

# 长沙、湘潭和株洲市碳排放达峰路线图研究：以湘潭为案例

实现高质量发展：创新驱动、低碳排放、均衡发展

## CZT City Emission Peaking Roadmap and Action Plan: The Case of Xiangtan

Achieving High Quality Development: Low Emission, Innovation & Inclusion

2018.12.05



# 汇报提纲

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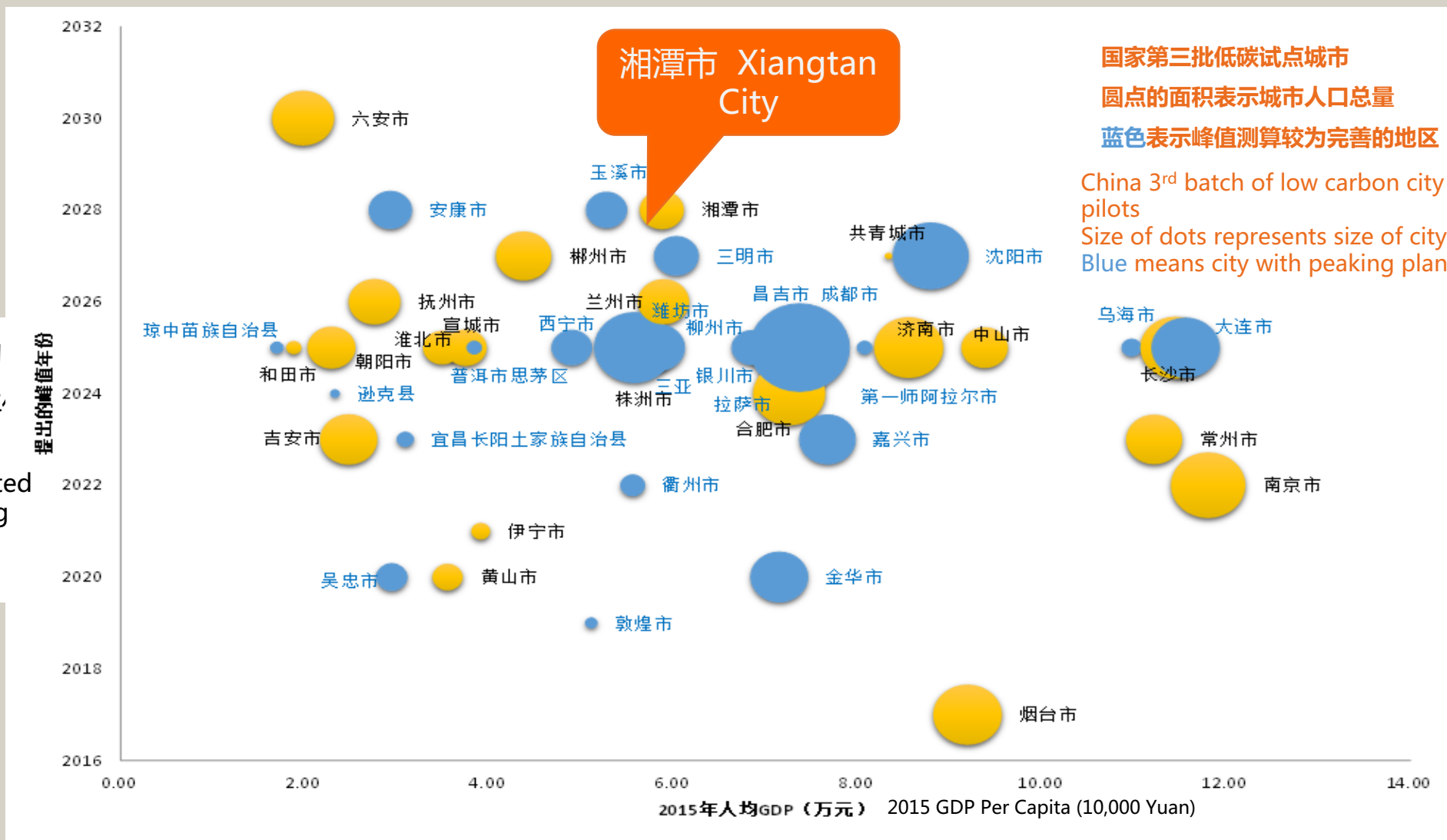
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提出的  
达峰年，

Estimated  
Peaking  
Year

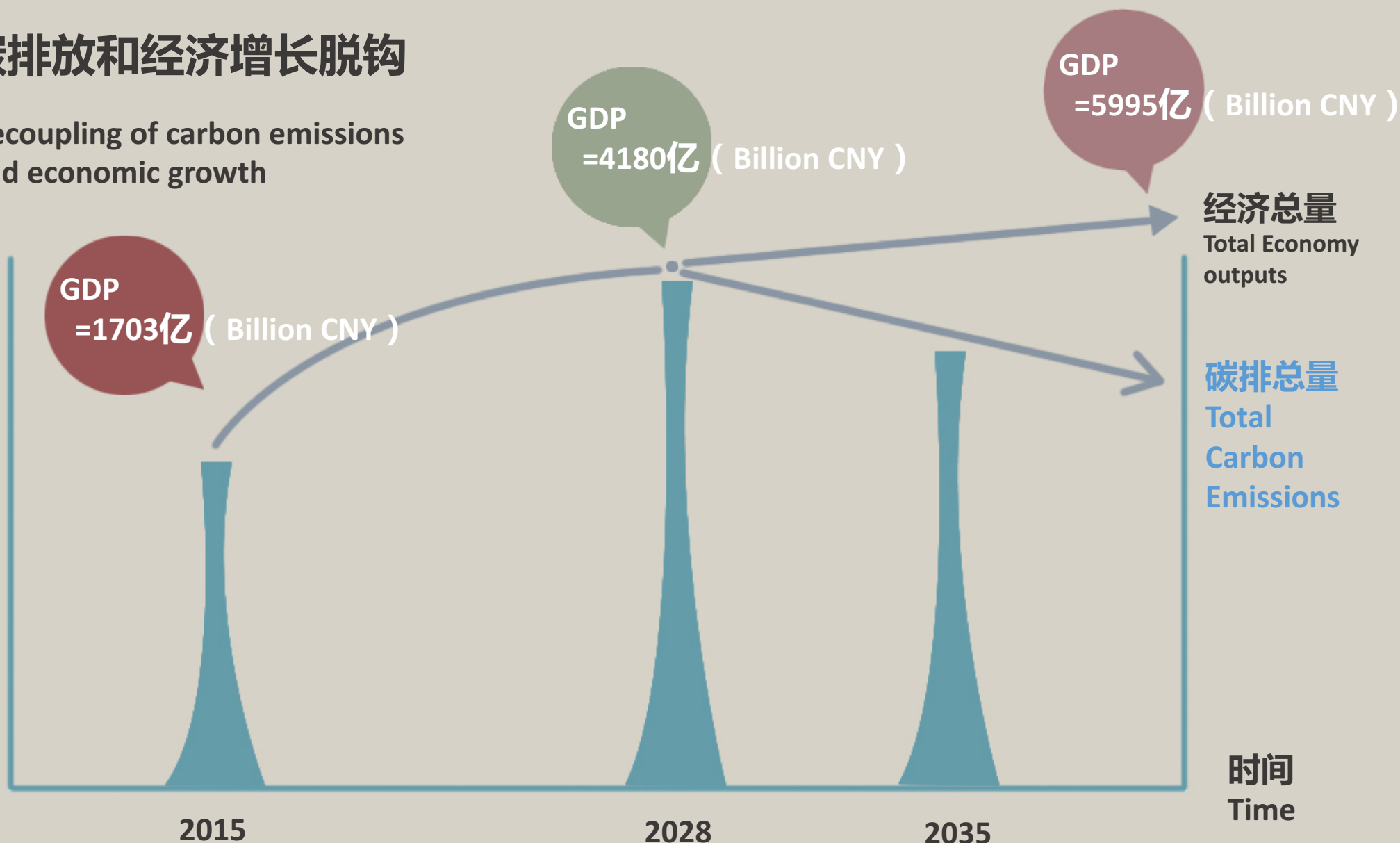


注：本图在国家气候中心报告（2017）上修改  
Note: Chart revised based on the NCSC report (2017)

# 碳排放和经济增长脱钩

Decoupling of carbon emissions and economic growth

Xiangtan peak: the key node of high-quality development



湘潭市碳排放达峰与经济增长理想曲线

The Ideal Curves of Economics and Emission Peaking in Xiangtan city

## Technical System of Peaking Research in Xiangtan City

碳排  
清单  
模块

量化基准  
现状对标  
找准短板

### GHG Emission Inventory Module

- City GHG emission profile
- Benchmark comparison
- Identification of weakness

### Peaking Investment Module

- Cost-benefit analysis
- Carbon economy analysis on prioritized projects

达峰  
投资  
模块

成本收益分析  
重点项目碳  
经济分析

达峰  
情景  
模块

排放趋势模拟  
达峰总量预测  
路线图目标分解

### Scenario Planning Module

- Emission trend simulation
- Peaking amount projection
- Target allocation

## 2、摸清家底

### ——湘潭市碳排放特征

Baseline study:

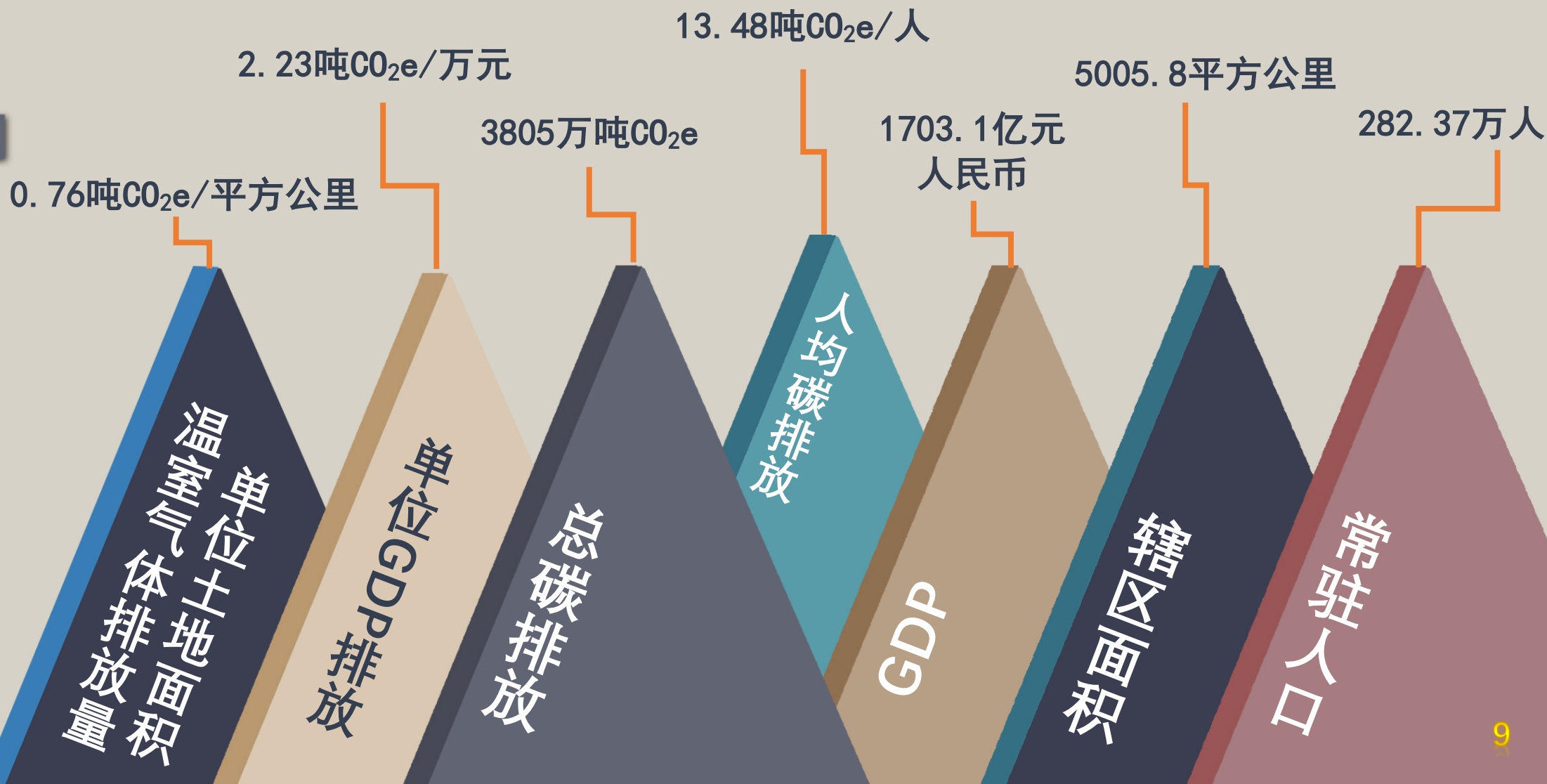
Xiangtan GHG emission inventory profile

## 湘潭市基本情况 (2015年度) Basic Data of Xiangtan City 2015

湘潭市人均碳排放是  
欧盟的**1.9**倍  
全国的**1.8**倍  
长沙的**1.4**倍

### 湘潭市碳排放特征

Xiangtan  
GHG  
emission  
inventory  
profile



# 3、情景分析

## ——2028年能否达峰？

Scenario Planning for early peaking in 2028

3

## Scenario Planning for early peaking in 2028

绝对减排量达2000万吨级别

完成达峰目标的80%

Absolute emission reduction of  
20 million tons Achieving 80%  
of the peak target



=既有规划和政策  
current plan  
& policy  
framework

1

基准情景 Business as  
usual

=情景1+加速节能  
+能源结构优化  
Improving energy  
efficiency &  
structure

2

优化情景  
Energy optimization

=情景2  
+综合达峰措施  
Climate Action Plan  
(CAP)

3

达峰情景 Early Peaking

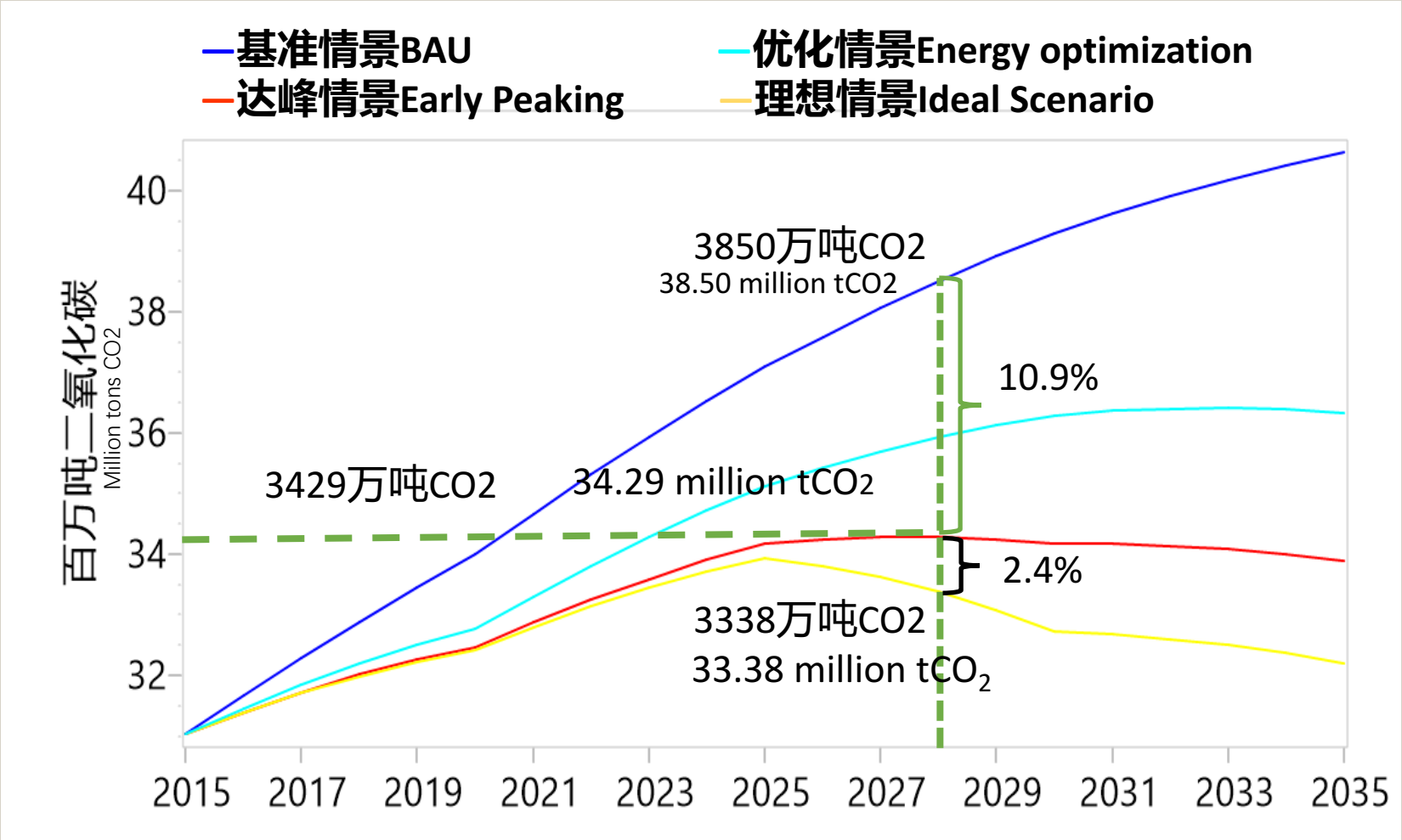
=情景3+理想措施  
Accelerating CAP

4

理想情景 Ideal scenario

情景分析：2028年能否达峰？

Trend Map of Carbon Emission from Energy Activities in Xiangtan



湘潭能源活动碳排放趋势图

在基准情景下，2028年不能达峰，到2035年也不能达峰。在达峰情景下，2028年峰值总量达到

3429万吨CO<sub>2</sub>。达峰情景相比基准情景减排10.9%，2028年可避免排放约421万吨。

Under the benchmark scenario, the peak could not be reached in 2028, nor could it be reached by 2035. Under peak scenario, the total peak value in 2028 is 34.29 million tons of CO<sub>2</sub>, and the peak scenario reduces emissions by 10.9% compared with the benchmark scenario, and avoids about 4.21 million tons in 2028.

3

情景分析：2028年能否达峰？

Scenario Planning for early peaking in 2028

3

湘潭市碳排放达峰情景

Scenario  
Planning for  
early  
peaking in  
2028

交通工具低碳化

1.7%

Low carbon...

能源清洁化

22.2%

Low carbon energy

22.2%

产业转型升级

31.9%

Industrial

Transformation

31.9%

能效提升

44.2%

Improve Energy

Efficiency

44.2%

各行动领域减排贡献率

Peaking Contributions by action areas

## 4、达峰之路

——四大领域、八大工程Climate Action  
Roadmap: 4 Key Areas and 8 Programs

## 18项关键指标 18 action Indicators

### 能效提升：

#### Improve energy efficiency：

- 重点排放企业单位增加值能耗年均下降4.5%
- Energy consumption per value added decrease of 4.5% among big manufactures.
- 既有大型公共建筑改造180万平方米
- 1.8 million square meters of existing public buildings are retrofitted.
- 新建公共建筑76%绿色二星建筑
- 装配式建筑比例达到51.7%
- 76% of newly-built public buildings are green certified. Proportion of prefabricated buildings reaches 51.7%.

### 产业转型升级：

#### Industrial transformation：

- 第三产业年均增值100亿元
- Annual growth of the Tertiary sector reaches 10 billion CNY.
- 战略性新兴产业年均增值80亿元
- Annual growth of new strategic industries reaches 8 billion CNY.

### 总体目标：

#### Overall Goals:

- 单位GDP能耗年均下降率不低于4.8%
- Per GDP unit energy consumption decreases no less than 4.8% annually.
- 能源消费总量年均增速不超过1.2%
- Annual growth of total energy consumption does not exceed 1.2%.
- 碳排放增量相对于2015年不超过326万吨CO<sub>2</sub>
- Increase of carbon emissions does not exceed 3.26 million tons, compared with the level of 2015.

### 交通工具低碳化：

#### Low carbon transportation:

- 家用新能源车保有量达到15万台
- Total number of private electric vehicles reaches 150,000.
- 公交车56%电动化
- 出租车76%电动化
- More than 75% of taxis are electric cars. E-buses numbers reaches 900.

### 能源清洁化：

#### Low carbon energy:

- 新增光伏470MW
- Solar PV growth of 470MW
- 新增风电308MW
- Wind power growth of 308MW
- 新增垃圾发电34MW
- Waste-generated electricity growth of 34MW
- 新增生物质发电35MW
- Biology-generated electricity growth of 35MW
- 关闭1、2号煤电机组600MW
- Shut down No. 1 and 2 coal fired generators - 600MW
- 新增天然气发电910MW
- Natural-gas-generated electricity growth of 910MW

Climate  
Action  
Pathway:4  
key areas  
and 8  
programs

达峰重点工程项目集群 Key project clusters	碳投资强度 (元/吨) Carbon investment intensity (CNY/Ton CO2e reduction)	减排量 (万吨CO2) Reduction ( million tCO2 )	减排占比 ( % ) Reduction Ratio ( % )	投资规模 ( 亿元 ) Investment ( Billion CNY )	投资占 比 (%) Investment ratio (%)
重点企业节能减排攻坚工程 Large Manufacture Energy Program	1600	1000	38.5	160	7.1
新旧动能转换工程 Industrial Transformation	14049	1300	50	1826.37	80.8
气化湘潭工程 Gas for All Program	10084	136	5.2	137.15	6.1
无废城市工程 Zero-Waste City Program	4084	28.5	1.1	11.66	0.5
零碳能源工程 Zero-Carbon Energy Program	5693	95	3.7	54.09	2.4
绿色低碳建筑大规模推广工程Large Scale Green Building Program	27745	15.3	0.6	42.45	1.9
住宅产业化工程 Prefabricated residential building Program	29569	9.3	0.3	--	--
低碳交通工程 E-mobility Program	18714	14	0.5	26.2	1.2
总计 TOTAL	8696	2598	100	2257.92	100

# 5、政策建议

## ——市场主导、普惠民生

### Policy Recommendations:

Market-Driven and inclusive low carbon development

设定积极达峰目标  
和关键指标

Allocation of peaking targets and key indicators to  
collaborative entities

政策给与市场稳定预期

21+政策细化

21+ pro-climate policies

抓达峰目标  
管理“牛鼻子”

Peaking Target Oriented  
Climate Administration

建立清单管理、部门目标分解、第三方评估的低碳管理  
“三步曲”

Carbon inventory, target allocation and 3<sup>rd</sup> party  
MRV as the 3 major components of Climate  
Administration

生态文明效益协同空气治理、智慧城市、海绵城市、都  
市公交、循环经济和生态城市

Integrating climate action into sustainability  
programs such as air quality management, smart  
city, sponge city, pro-public transportation, circular  
economy and ecological city development

城市低碳转型发展的社会年投资需求量在200亿元左右，约占全市年固定资产投资量的10%左右  
From 2018-2028, annual demand for low-carbon investment is around 20 billion CNY, accounting for 10% of the city's annual fixed assets investment.

4大关键行动领域

8大重点工程

16个项目集群

4 key action areas

8 programs

16 project clusters

### 市场主导 Market-driven Action

大部分达峰项目均采用“使用者付费”的模式招募市场主体力量投资运营

Most climate action projects adopt the user-pay principle attracting private investment.

大规模利用绿色债券相结合的金融工具以及政策性贷款支持低碳试点

Utilization of green finance instruments such as green bonds and green PPP to support climate action implementation.

## Policy Recommendations

天然气管网、电动公交、农村光伏扶贫、废弃物前置分类等多项达峰公益性投资总量118亿元  
Natural gas pipe network, electric public transportation, rural PV for poverty alleviation, waste sorting needs to be implemented by social investment at a scale of 11.8 billion CNY.

按20%-30%由政府财政专项资金投入核算，年均投入2.5亿元-3.5亿元之间。If 20 to 30% social investment subsidized by government, the annual fiscal payout will be between 250 and 350 million CNY.

### 低碳普惠Inclusive low carbon development

天然气管网区县全覆盖项目，10年增加30万天然气用户，提升湘潭人民生活品质，协同蓝天工程改善空气质量e.g. The natural gas pipe network for all districts will cover additional 300,000 households.

社区巴士电动公交项目推广900台电动巴士，降低居民机动车出行成本50%，提高空气质量，解决油污污染e.g. 900 electric buses will be deployed connecting neighborhoods making affordable and clean mobility for all.

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谢谢!  
Thank you !

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