配额管理和MRV机制——广东挑战及对策

Allowance Allocation and MRV Mechanism —— Guangdong Challenges and Countermeasures

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第一部分
Part A

配额分配
Allowance Allocation Mechanism

广东碳市场配额分配方法概览
Overview of Guangdong allowances allocation system

- 基准法：免费配额=产量（周转量）× 单位产品排放量基准值（或企业历史碳强度）× 免费比例
  Benchmarking **(BM)** Allowance=Production(Traffic Turnover) × Benchmark × Free Allowance Ratio
- 历史强度法：免费配额=企业历史年均年碳强度×产量×年度下降系数×免费比例
  Intensity-Based Grandfathering **(IG)** Allowance=Average Intensity of Past 3 Years × Production × Reduce Factor ×Free Allowance Ratio
- 历史排放法：免费配额=企业历史年均年碳排放×年度下降系数×免费比例
  Emission-Bassed Grandfathering **(EG)** Allowance= Average Emission of Past 3 Years × Reduce Factor × Free Allowance Ratio

行业 Industry		基准法 BM	历史排放法 EG	历史强度法 IG
电力 Power	纯发电机组、热电联产 Pure generation、Combined heat and power(CHP)	●		
	特殊燃料发电机组、供热锅炉 Special gas-fired CHP、Heating boiler			●
水泥 Cement	熟料生产、粉磨、白水泥生产 Clinker production、Pulverize、White cement production	●		
	其他粉磨 Others (pulverize)			●
钢铁 Steel	炼焦、烧结、球团、石灰烧制、炼铁、炼钢 Coking、Sintering、Pelletizing、Lime Firing、Ironmaking、Steelmaking	●		
	轧钢 Steel Rolling		●	
石化 Petrochemical			●	
造纸 Paper Making	普通造纸和纸制品生产 Regular paper making and paper products	●		
	纸浆制造、特殊造纸和纸制品生产 Pulp manufacturing, Special papermaking and paper products			●
民航 Civil Aviation	全面服务航空企业 Comprehensive Enterprises	●		
	其他航空企业 Others			●

挑战：宏观经济波动的不确定性

Challenge： The uncertainty of macroeconomic fluctuation

对策：基于企业实际产量发放配额应对经济波动性

Countermeasures：Allowance allocations based on enterprises actual production to deal with economy

根据总量控制原则，设置产量“天花板”，当产品产量大于产能时，直接取产能数值代入公式计算（兼容经济波动的同时保持减排压力）

Based on the cap, setting production "ceiling", select enterprise capacity data for calculation when production greater than capacity (Compatible with economic fluctuations while maintaining pressure to emission reduction)

行业与机组（工序） Industry and unit (process)		配额核定的产量上限 The upper limit of production data that used for calculating allowances
水泥 Cement	熟料生产 Clinker production	核准产能×1.3 Approved capacity × 1.3
钢铁 Steel	生铁、粗钢 Iron,steel	核准产能×1.0 Approved capacity × 1.0
造纸 Papermaking	机制纸和纸板 Machine made paper and board	核准产能×1.6 Approved capacity × 1.6

核准产能指国家或省政府部门相关核准文件

Appoved capacity refers to the approved documents that related to governments both national and provinces

挑战：配额分配方法设计与数据基础的相互影响
Challenge: Interaction between allowance allocation method design and data base

- 基准法一般比历史法需要更多较为细分的数据，以确保基准值的可比性
- 计算工序水平排放量涉及中间产品和内部能源生产的数据。与企业级数据相比，设施级数据测量误差较大，外部证据支持较少，不确定性较大

- Benchmarking method require more detailed data than emission-based grandfathering method, so as to ensure its comparability
- Calculating installation-level emissions involves data of the intermediate products and internal energy production. Comparing to the enterprise-level data, installation-level data has greater measurement error, is supported by less external evidences and leads to larger uncertainty

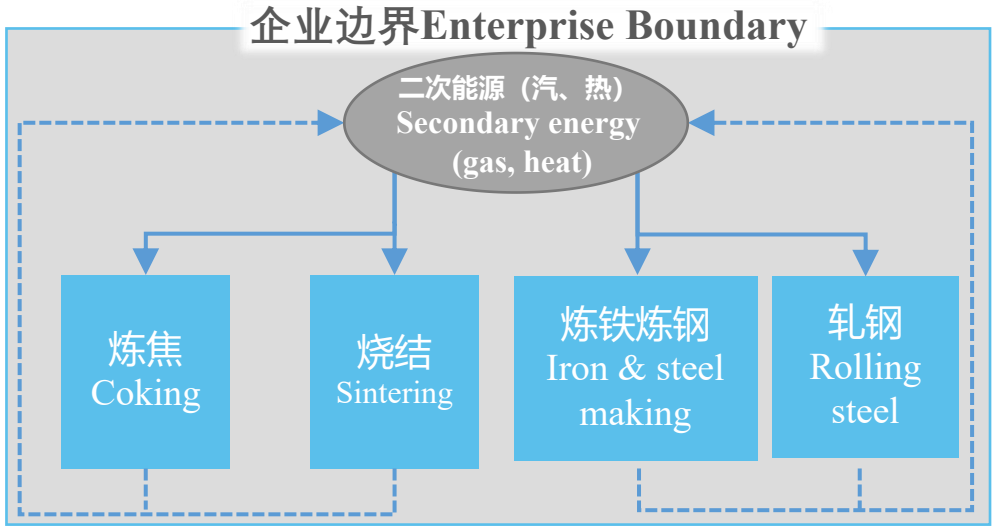

表. 企业级、设施级数据测量和相关证据

Table. Enterprise-level and installation-level data measurement and evidence

	能源（示例）Energy（example）	企业层级 Enterprise-level	设施层级Installation-level
测量误差上限 **Upper limit for measurement error**	燃煤Coal	0.1%	0.1%
	煤气、热（中间产物） Coal Gas, Heat (Intermediate product)	2.0~2.5%	2.0~2.5%
测量设备的最低要求 **Minimum requirement for equipping measuring instruments**	燃煤、电 Coal, Electricity	100%	100%
	燃气、热（中间产物） Coal Gas, Heat (Intermediate product)	100%	80-90%
证据文件 **Evidence documents**		外部文件：如，收据，收费单，官方报告 External evidences: e.g., trading receipts, invoices, official reports	主要是企业提供的内部文件 Most are internal documents provided by enterprises themselves

挑战：配额分配方法设计与数据基础的相互影响

Challenge: Interaction between allowance allocation method design and data base

对策：根据数据基础和质量设置合适的配额分配方法，并加快补足数据短板

Countermeasures: Select the appropriate allowance allocation method based on data base and quality, and speed up the complement of data imperfection

- 配额分配方法应考虑所需数据的准确性和可信度

Consider the accuracy and credibility of the required data while setting the allowance methods

- 提前完善企业MRV的能力以减少企业数据的不确定性

Improve the MRV capacity of enterprises beforehand, so as to reduce the uncertainty of enterprise data sources

- 采用数据风险较小的配额分配方式

Adoption of allwance allocation method with less data risk

挑战：配额分配方法设计与数据基础的相互影响

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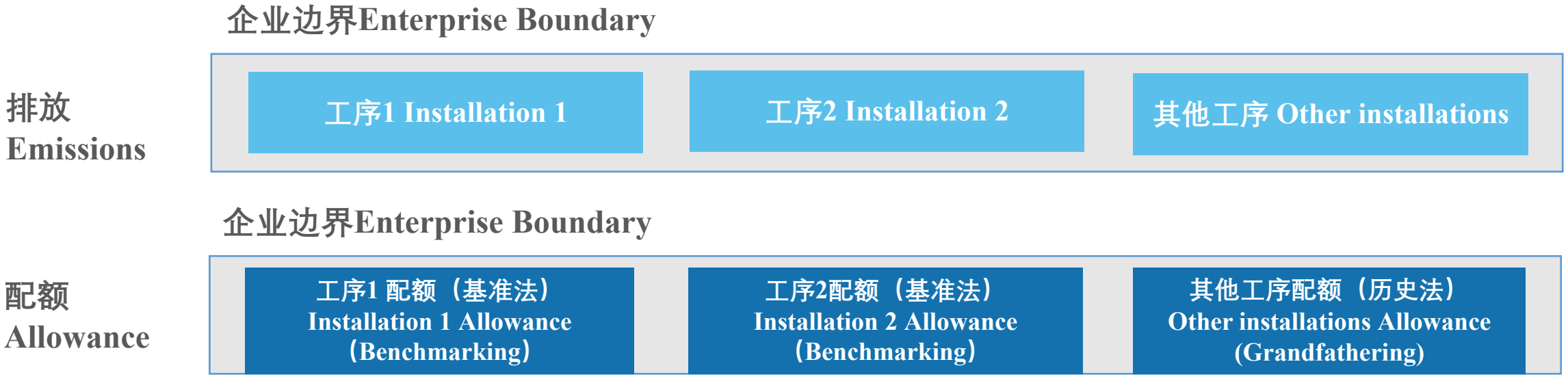
- 统一分配、排放和企业边界：考虑到可比性，基准法只能适用于一些特定行业（如钢铁企业）中的某些工序。 企业内的其余工序可以使用历史法来确保配额分配、排放和企业边界保持一致。 履约排放量可以根据企业的整体数据进行计算，确保数据来源更加可靠。

Harmonize allocation ， emissions and enterprise boundary：Considering the comparability，benchmarking can only apply to some installations in an enterprise in a certain sector (e.g., iron and steel). Rest of installations within the enterprise can use grandfathering to ensure the allocation， emissions and enterprise boundary are harmonized. The emissions used for compliance can be calculated based on enterprise-level overall data for its better quality in data sources.



第二部分
PartB

监测、报告和核查
Monitoring, Reporting & Verification

广东碳市场MRV制度概览
Overview of MRV mechanism in Guangdong ETS

企业提交排放报告
Emission report submitted by enterprises

1

- 企业根据报告指南编制监测计划、年度排放报 Enterprises complete monitoring plans and annual emission reports according to the reporting guidelines

第三方核查机构核查
Third-party verification agencies

2

- 监测计划需第三方核查机构核查Monitoring plans need to be verified by third-party verification agencies
- 第三方核查机构根据监测计划对数据进行现场核查，出具核查报告The third-party verification agency conducts on-site verification of the data according to the monitoring plan and issues a verification report

专家数据评议
Data audited by experts

3

- 所有核查后的数据组织专家评议评审（完整性、规范性、合理性）All verified data need to be audited by experts (For data's integrity, normalization and rationality)

抽查、复查
Re-verification

4

- 发现核查漏洞，组织复查 Re-verification will be organized when weakness be noticed from some enterprises in first verification
- 对未发现问题，随机抽取企业组织抽 Random inspection among other enterprises

再评议、审核确认
Re-audition and confirmation

5

- 对复查抽查后的企业进行再评议，直至问题完全解 After re-verification, a second expert audit will be conducted until all problems were resolved.

挑战：企业监测水平存在差异，有待提升
Challenge : The monitoring level of enterprises require improvement

企业间数据报告的差异
Differences of data reports among enterprises

- 部分企业未对碳排放计算的相关参数实施监测
  Some enterprises do not measure the related parameters for carbon emissions calculation
- 原因：因行业技术特点、企业规模等的多样性，碳排放数据现状不完善，
  Reasons: carbon emission data collection system is not well established, sectoral technical characteristics, scale of the enterprise, etc

表. 用于计算排放量的关键参数的实测率（例如热值）
Table. The rate of measuring the key parameters for calculating emissions (caloric value for example)

行业 Sector	固体燃料的热值 Caloric value of Solid fuels	液体燃料的热值 Caloric value of Oil	气体燃料的热值 Caloric value of Gaseous fuels
电力 Power	97%	18%	100%
水泥 Cement	69%	0%	—
钢铁 Steel	39%	33%	0%
石化 Petrochemical	100%	13%	40%

以上数据来源于2012年广东企业调查报告
Note: Data above were from survey of Guangdong Enterprises in 2012

挑战：企业监测水平存在差异，有待提升
Challenge : The monitoring level of enterprises require improvement

对策：允许企业选择实测燃料参数或采用缺省值
Countermeasure : Allow enterprises to use actual measured fuel parameters or default values

- 燃料低位发热量的缺省值取值为合理范围内的惩罚性高值（一般高于企业实测值），目的是为了鼓励更多企业选择实测。

  The default value of low calorific value of fuel is the punitive high value within a reasonable range (generally higher than the actual measured value), in order to encourage more enterprises to access the actual measured value.

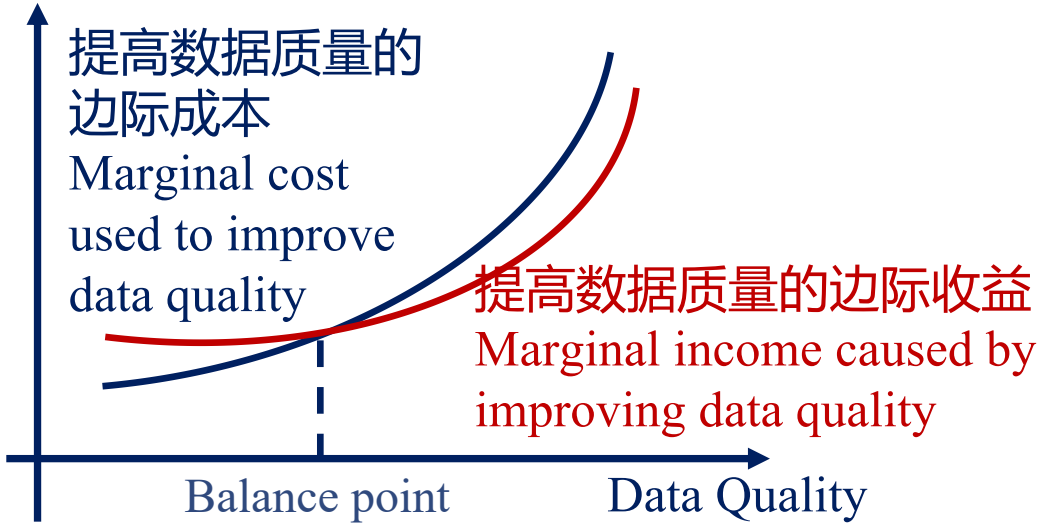


表 广东碳排放报告的缺省值与企业实测值比较（以石油沥青为例）
Table. Comparison of energy default values and actual measured values in Guangdong (Bitumite for example)

行业 Sector	石油沥青低位发热量 Calorific Value of Bitumite (MJ/t)		实测值低于缺省值的比例 Percentage lower (measured value compare to default value)
	缺省值 Default value	实测值 Measured value	
电力Power	23736	15288~22313	6~35.6%
水泥Cement		19036~23248	2.1~19.8%
钢铁Steel		19790~23208	2.2~16.6%
石化 Petrochemical		20541~22919	3.4~13.5%

挑战：企业监测水平存在差异，有待提升

Challenge : The monitoring level of enterprises require improvement

对策：延后采用实测值用于计算企业排放量

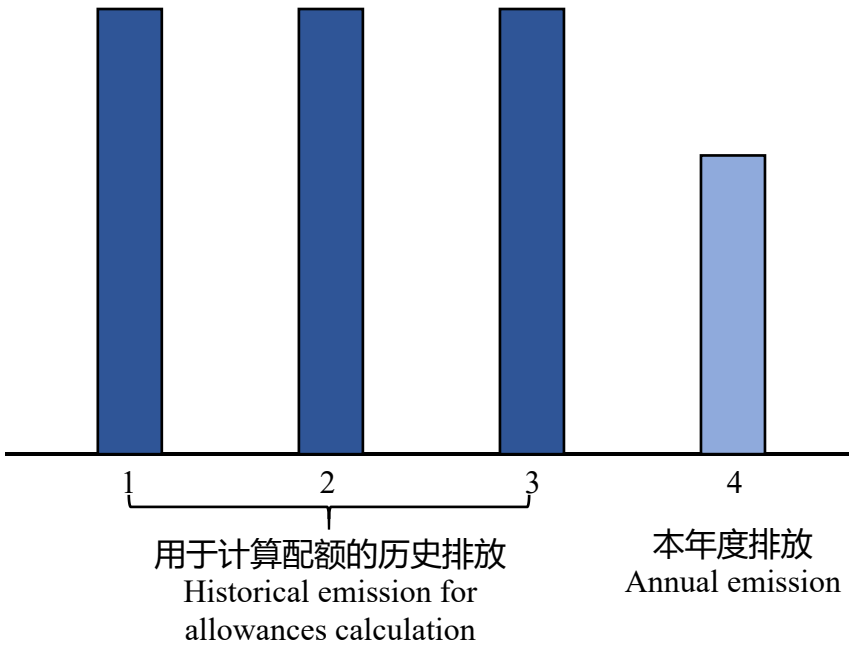
Countermeasure : Delayed adoption of actual measured values to enterprise emissions calculation

自企业申请从缺省值值变更为实测值，核查通过后，延后两年使用实测值核算排放量，使企业获得一定的配额收益，但不会过多

After enterprises applyment of changing from default value to actual measured value, and after verification, there is a two years gap before it is used to calculate the emission officially. Therefore, enterprises would gain some advantages from allowances allocation in appropriate level.

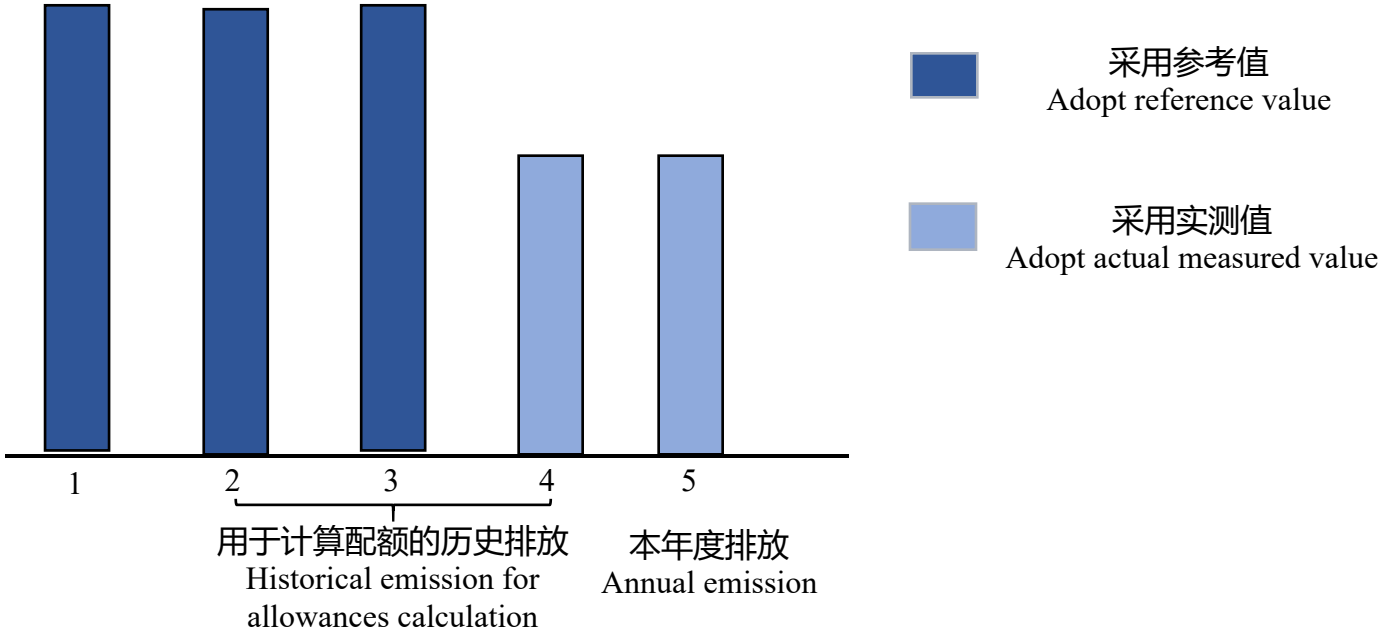
未推迟采用实测值

Before delayed adoption of actual measured value



推迟采用实测值

Delayed adoption of actual measured value



挑战：企业数据来源多样性与匹配性

Challenge: Diversity and matching of enterprise data sources

- **在不同的监测环节（如入库量、入炉量）和监测条件下，监测指标（如燃料消耗量）可能有明显差异；**
- **同一类监测数据的不同来源可能导致多达10%的排放量差异。**

- **The monitoring indexes (such as fuel consumption) may have obvious differences under different measuring points (such as storage quantity, furnace quantity) and monitoring conditions**
- **Same type of monitoring data that from different sources can lead to 10 % differences of emissions**

挑战：企业数据来源多样性与匹配性
Challenge: Diversity and matching of enterprise data sources

对策：明确数据监测要求，避免企业随意更改监测来源
Countermeasures: Clarify data monitoring requirements to prevent enterprises from falsify data sources

- 明确数据来源的选择规则：如测量点和消耗状态应与热值对应一致

Clear selection rules for data sources: The measurement point and status of consumption should be consistent with those caloric value

- 要求企业报告数据源具体到文件名，确保一致性

Require companies to report data sources specific to file names to ensure consistency

挑战：企业数据来源多样性与匹配性

Challenge : Diversity and matching of enterprise data sources

对策：明确数据监测要求，避免企业随意更改监测来源

Countermeasures: Clarify data monitoring requirements to prevent enterprises from falsify data sources

详细的证据文件清单（要求企业提供备查的文件类型）

List of documentation (Various documents required to be provided by enterprises for future reference)

数据类型 Data Categories	记录分类 Record Categories	
活动数据 (产量、使用量、输入/输出量) Activity data (Production,usage,input/output)	计量设备相关记录 Record of the measurement instruments	
	活动数据记录 Record of the activity data	
	管理记录 Management record	
热值、碳含量等实测值 Actual measurement of calorific value, carbon content, etc.	企业自有实验室检测 Measured by enterprise own lab	设备相关记录 Equipment record
		抽样采样记录 Sampling record
		检测记录 Detection record
		管理记录 Management record
	第三方实验室（含供应商）提供检测结果 Measured by third-party lab	资质证明 Qualification
		相关记录 Relavent record

广东碳市场配额管理和MRV制度进一步完善的思考
The consideration of improvement of allowances management and MRV in Guangdong ETS

进一步优化配额分配方法
Further optimization of allowance allocation methods

- 进一步研究配额分配与地区碳达峰、碳中和目标的衔接

Further research the linkage between allowance allocation and peak carbon emission ,carbon neutrality

- 优化复杂行业的配额分配（如轧钢、石化等行业企业间产品结构、加工工艺链条长度差异大、工序间能源物料关系复杂）

Optimize the allowances allocation of complex industries (Enterprises have different product structures, the length of the process chain varies greatly, complex relationships of energies and raw materials in installation)

进一步强化事中监管
Fuether enhancement of monitoring during operation

- 推进企业实验室按国际标准（如ISO/IEC 17025等）完善管理体系；
- 探索建立企业飞行检查制度，不定期在履约期中对企业能源、含碳物料进行采样与数据校验等；
- 探索建立二氧化碳在线监测制度，对企业进行全年持续的排放监控，并与计算法结果相互校验比对。

Promote the establishment of management system for enterprise laboratories according to international standards (such as ISO / IEC 17025, etc.) ; Explore the establishment of enterprise unannounced inspection system , irregular sampling and data verification of enterprise energy and carbon materials during the performance period; Explore the establishment of carbon dioxide on-line monitoring system to monitor the emission of enterprises throughout the year continuously, and compare with calculation results.

谢谢
Thank You

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