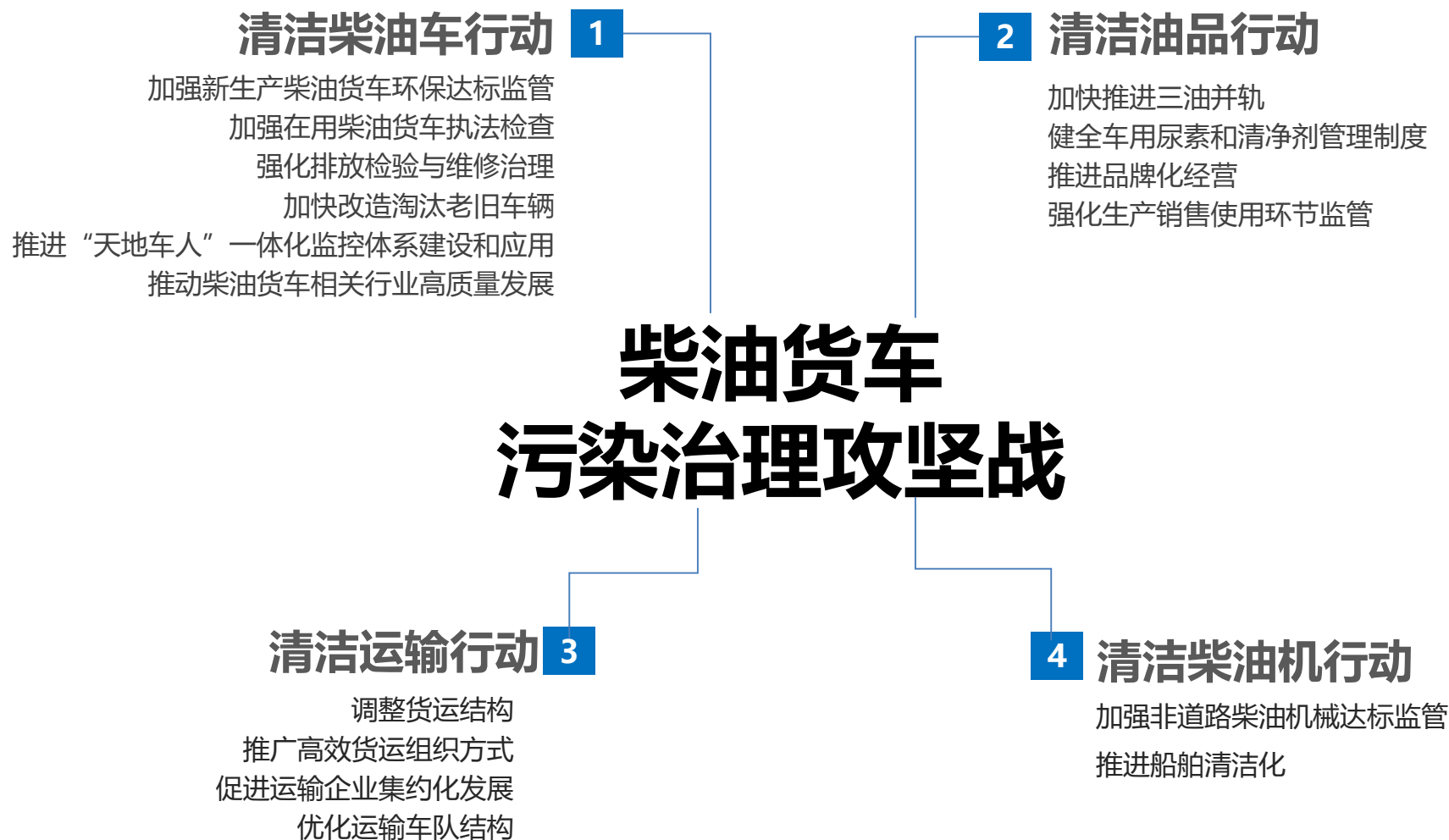
成长期特征：公司/竞争者多、利润增加、市场增长率很高、技术渐趋定型、市场壁垒增加、产品价格下降、行业标准逐渐形成

后补贴时代的最大影响的政策变量：双积分政策

- 2017年9月，工信部公布《乘用车企业平均燃料消耗量新能源汽车积分并行管理办法》，建立推动新能源汽车发展的长效机制，促进新能源汽车研发和推广。



后补贴时代的最大影响的政策变量：蓝天保卫战





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全球燃料经济性与零排放汽车政策



Liu Xiaoshi

China EV100 Deputy Secretary-General of China EV100

Mr. Liu has multiple years of rich experiences in institutions, industries and businesses. Liu's international experience including financial, consulting and engineering works with Research Foundation of State University of New York Copia Consulting Company(USA) and Samsung (China) Investment Corporation.

His domestic experience including 20-years work in SOEs' Reform and energy industry at China International Capital Corporation Ltd.. He also worked in product management at Ministry of Petroleum Industry of China and China Petrochemical Corporation.

Mr. Liu graduated with M.Sc. in Policy Management at State University of New York (SUNY) in 1987 and also graduated with M.Sc. in Technology at SUNY in 1986. Mr. Liu graduated with B. In Eng. in Petrochemical Engineering from China Petroleum University in 1976.

刘小诗

中国电动汽车百人会 副秘书长

刘先生有多年的机构、行业 and 企业的丰富经验。刘先生的国际经验包括美国纽约州立大学研究基金会（负责财务分析、孵化器、技术转让），美国科比亚咨询公司（世界银行项目咨询）、韩国三星（中国）投资公司（工程管理）。

刘先生的国内经验包括中国国际金融股份有限公司20年经验（国有企业改革和能源行业专家）、以及石油工业部炼油化工生产司(生产管理)、中国石油化工集团公司(生产管理)等。

刘小诗先生于1987年获美国纽约州立大学公共管理硕士学位，1986年于该校获企业管理硕士学位，1976年毕业于中国石油大学（华东）石油化工工程专业。



中国新能源汽车政策成果及走向 The Accomplishments and Development of NEV policies in China

刘小诗 Xiaoshi LIU

中国电动汽车百人会 副秘书长

Deputy Secretary-General, China EV100

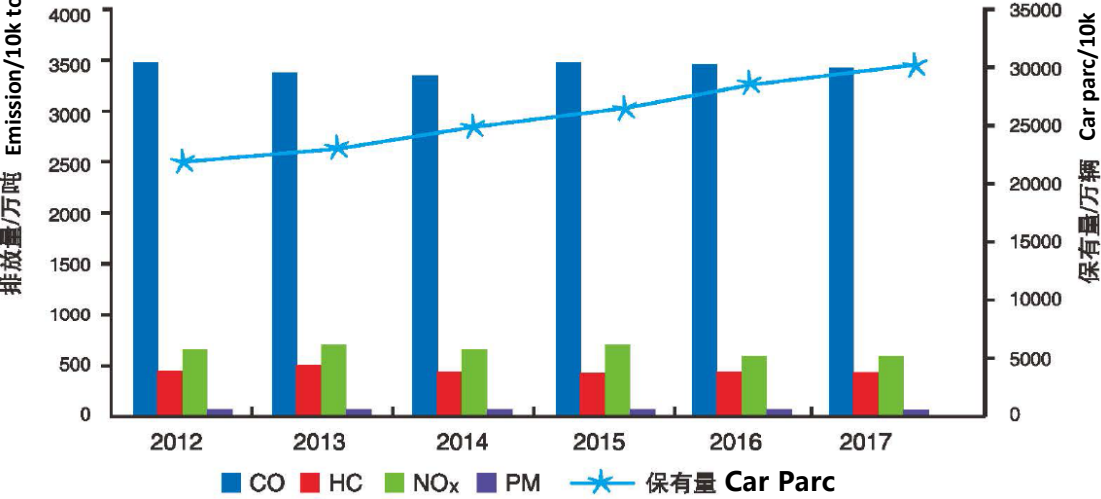
2018年9月12日 | Sep 12, 2018

中国节能减排发展现状

Energy-Saving and Emission-Reduction in China



全国机动车污染物排放量变化趋势
Trends of vehicle emission in China



来源：中国人民共和国环境保护部，中国机动车环境管理年报2018
Source: "China Vehicle Environmental Management Annual Report 2018", Ministry of Environmental Protection

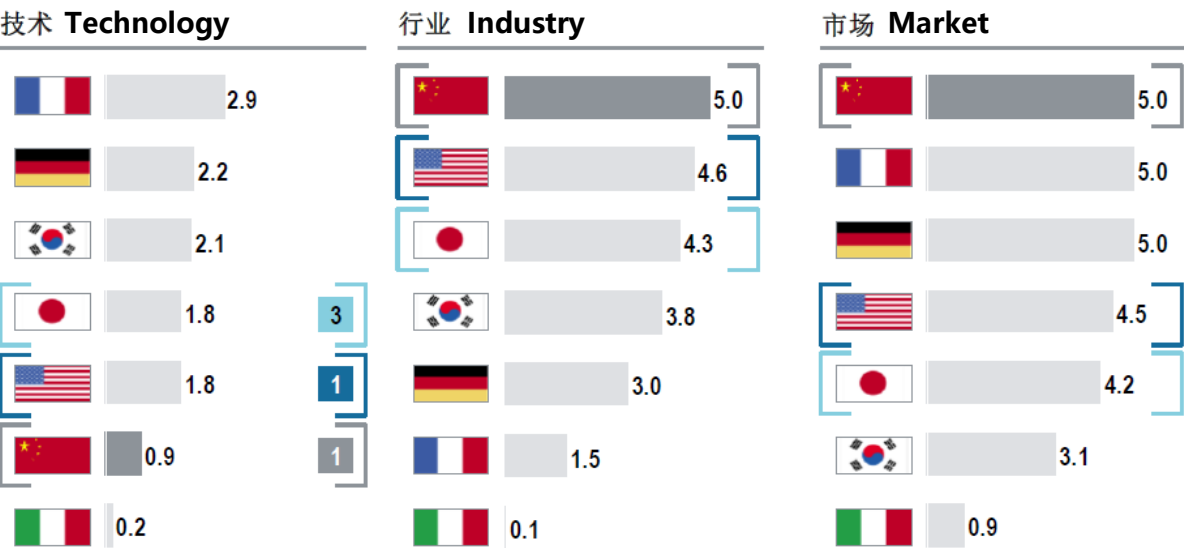
汽车燃油经济性要求逐步提高
Fuel economy requirements gradually improve

年度/Year	乘用车平均燃料消耗量 (L/100km) Avg fuel consumption of passenger cars
2016	6.7
2017	6.4
2018	6.0
2019	5.5
2020	5

来源：GB 27999-2014《乘用车燃料消耗量评价方法及指标》
Source: GB 27999-2014 "Fuel consumption evaluation methods and targets for passenger cars"

- 机动车排放控制初步见效，仍需降低汽车油耗水平
- 多种技术路线并举推进，纯电动为重心
- Vehicle emission control is initially effective, fuel consumption still needs to be reduced.
- A variety of technical routes are promoted simultaneously, and BEV is the focus.

中国电动汽车发展指数
China EV development index—Technology needs to be improved



来源：亚琛汽车工程技术有限公司、罗兰贝格
Source: fka & Roland Berger

政策推动下供需端现状

Current Situation of Supply Side and Demand Side



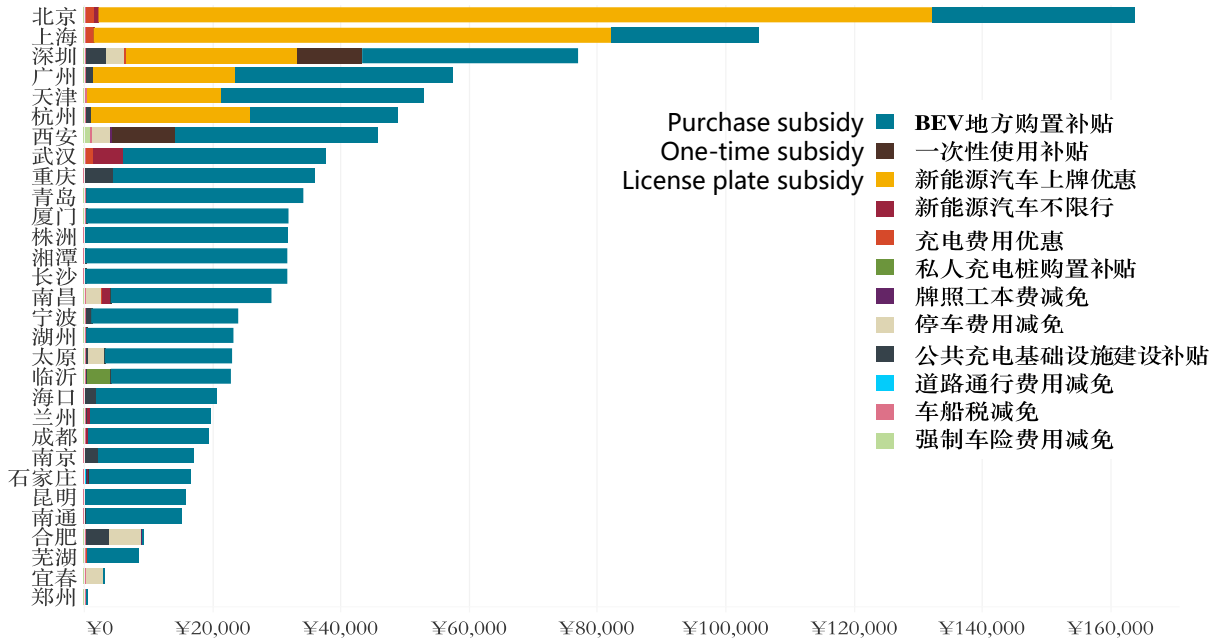
- 供给端：高额中央和地方补贴刺激企业生产新能源汽车，技术指标导向性明显
- 需求端：不限购、不限行等非财税政策已经成为新能源汽车消费者考虑因素
- Supply side: High subsidies stimulate the production of NEV, with obvious technology oriented incentives.
- Demand side: Non-fiscal and nontax policies such as unlimited purchase and unrestricted travel have become key concerns of NEV consumers.

2013-2018年新能源乘用车中央购置补贴额度变化 (万元)
2013-2018 NEV central subsidies change (10k RMB)

	纯电续航里程R (公里)			纯电续航里程R (公里)			纯电续航里程R (公里)		
	2013	2014	2015	2016	2017	2018	2013	2014	2015
BEV	Battery life (km)			Battery life (km)			Battery life (km)		
	80≤R<150	3.5	3.33	3.15	100≤R<150	2.5	2	100≤R<150	-
	150≤R<250	5.0	4.75	4.5	150≤R<250	4.5	3.6	150≤R<200	1.5
	250≤R	6.0	5.7	5.4	250≤R	5.5	4.4	200≤R<250	2.4
							250≤R<300	3.4	
							300≤R<400	4.5	
PHEV (包括REEV)	50≤R	3.5	3.33	3.15	50≤R	3	2.4	50≤R	2.2
FCV	20	19	18	150≤R	20	20	300≤R	20	

来源：公开资料，百人会整理
Source: Public information collected by China EV100

一揽子地方性鼓励政策为消费者购买纯电动乘用车提供的货币化收益
Local subsidy policies to encourage NEV consumption



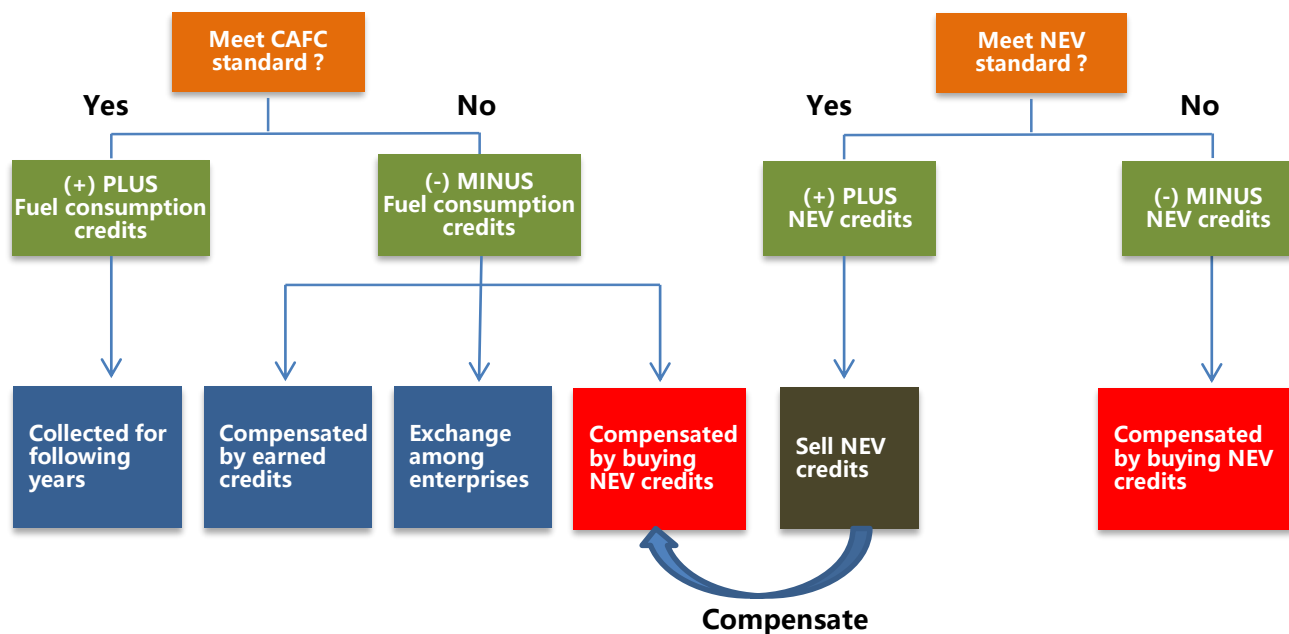
一揽子地方性激励政策为消费者购买纯电动乘用车提供的货币化收益

来源：ICCT，百人会<中国城市新能源乘用车激励政策评估>
Source: "Evaluation of incentive policies for NEV in China" by ICCT & China EV100

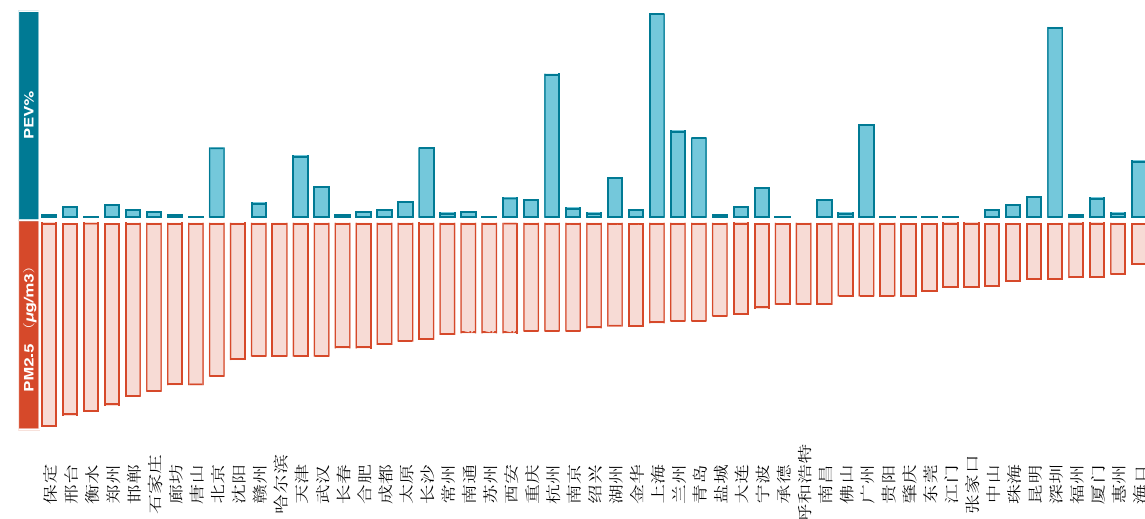


- 供给端：双积分政策倒逼企业生产新能源汽车，催生第二次合资潮，政策效果待观察。
- 需求端：环保政策尚未纳入新能源汽车推广，污染严重城市和非财税政策将成为政策发展重点
- Supply side: The "Parallel Credits" policy will force enterprises to produce NEVs and generate another joint venture boom. The policy effect is to be observed.
- Demand side: Environmental policies have not been included in the promotion of NEV, so pollution treatment and non-fiscal policies will be the focus of government.

企业平均燃料消耗量积分和新能源汽车积分核算方法
Parallel Administration of CAFC and NEV Credits



中国53个城市年均PM2.5（红色）与新能源汽车推广比例（蓝色）对比
PM2.5 amount (in red) and NEV portion (in blue) in 53 cities in China



来源：百人会、ICCT联合研究
Source: Research made by ICCT & China EV100

后补贴时代政策建立依然任重道远

Long Way to Go in Post Subsidy Time



- 政策体系建立涉及市场公平竞争、交通支持、基础设施、推广领域、财税引导、产业融合、模式创新和供给侧改革等多个方面，可以借鉴的外国经验也不多，需要我国政策设计部门加强协同
- The policy system involves many facts such as market fair competition, transportation support, infrastructure, promotion, fiscal and tax guidance, industrial integration, business mode innovation and supply-side reform. Experience of foreign countries is limited, so China's policy-making departments need to strengthen coordination.

- | | |
|-----------------|--|
| ➤ 坚决破除地方保护 | ➤ Removing local protectionism |
| ➤ 推动公共服务领域推广应用 | ➤ Promoting the application of public services |
| ➤ 完善财税金融扶持政策 | ➤ Improving fiscal, taxation and financial support policies |
| ➤ 完善交通差异化支持政策体系 | ➤ Improving the transportation differentiation support policy system |
| ➤ 进一步推动行业供给侧改革 | ➤ Further promoting industrial supply-side reform |
| ➤ 加强技术创新和产业化升级 | ➤ Strengthening technological innovation and industry upgrading |
| ➤ 加快完善充电服务环境 | ➤ Speeding up the construction of charging service environment |
| ➤ 积极引导产业融合和模式创新 | ➤ Guiding industrial integration and business model innovation |



PANEL 1 第一小节

Global Fuel Economy and Zero-Emission Policies

全球燃料经济性与零排放汽车政策



Michael Nicholas, PhD

ICCT Electric Vehicles and Fuels Senior Researcher

Dr. Michael Nicholas is a senior researcher at the International Council on Clean Transportation. His work focusses on the electric vehicle market transition with particular focus on policy, consumer behavior and electric vehicle infrastructure. He has assisted state, federal and international policymakers on understanding the shift to electric vehicles and how policy can help effectively shape the future market. He is a member and editor with the National Academies standing committee on Alternative Transportation Fuels and Technologies. He received his Ph.D. from the University of California, Davis in Transportation Technology and Policy.

Michael Nicholas 博士

国际清洁交通委员会 电动车与燃油领域高级研究员

Michael Nicolas 是国际清洁交通委员会高级研究员。他的研究专著于对电动汽车市场转型的政策研究、用户行为研究和电动汽车基础设施研究，是美国交通运输学会常务委员会替代交通能源和科技领域的成员和编辑。他曾经帮助美国联邦、各州及国际上的政策制定者理解电动汽车如何引领未来全球汽车市场转型。他从美国加州大学戴维斯分校获得交通科技和政策博士学位。

Importance of regulatory standards for the continued transition to zero-emission mobility

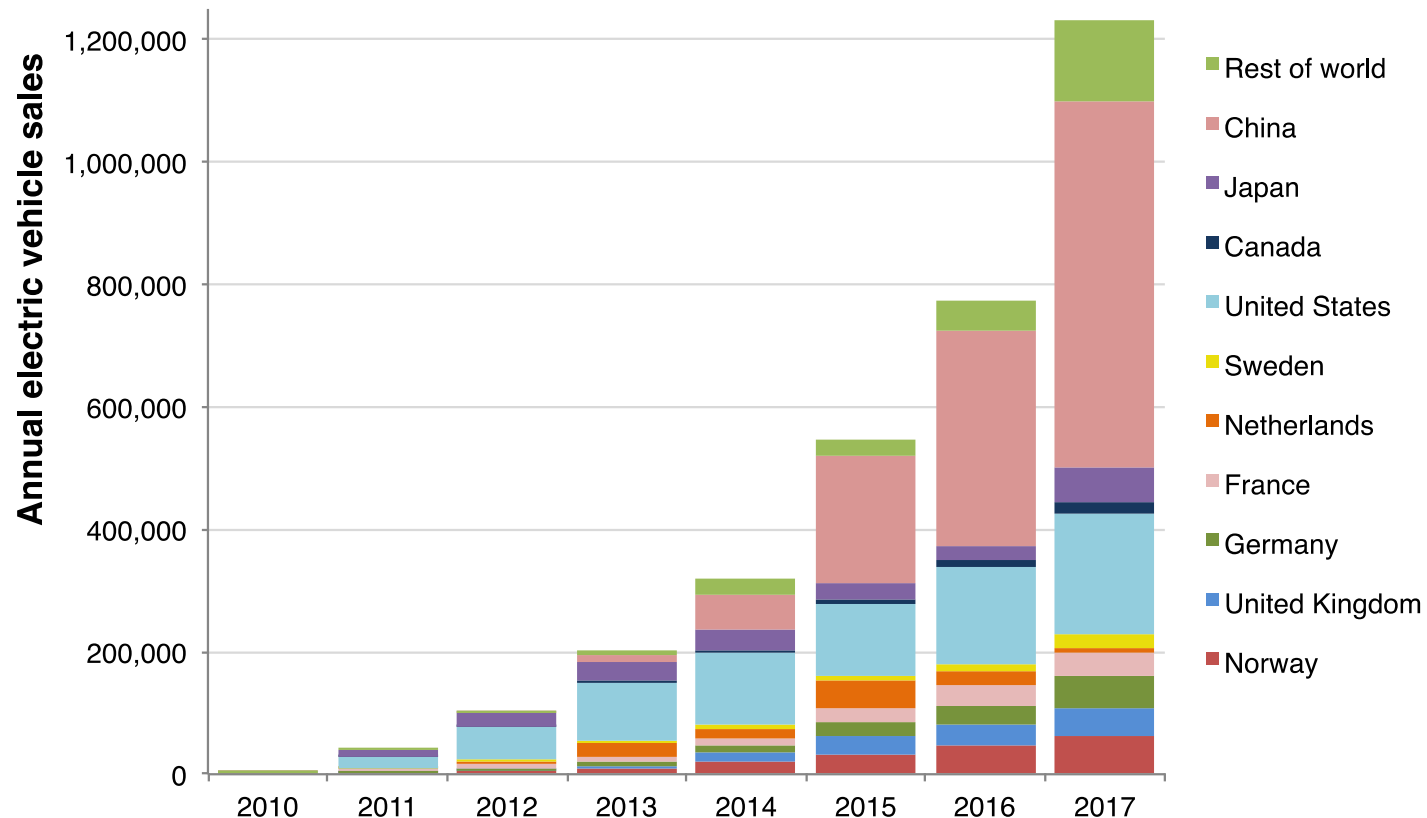
Michael Nicholas, Senior Researcher

iCET Towards Zero-Emission Mobility Workshop
September 12th, 2018



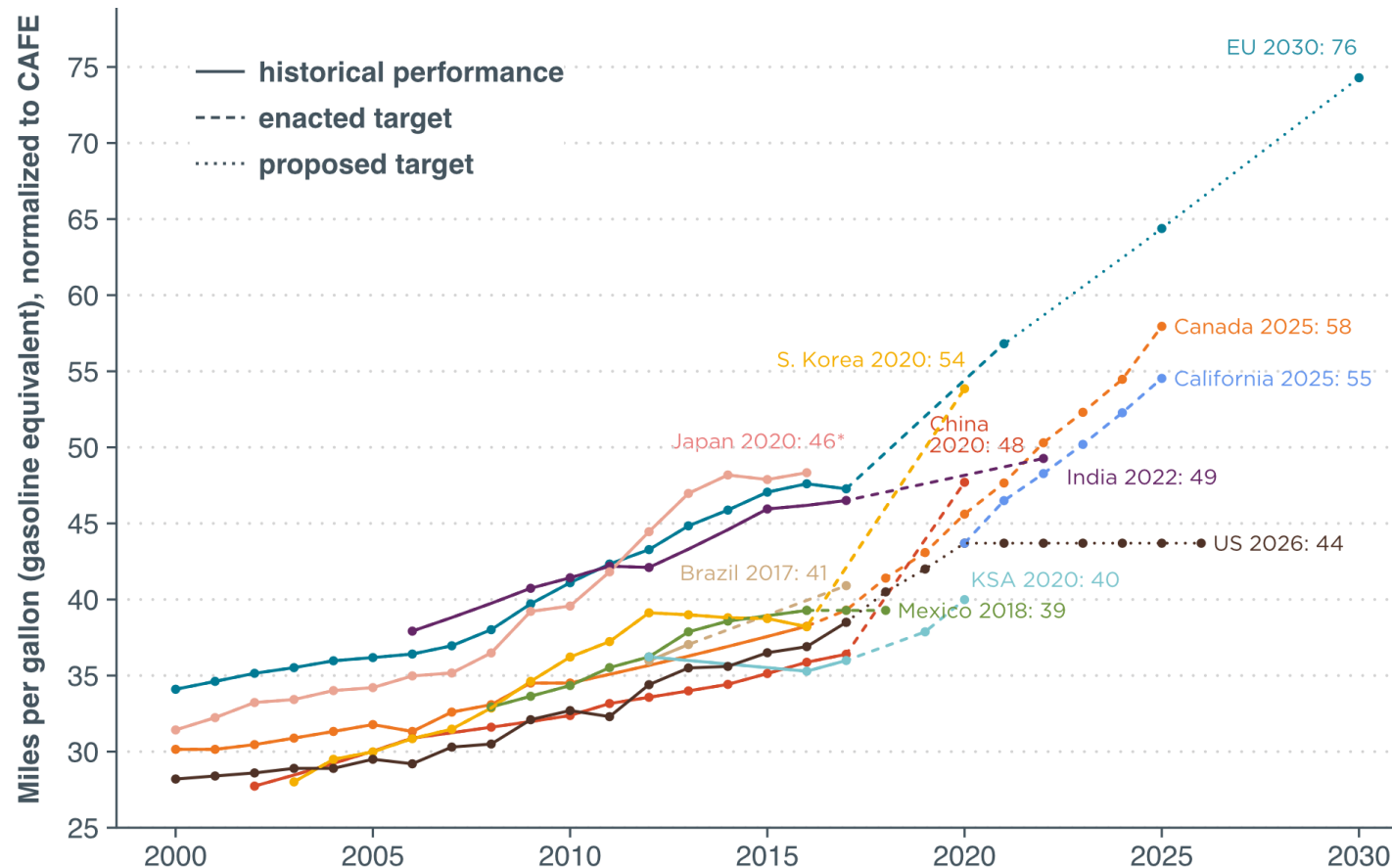
Global electric vehicle sales

- Through 2017, cumulative global light-duty EV sales passed 3.2 million
 - Nearly all (99%) of the EV sales are in Canada, China, Europe, Japan, Korea, U.S.
 - These markets have policy packages of regulation, incentives, charging, local action



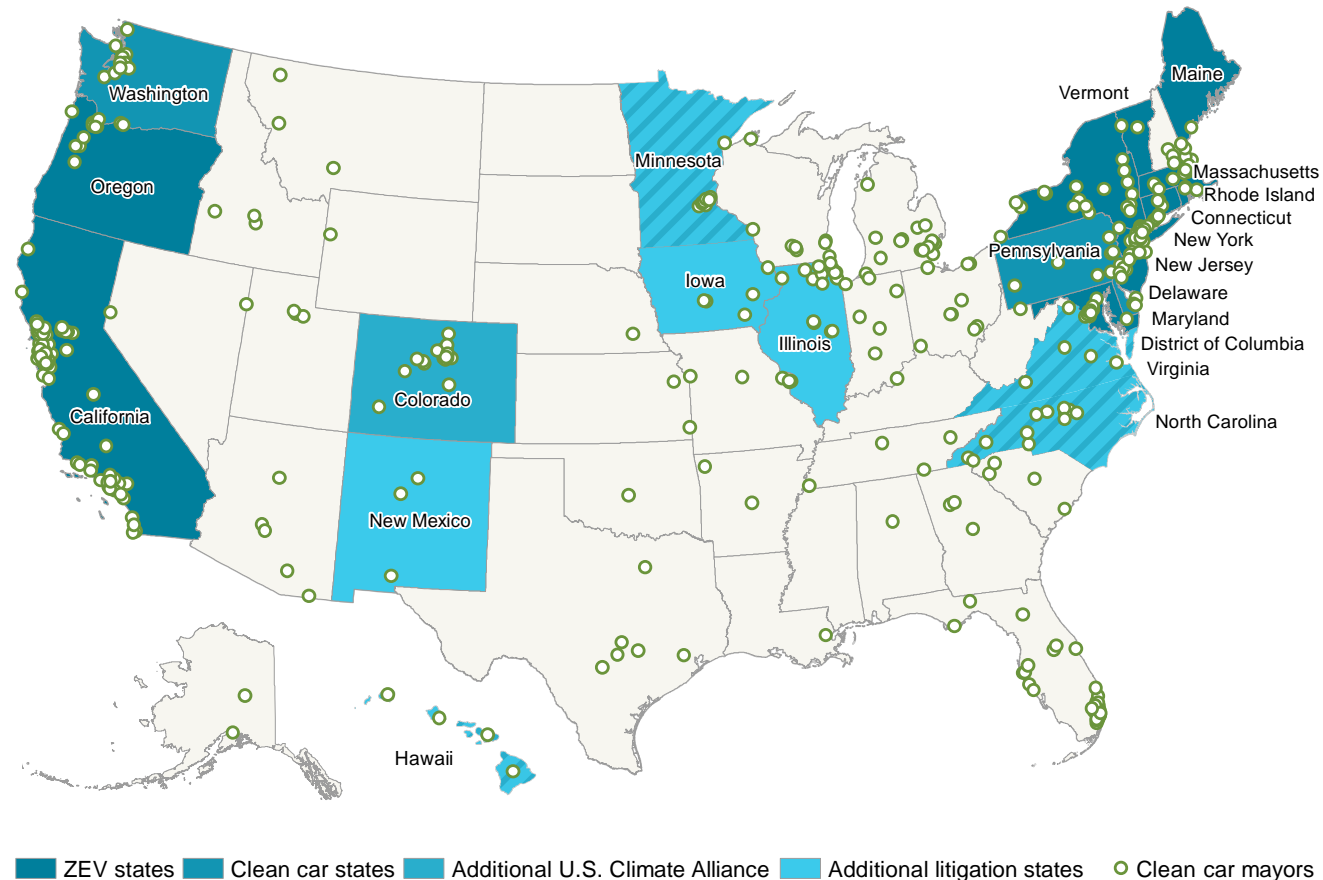
U.S. CAFE and CO₂ regulation proposal would grind auto industry innovation to a halt

- Standards are foundation for auto investments, eventually pushing electrification
- U.S. proposal would freeze standards, remove California's regulatory authority



Cities and states opposed to the fuel economy freeze comprise 55% of U.S. vehicle sales

- Jurisdictions suing the fuel economy freeze total about half of U.S. auto sales
- There are 412 clean car mayors, many outside states with political action



More info

ICCT electric vehicle page:

<http://theicct.org/electric-vehicles>

Acknowledgements

Analysis and data collection by Mike Nicholas, Dale Hall, Nic Lutsey, Mikhail Grant, Sandra Wappelhorst, Huan Zhou, Pete Slowik, Hongyang Cui

Supported by Blue Marble Fund, governments of ZEV Alliance, ClimateWorks Foundation, The 11th Hour Project, Joshua and Anita Bekenstein



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全球燃料经济性与零排放汽车政策



Patrick Duan

Vice President of Operations, BYD Motors

With a broad range of engineering, sales and operations experience, Patrick Duan brings a unique perspective to his role as Vice President of Operations and SkyRail for BYD Motors. He has played an integral role in bringing the global leader of battery electric technology to the United States and its continued growth in North America, having previously served as engine modeling Design Engineer, Project Manager and Regional Manager for cell phone battery sales and Regional Sales Director for the coach and bus division. Currently, Duan leads the company's general day-to-day operations and oversees its marketing, bids and grants, communications/public relations and SkyRail divisions. Duan received his Mechanical Engineering degree from the Beijing Institute of Technology, one of the key national universities in China.

段岳峰

比亚迪汽车运营副总裁

段岳峰是比亚迪汽车运营和云轨副总裁，他拥有丰富广泛的工程、销售和运营经验，在工作中有其独特的视角与见解。他先前作为发动机造型设计工程师、手机电池区域项目经理和销售经理，以及客车和公共汽车部门区域销售总监时，在将电池电力全球领先技术带入美国，以及帮助其在北美的持续发展壮大方面发挥了不可或缺的作用。目前，他负责公司的日常运营，并监督市场营销、投标和基金、通讯/公共关系和“云轨”部门的工作。他曾获得中国重点大学之一——北京理工大学的机械工程学位。



BYD – “Build Your Dreams” Overview

- World Pioneer and Leader in Battery and Electric Vehicle Technology
 - 200 Cities, 50 Countries, 6 Continents
- An Entrepreneurial International Private Company
 - Founded in 1995
 - Grown to 220,000 employees globally
 - BYD Group Revenues of \$17 Billion (2017)
 - 10% Ownership by Berkshire Hathaway
- Warren Buffett on CNBC 02/18:
 - Wang Chuanfu is 2nd of his top 4 respected and trusted CEO's
 - “He’s got big, big ideas and he’s very good at executing”



BYD in North America



- BYD Coach & Bus and BYD Energy are both located in Lancaster
- Executive and Administration office in Downtown Los Angeles



BYD is proud to meet and exceed *Buy America* compliance

BYD Coach & Bus facility was expanded to 446,000 square feet in October 2017 and currently employs 800 people.

JMA Agreement: 40% of workforce comprised of veterans, women, African Americans, returning citizens



BYD Business Divisions

Battery



IT



LED, Solar, Forklift



SkyRail



Cars, Buses & Trucks

7+4 Strategy



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全球燃料经济性与零排放汽车政策



Mr. Bob Ye

VP of Business Development, Faraday Future

10 years Business Journey in western country, including Germany, UK, France and US, successfully bring 2 Chinese brand to top 2 leading position. Also acting board of director in Lucid Motor.

叶青先生

Faraday Future 商务发展副总裁

法拉第未来商务发展副总裁，有超过10年的国际工作经验，曾在德国、英国、法国和美国工作过，成功地将两个中国本土品牌带领至全球前三的顶尖位置，目前也担任Lucid Motor的董事。

FARADAY FUTURE

New Species-Next Generation
Mobility Ecosystem



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About FF

History

Founded in May 2014

Locations

USA— Los Angeles (headquarter), Silicon Valley

China — Beijing, Shanghai, Guangzhou

Employees

1000+ employees with backgrounds in Internet, technology, automotive, aerospace, and energy industries

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AUTO



TECH



Value Chain Disruption



Google



UBER

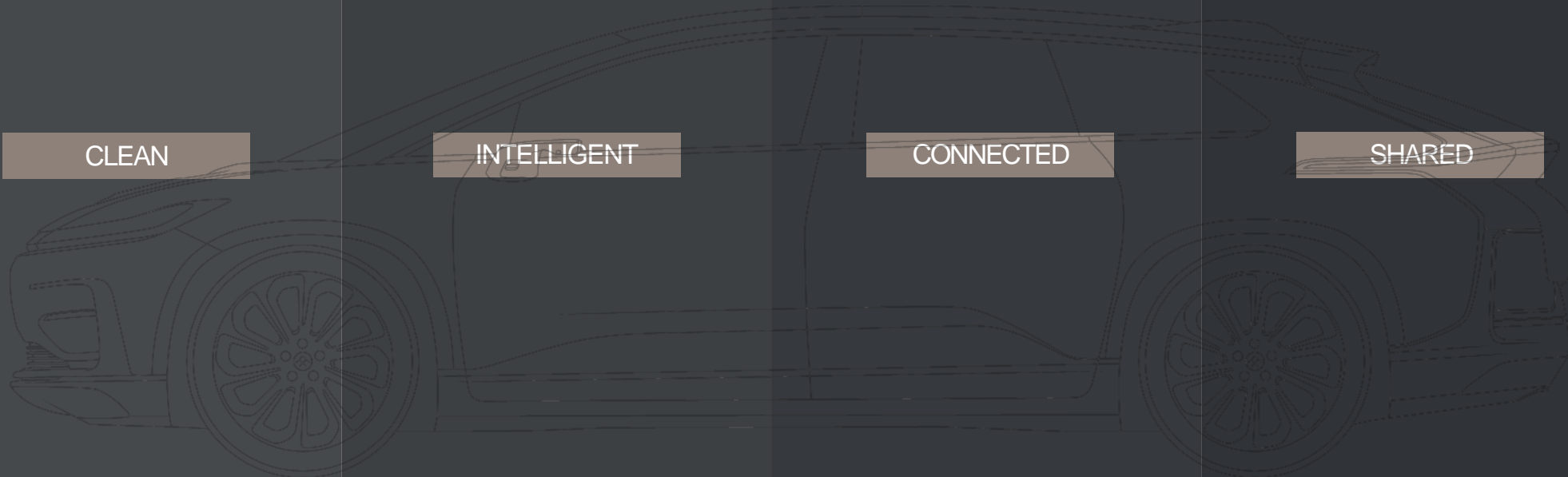
CLEAN

INTELLIGENT

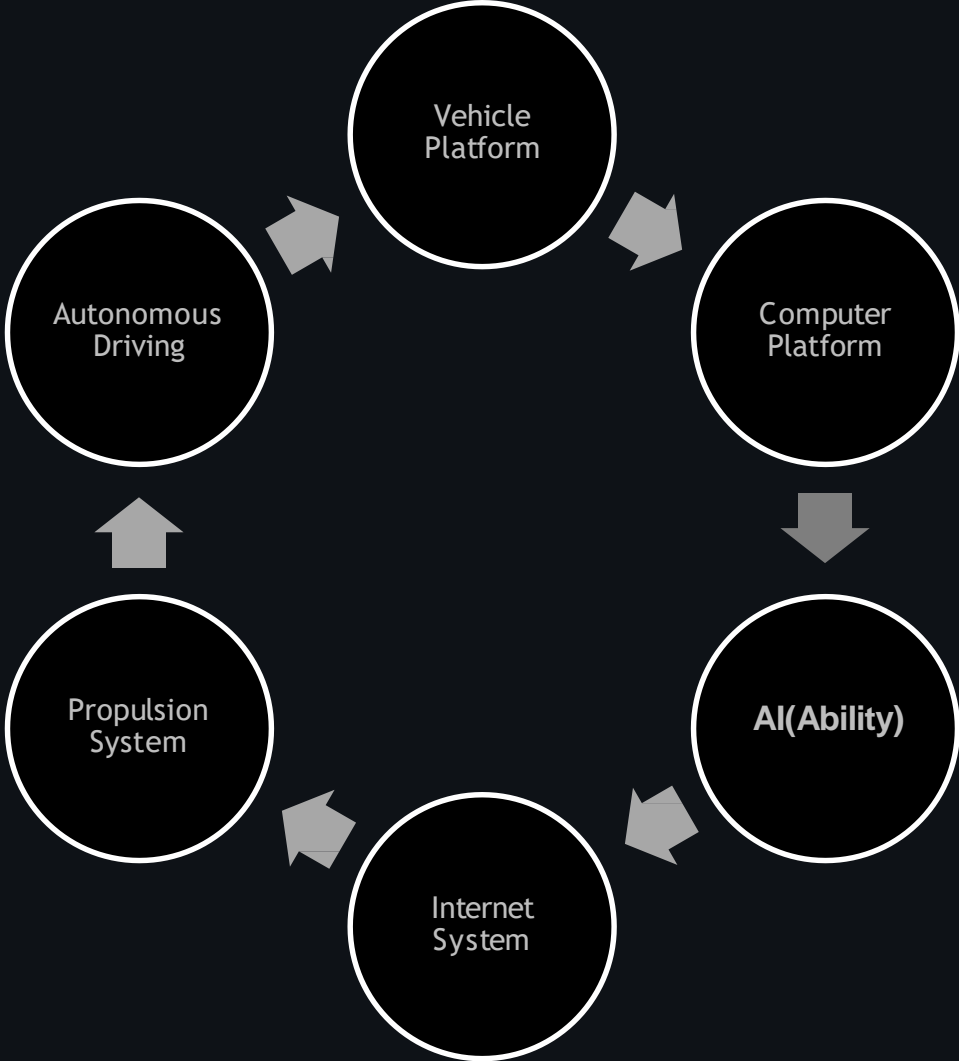
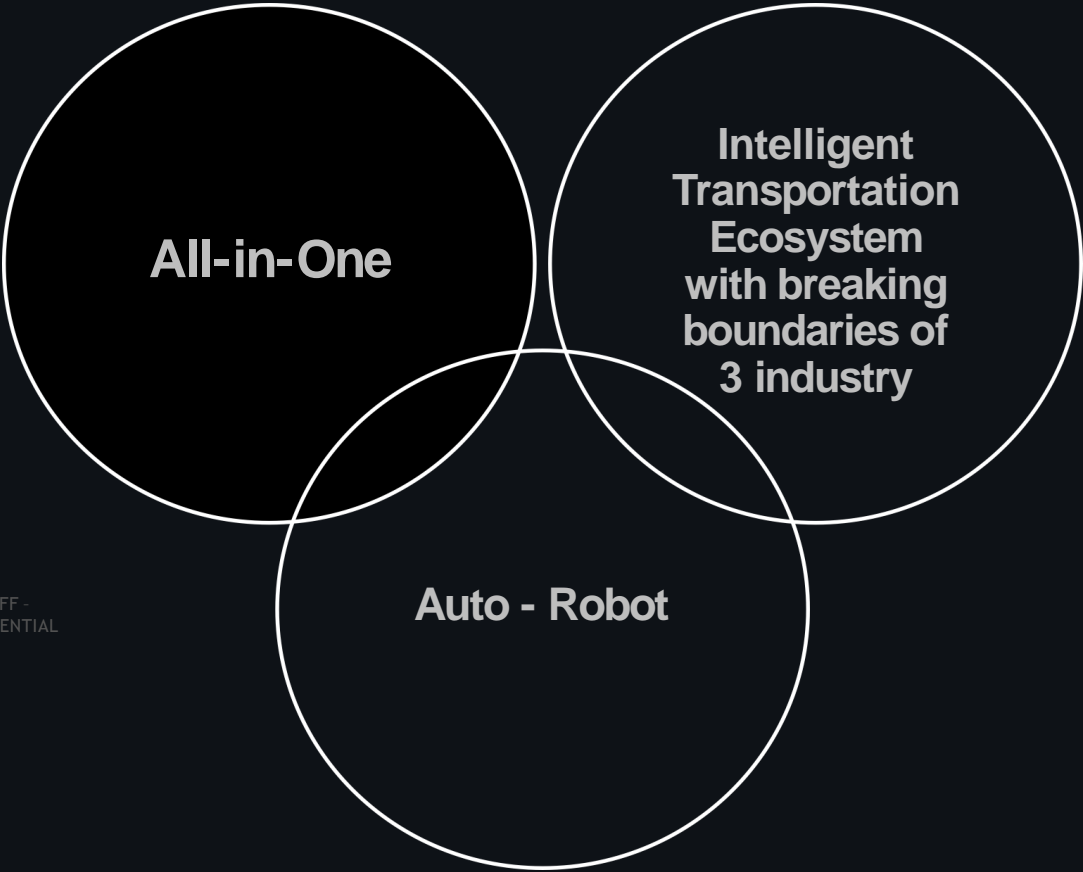
CONNECTED

SHARED

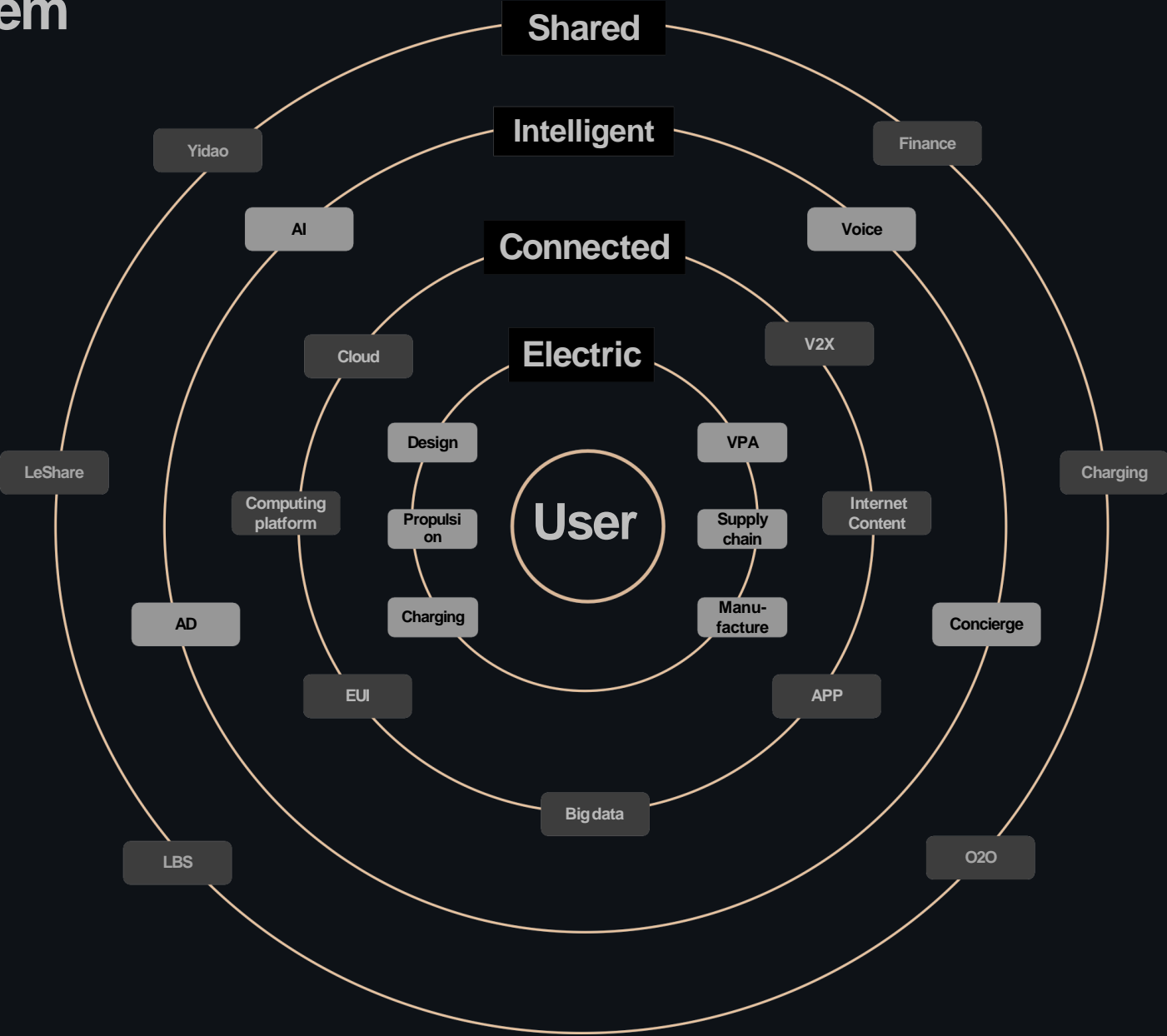
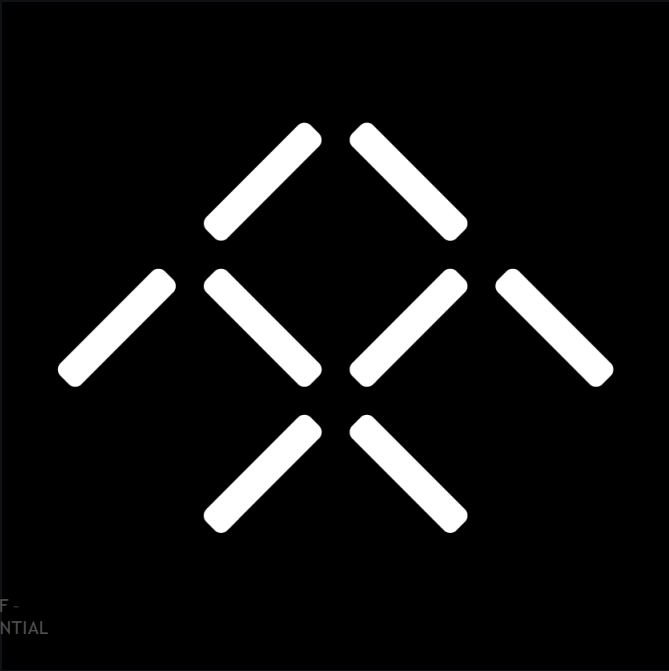
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Disruption of FF – 3 Product Disruption and 6 Technology Disruption



FF Intelligent Mobility Ecosystem





Thank You

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PANEL 1

Global Fuel Economy and Zero-Emission Policies



Mr. Huiming Gong
*Transportation Program Director
Energy Foundation China*



Dr. Michael Nicholas
*Electric Vehicles and
Fuels Senior Researcher,
ICCT*



Mr. Jinhua Zhang
*Executive Vice President &
Secretary General, China
Society of Automotive
Engineers*



Mr. Liu Xiaoshi
*Deputy Secretary-
General
of China EV100*



Patrick Duan
*Vice President of
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BYD Motors*



Qing Ye
*Vice President
Faraday Future*

Towards Zero-Emission Mobility Workshop

Organizers:

Energy Foundation China

Innovation Center for Energy and Transportation (iCET)

Co-organizer:

China Clean Transportation Partnership (CCTP)