4th U.S.-China Energy Efficiency Forum September 25, 2013

Compiled Presentations from Track 2, Breakout Session 2/Afternoon

Energy Management in Energy-Intensive Facilities

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The Green Grid: Accelerating the Resource Efficient Digital Economy

John Tuccillo

The Green Grid President and Chairman of The Board

Schneider Electric, Senior Vice President , Industry and Government

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The global authority on resource efficient information technology and data centers.

www.thegreengrid.org

Over 200 Members Worldwide

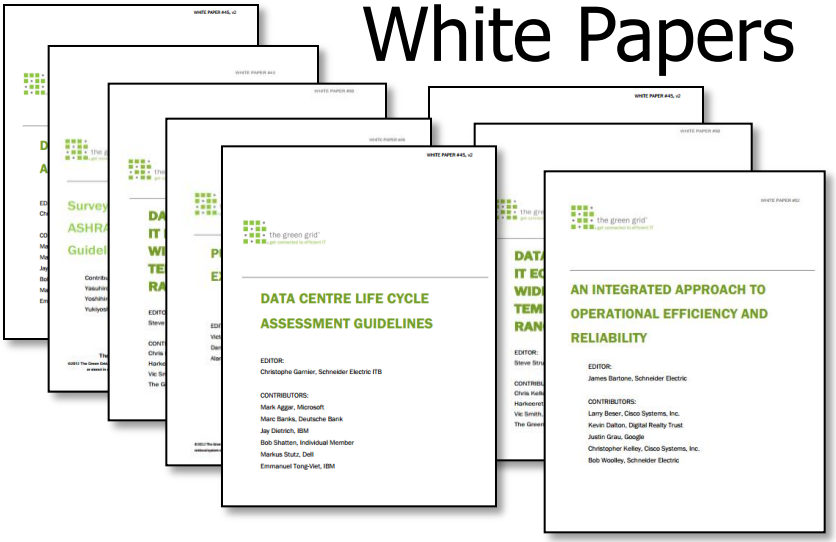
More than 4,000 active participants

Connected Global Interest Groups

- Data Center Maturity Model 2.0 Harqs Singh of Thomson Reuters
- Data Center and ICT Utilization: Mark Aggar of Microsoft
- Software Efficiencies: Kim Shearer of Microsoft
- Water: Winnie Lam of Google
- TGG Data Center Logo Program: Jack Pouchet of Emerson
- Government Engagements: Rona Newmark of EMC
- Cloud Efficiencies: Winston Saunders of Intel
- Data Center Life Cycle: Christophe Garnier of Schneider Electric

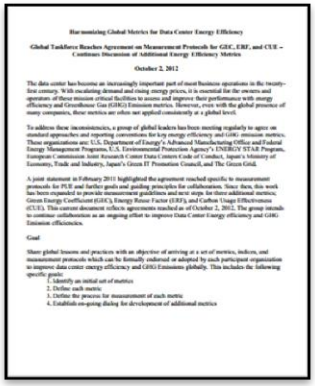
More than 400 Deliverables
Hundreds of Thousands of Downloads

White Papers

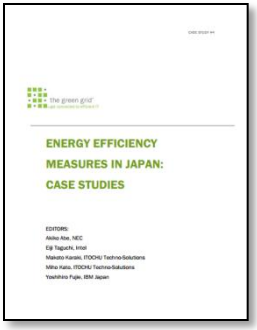


Webcasts

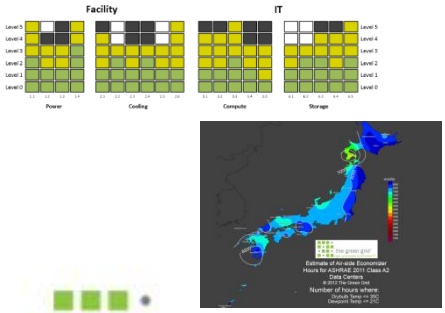
Detailed Reports



Case Studies



On-line Tools



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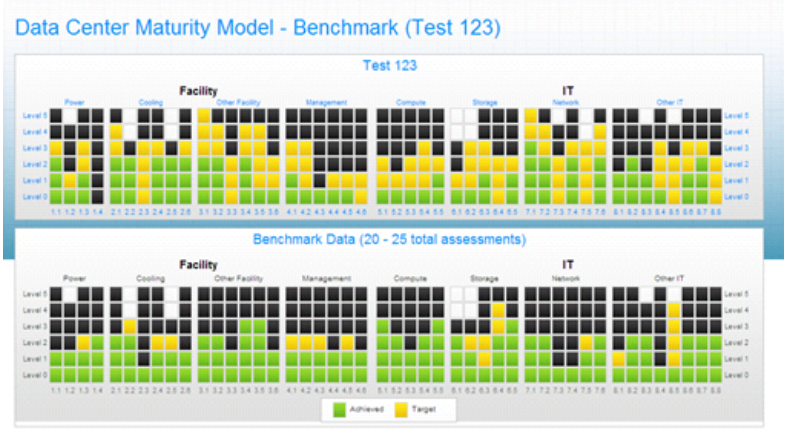
New Tools

Data Center Maturity Model Assessment Tool

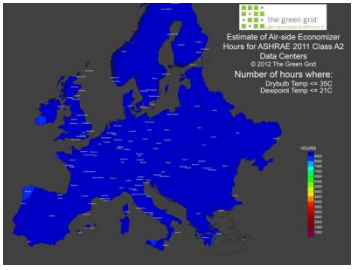
Over 400 active assessments!

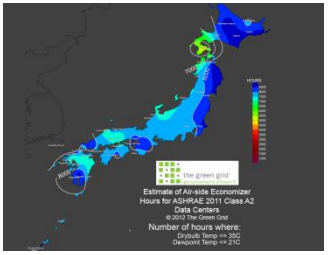
- Outlines current best practices and a 5 year industry roadmap
- Purpose:
  - Evaluate your data center and IT portfolio
  - Access your personal DCMM equalizer
  - Obtain benchmarking results

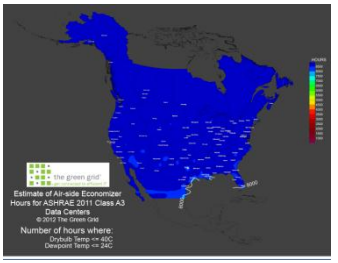


Updated Air-Side Free Cooling Maps

- ASHRAE Class A2 and A3 Maps for:
  - EMEA
  - Japan
  - North America







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The Green Grid China Forum 2013 Agenda

Time	Topic	Speaker
08:30-09:00	Registration	
09:00-09:10	Opening Speech	David Wang, Ph.D.
09:10-09:15	Government Official Speech	1. Yuqi Xie, Department of Industry and information technology policy Commissioner for Standards, Communication Development Division , MITT
09:15-09:45	TGG management Speech	2. Roger Tipley Vice President ,The Green Grid
09:45-10:25	The Green Grid view on IT Resource Efficiency: Past, Present and Future	3.David Wang, Ph.D. China Liaison WG Chair, The Green Grid
10:25-10:40		Tea Break
10:40-11:20	GGA—Data Center Green Grade Assesement	5.Baohong He, Ph.D. China Council Chair, The Green Grid Director of Internet Center of CATR
11:20-12:00	DCMM—The Green Grid's Data Center Maturity Model	6. Chang Tsann China Liaison WG Vice Chair, The Green Grid Practice Director, APJ I&CC Data Center Tranformation, Dell
12:00-12:30	The Green Grid-Driving IT Efficiency Through Collaboration	7. Jian Wu China Marketing WG Vice Chair, The Green Grid
12:30-13:30		Lunch
13:30-14:10	PUE—PUE Consolidation	Roger Tipley
14:10-14:50	LCA—Data Center Life Cycle Analysis	8. Xiongwei Lian China Technical WG Vice Chair, The Green Gr Assistant President ,Centrin Data Systems Ltd.
14:50-15:05		Tea Break
15:05-15:45	Panel discussion on DCIM	9. Xiongwei Lian/Hongyu Shou/Keith Gislason
15:45-16:25	Panel discussion on Data Center Overall Health Management	10. David Wang, Ph.D./Lu Cao/Baohua Lei/Jianbing Zhang
16:25-16:30	Wrap up	David Wang, Ph.D.

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Joining the Conversation

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Thank you !

Questions or Comment?

John.Tuccillo@Schneider-Electric.com

GSEP

Global Superior Energy Performance Partnership

An initiative of:

CLEAN ENERGY MINISTERIAL

ipeec International Partnership for Energy Efficiency Co-operation

Global Superior Energy Performance Partnership - Energy Management Working Group

Ms. Graziella Siciliano, Office of International Affairs
U.S. Department of Energy

4th U.S.-China Energy Efficiency Forum
September 25, 2013
Sheraton Pentagon City Hotel

Clean Energy Ministerial

Ministers and other high-level representatives convened for the Clean Energy Ministerial in Washington in July 2010, Abu Dhabi in April 2011, London in April 2012, and will meet in New Delhi in April 2013 and Seoul in 2014 to collaborate on policies and programs that **accelerate the global transition to clean energy technologies**.

>90% of Global Clean Energy Investment > 80% of Global GHG Emissions

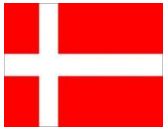

Australia


European Commission


Brazil


Canada


China


Denmark


Finland

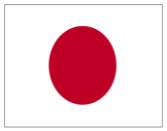

France


Germany


India

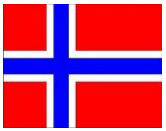

Indonesia


Italy


Japan


Korea


Mexico


Norway


Russia


South Africa


Sweden


Spain


United Arab Emirates


United Kingdom


United States

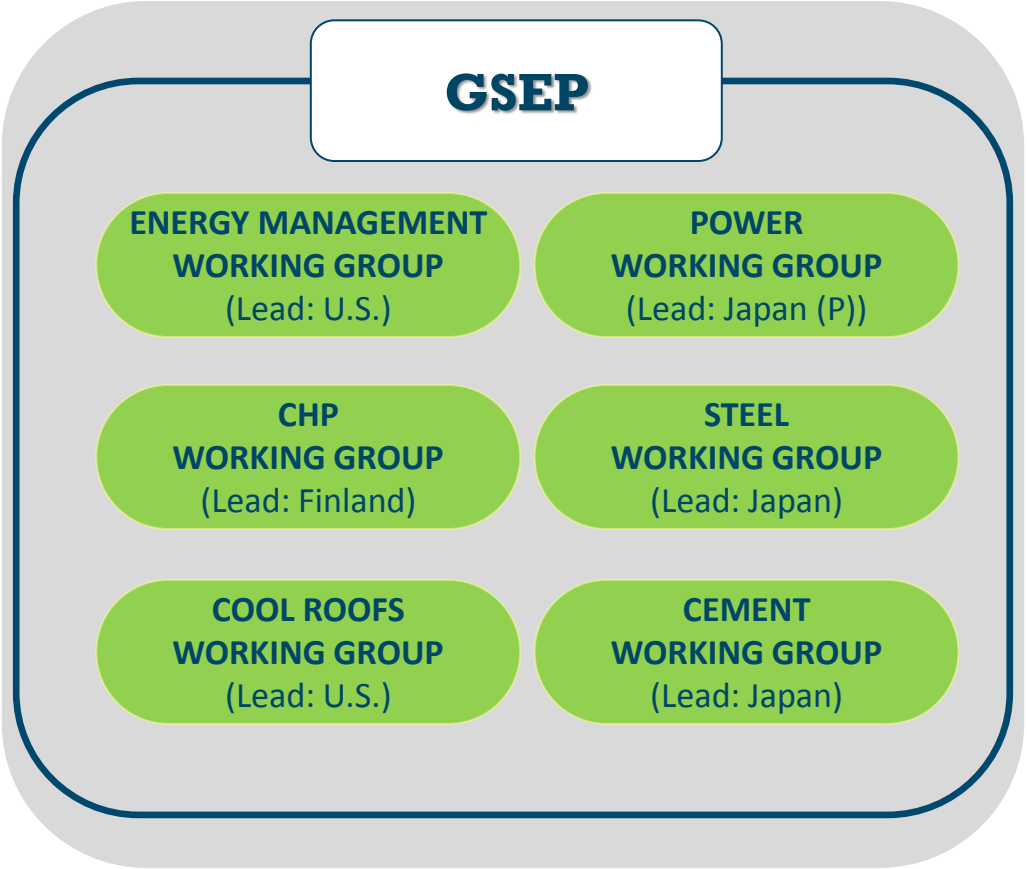
Global Superior Energy Performance Partnership (GSEP)

GSEP is one of 13 ongoing Clean Energy Ministerial (CEM) initiatives.

GSEP objectives are to significantly cut global energy use by:

- Encouraging industrial facilities and commercial buildings to pursue **continuous improvements** in energy efficiency
- Promoting **public-private partnerships** for cooperation on specific technologies or in individual energy-intensive sectors

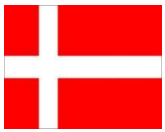
Within GSEP there are six working groups



GSEP Energy Management Working Group (EMWG)

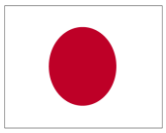

Australia


Canada


Denmark


European Commission


India


Japan


Korea


Mexico


South Africa


Sweden


United States

The GSEP EMWG works to ***accelerate the adoption and use of* energy management systems (EnMS) *in industry and in commercial buildings worldwide.***

The GSEP EMWG leverages the extensive experience of its member countries who employ a range of approaches to promote EnMS on the national level including:

- Mandatory programs with specified targets or improvements
- Mandatory programs for requiring improved understanding of energy use and saving opportunities
- Information dissemination or energy rating programs
- Voluntary agreements and programs

Value of Energy Management

- Time and again, industrial energy efficiency has been demonstrated to be ***cost-effective*** while having a positive effect on productivity
- Despite this, energy efficiency improvements with very favorable payback periods often ***do not get implemented***
- Even projects that <u>are</u> implemented may ***not be sustained*** due to lack of supportive operational and maintenance practices

Problem: Energy efficiency is not integrated into daily management practices.

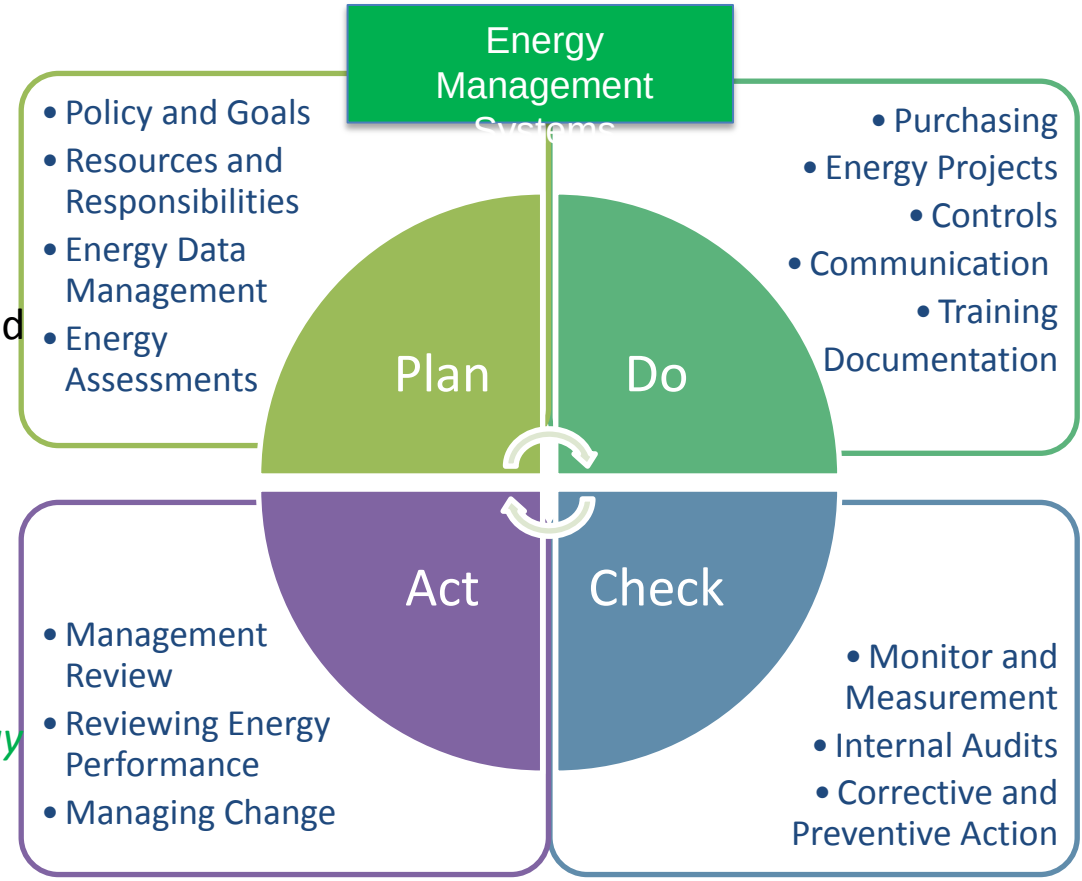
Solution: ***Staff at all levels within an organization need to be engaged in the management of energy on an ongoing basis.***

Energy management requires an organization to shift from a project-by-project approach to one of ***<u>continual improvement in energy performance</u>***

What is an Energy Management System (EnMS)?

Energy management systems (EnMS) help an organization institutionalize the policies, procedures, and tools to systematically track, analyze, and improve energy efficiency—leading to continual improvements in energy performance.

Industries that adopt EnMS may ***save up to 10-30%*** *of their total energy use!*



GSEP Energy Management Working Group (EMWG)

The GSEP EMWG's collaborative approach facilitates active peer sharing on a broad range of relevant activities led by its member countries.

Together, GSEP EMWG members:

- **Advocate for energy management**
- **Provide assistance on policies and programs**
- **Develop tools and resources**

Advocating for Energy Management

The GSEP EMWG is building the business case for energy management to effectively communicate its diverse benefits for the industrial and commercial sectors.


Global Energy Management System Implementation: Case Study

USA, Superior Energy Performance

Nissan

ISO 50001

Business Benefits Achieved

Key 2013- 2014 Activities:

Case Studies: Members are producing a suite of case studies to *showcase early adopters* and help to *develop a compelling business case* based on real-world data and experiences.

Energy Performance Database (EPD): Members are leading an effort to collect and organize energy performance data submitted by member countries into a secure database. Analyses of the collected data will establish specific impacts, paybacks, and other findings to *demonstrate the value* of energy management and *identify effective strategies* for implementation.

Providing Assistance on Policies and Programs

The GSEP EMWG offers stakeholders (governments, NGOs, etc.) technical support for their efforts to design, implement, and evaluate energy management policies and programs.

Key 2013- 2014 Activities:

Peer sharing webinars and workshops: Discussion of a range of topics including policy and program developments, new resources and tools, and barriers/enables to industry uptake.

- Next webinar is October 2, 2013

Pilot Projects: Members share information and technical expertise to support pilot projects.

- **3M Canada:** Using ISO 50001, a 3M facility improved its energy performance by 15.2% during a two-year pilot project.
- **Multiple U.S. pilots**: 13 facilities have improved their performance by 5 to 25.8% over a 2-3 year period.
- **Multiple Korean pilots**: 10 facilities are participating in a pilot project.

Photo courtesy of 3M

Developing Tools and Resources

The GSEP EMWG develops and disseminates practical tools and resources (enablers) to support government and industry implementation efforts.

Key 2013-2014 Activities

Workforce Development: Members have shared information on their workforce training and credentialing programs, including qualification criteria, training requirements, and training materials.

- Next report to be published October 2013

Developing Tools and Resources (continued)

Key 2013-2014 Activities (continued)

EnMS Practitioner's Toolbox: Document between 10 to 20 key processes, practices and supporting tools that could make an immediate, cost effective and substantive EnMS benefits within corporations.

- Solidifying partnership with the Institute for Industrial Productivity (IIP) to help execute this activity
- GSEP is very pleased to welcome China's support and engagement on the practitioner's toolkit

THANK YOU!

For more information visit:

www.cleanenergyministerial.org/energymanagement

Or Contact:

Graziella Siciliano, graziella.siciliano@hq.doe.gov

HE Ping, Director of Industry Program, Energy Foundation China
September 25, 2013

Energy Management System in China

ENERGY FOUNDATION
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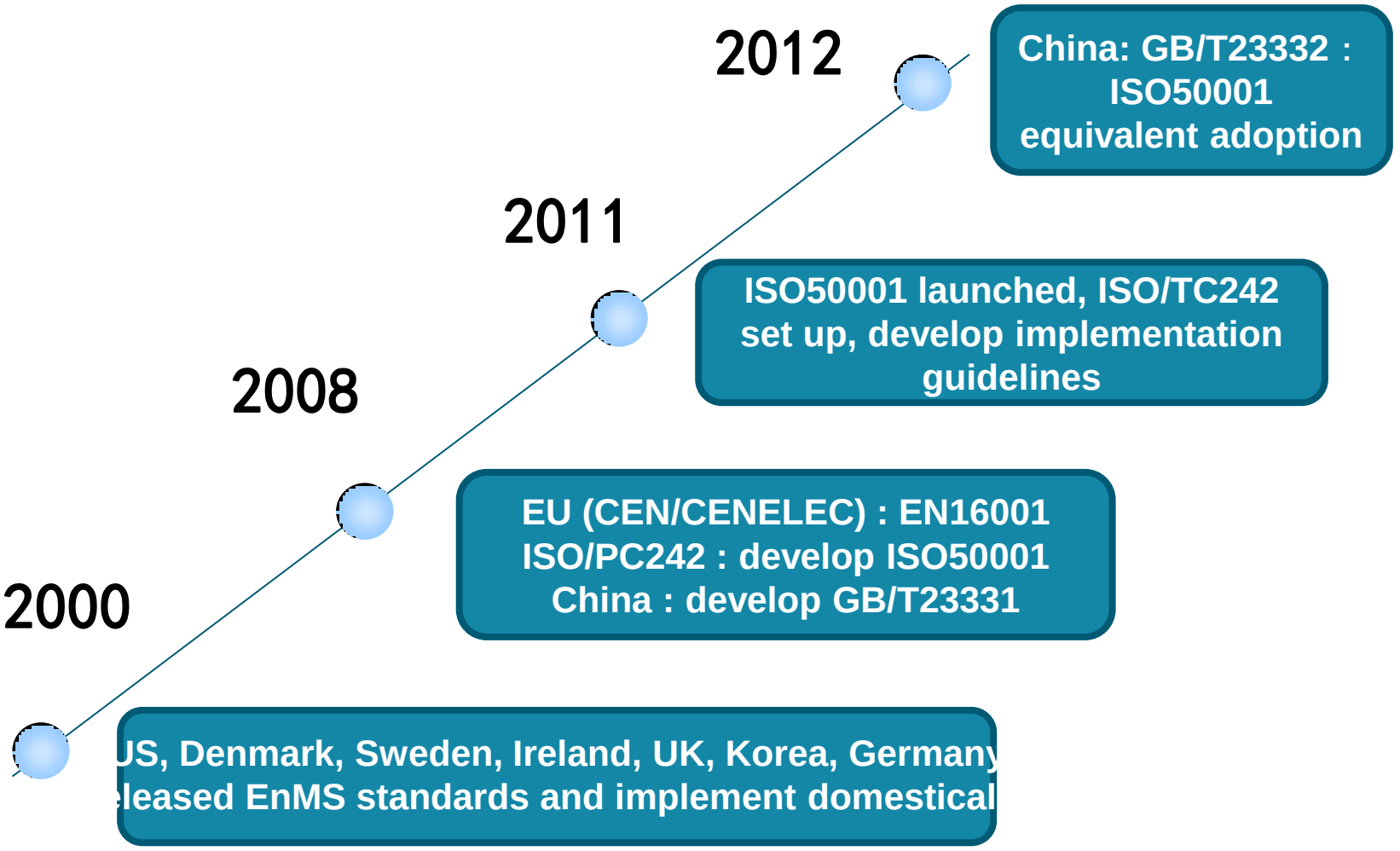
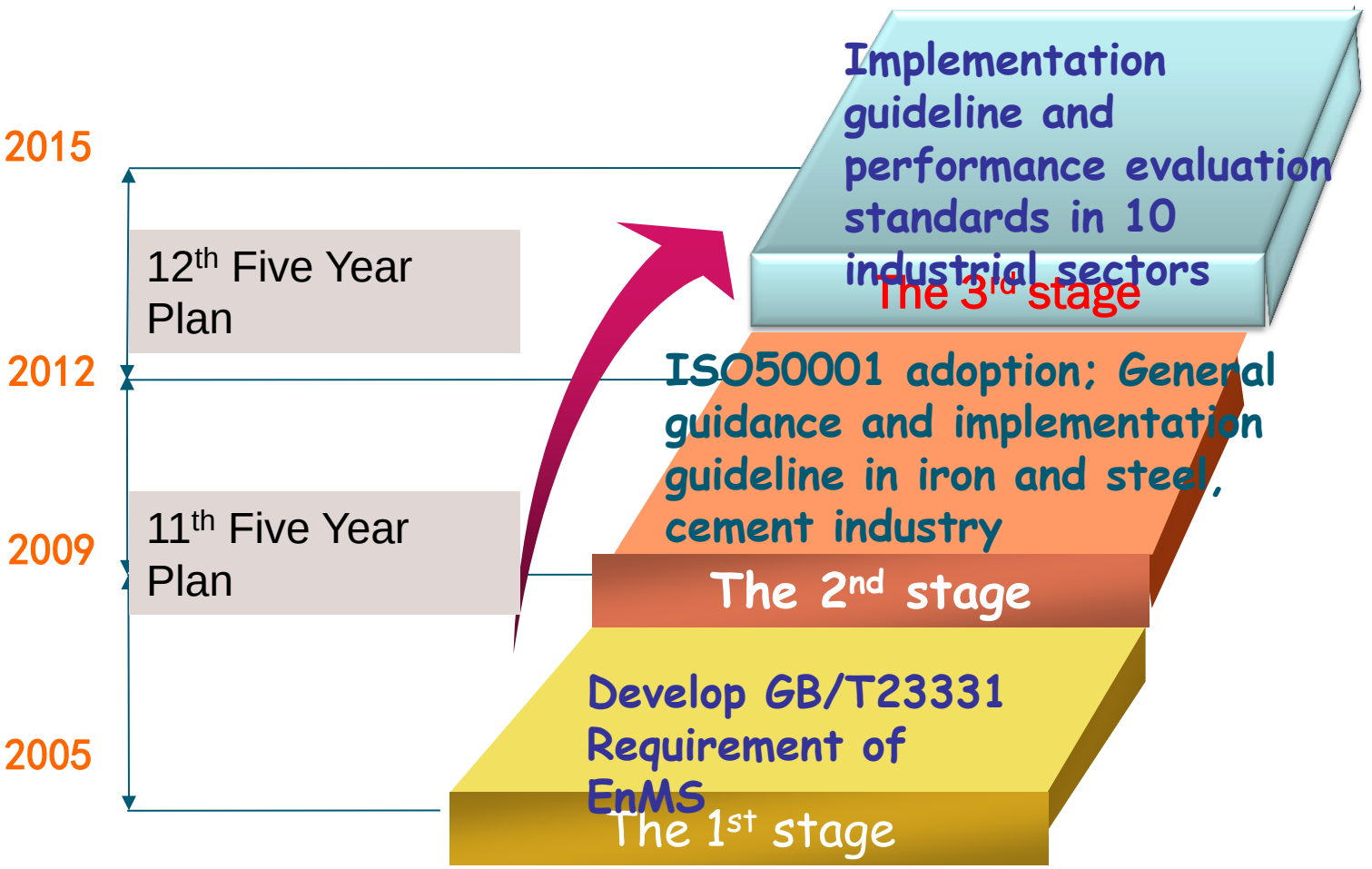
Contents

History of EnMS Standards

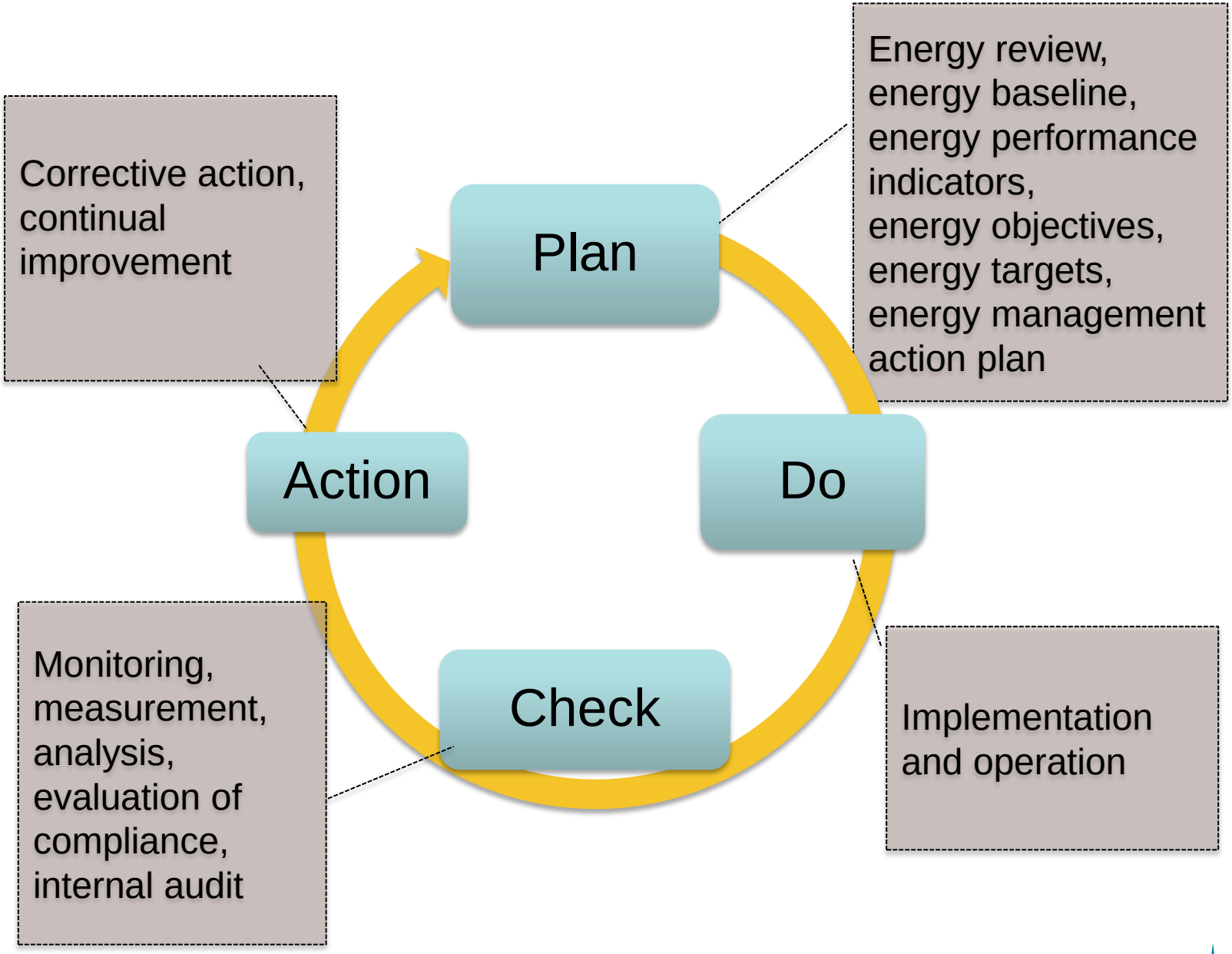


Roadmap of EnMS Series of Standards in China



Source: LI Aixian,CNIS,2012

PDCA- the Core of EnMS



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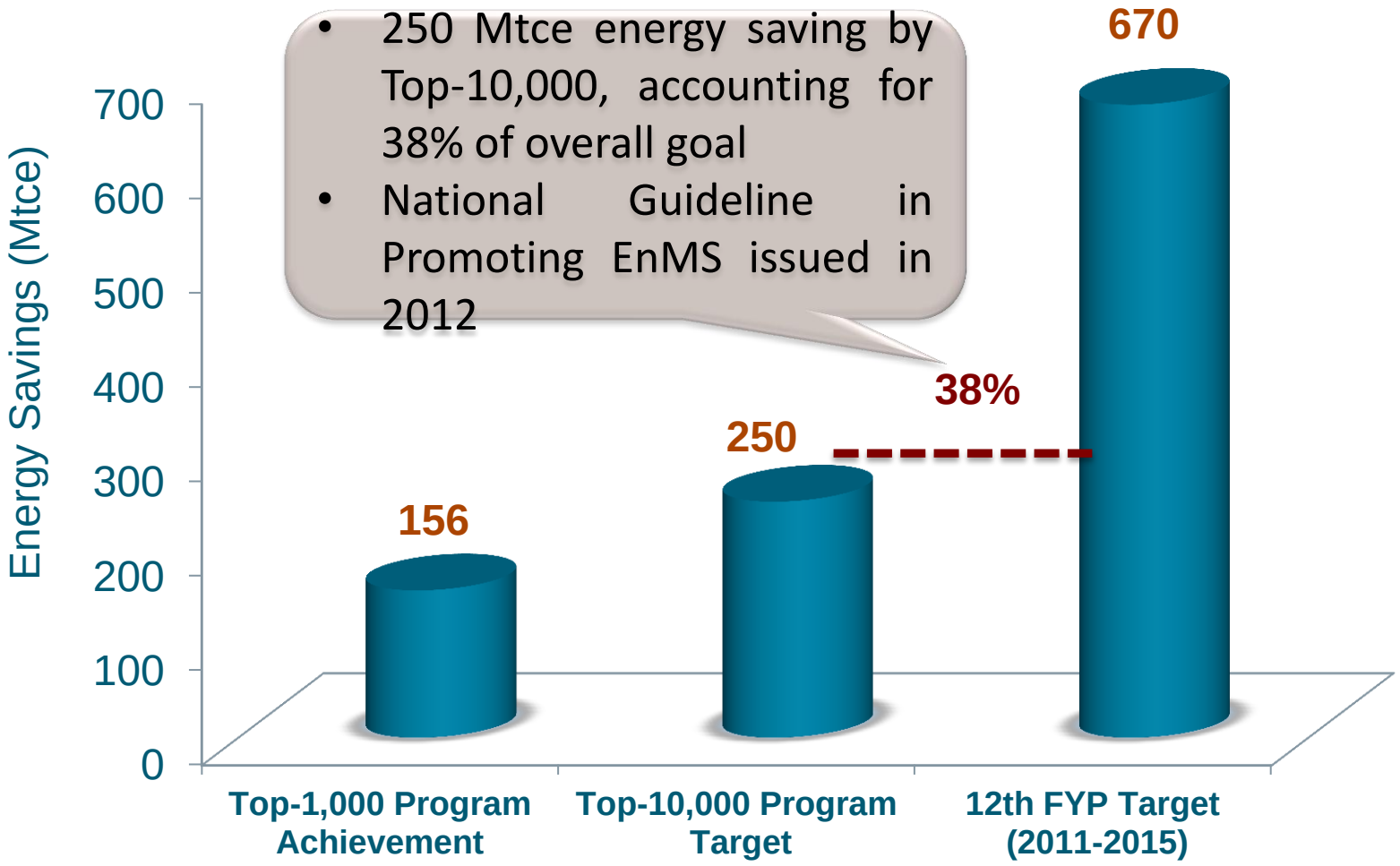
Top-10,000 Enterprises EE Program



Procedure of Certification on EnMS

Preparation and preliminary review

Information dissemination and skills training

EnMS planning, documentation and implementation

Plan and adoption of technical retrofitting

Training on internal auditor

Evaluation on operation of EnMS

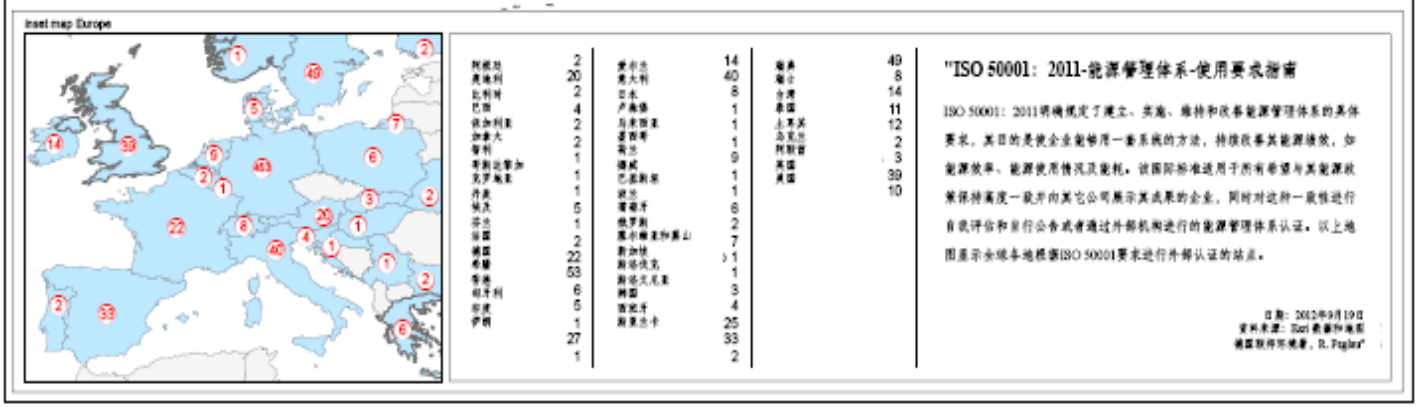
Continual improvement

Certification

EnMS Pilots and Certification Globally

Entities on ISO 50001 certification by Sep 2012

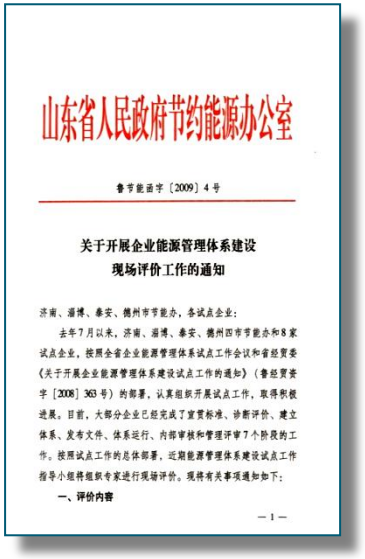
468 entities on ISO50001 certification
2000 enterprises being certified



Source：Julia Reinaud, IIP, 2012

Best Practice of EnMS - Shandong Province

- ‘To promote EnMS establishment’, ‘To pilot EnMS in key energy intensive enterprises’ is required in government document
- In 2008-2009, EnMS piloting in 8 enterprises representing 6 industrial sectors
- In 2010, EnMS scaling up in 44 enterprises in Shandong
- In 2011, demonstration zone of EnMS in Dezhou city
- In 2012, world’s largest EnMS Promotion Program initiated in Shandong engaging 1188 enterprises


山东省人民政府节约能源办公室

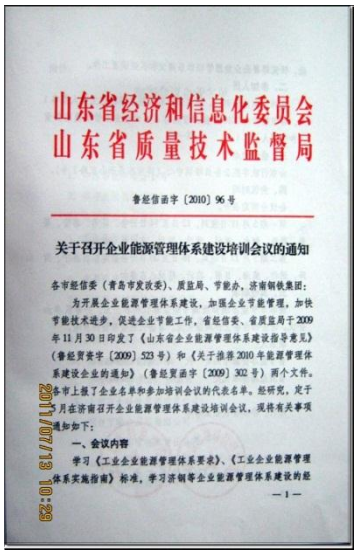
鲁节能函字〔2009〕4号

关于开展企业能源管理体系建设现场评价工作的通知

济南、淄博、泰安、德州市节能办，各试点企业：

去年7月以来，济南、淄博、泰安、德州四市节能办和8家试点企业，按照全省企业能源管理体系试点工作会议和省经贸委《关于开展企业能源管理体系建设试点工作的通知》（鲁经贸资字〔2008〕363号）的部署，认真组织开展试点工作，取得积极进展。目前，大部分企业已经完成了宣贯标准、诊断评价、建立体系、发布文件、体系运行、内部审核和管理评审7个阶段的工作。按照试点工作的总体部署，近期能源管理体系建设试点工作指导小组将组织专家进行现场评价。现将有关事项通知如下：

一、评价内容


山东省经济和信息化委员会
山东省质量技术监督局

鲁经信函字〔2010〕96号

关于召开企业能源管理体系建设培训会议的通知

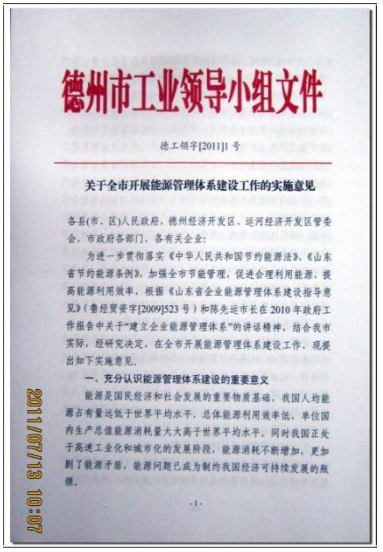
各市经信委（青岛市发改委）、质监局、节能办，济南钢铁集团：

为开展企业能源管理体系建设，加强企业节能管理，加快节能技术进步，促进企业节能工作，省经信委、省质监局于2009年11月30日印发了《山东省企业能源管理体系建设指导意见》（鲁经贸资字〔2009〕523号）和《关于组织2010年能源管理体系建设企业的通知》（鲁经贸函字〔2009〕302号）两个文件。各市上报了企业名单和参加培训会议的代表名单。经研究，定于7月在济南召开企业能源管理体系建设培训会议，现将有关事项通知如下：

一、会议内容

学习《工业企业能源管理体系要求》、《工业企业能源管理体系实施指南》标准，学习济钢等企业能源管理体系建设的经

2011/07/13 10:29


德州市工业领导小组文件

德工领字[2011]1号

关于全市开展能源管理体系建设工作的实施意见

各县(市、区)人民政府，德州经济开发区、运河经济开发区管委会，市政府各部门，各有关企业：

为进一步贯彻落实《中华人民共和国节约能源法》、《山东省节约能源条例》，加强全市节能管理，促进合理利用能源，提高能源利用效率，根据《山东省企业能源管理体系建设指导意见》（鲁经贸资字[2009]523号）和陈光远市长在2010年政府工作报告中关于“建立企业能源管理体系”的讲话精神，结合我市实际，经研究决定，在全市开展能源管理体系建设工作，现提出如下实施意见。

一、充分认识能源管理体系建设的重要意义

能源是国民经济和社会发展的重要物质基础，我国人均能源占有量远低于世界平均水平，总体能源利用效率低，单位国内生产总值能源消耗量大大高于世界平均水平。同时我国正处于高速工业化和城市化的发展阶段，能源消耗不断增加，更加剧了能源矛盾，能源问题已成为制约我国经济可持续发展的瓶颈。

2011/07/13 10:07

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Working Mechanism of EnMS in Shandong

- Actively collect and enforce energy conservation regulations and policies.
- Set up control /management on overall process；Manage energy in real-time and systematically.
- Upgrading energy efficiency technology on a regular basis
- Foster a culture of energy conservation, continual improvement on energy conservation rules and regulations, awareness and practice.

Key Elements of a Successful EnMS

- EnMS serves as important acting points to establish long-term mechanism of energy conservation;
- It's a combination of government leading, enterprise self-driving and experts' guidance;
- EnMS establishment integrated with equipment installation and staff capacity building;
- Attach importance to energy performance evaluation, when implement EnMS;
- The success of EnMS relies on：
  - Attention and emphasis from top managers；
  - Compatible with existing management systems；
  - A channel for information exchange；
  - Adhere to PDCA cycle, keep continual self-improvement

赛迪智库
面向政府·服务决策

The Fourth U.S.-China Energy Efficiency Forum

The Constructing of Energy Management and Control Center of Enterprises in Industry

China Center of Information Industry Development

WANG Xu

2013.9.25 WASHINGTON D.C.

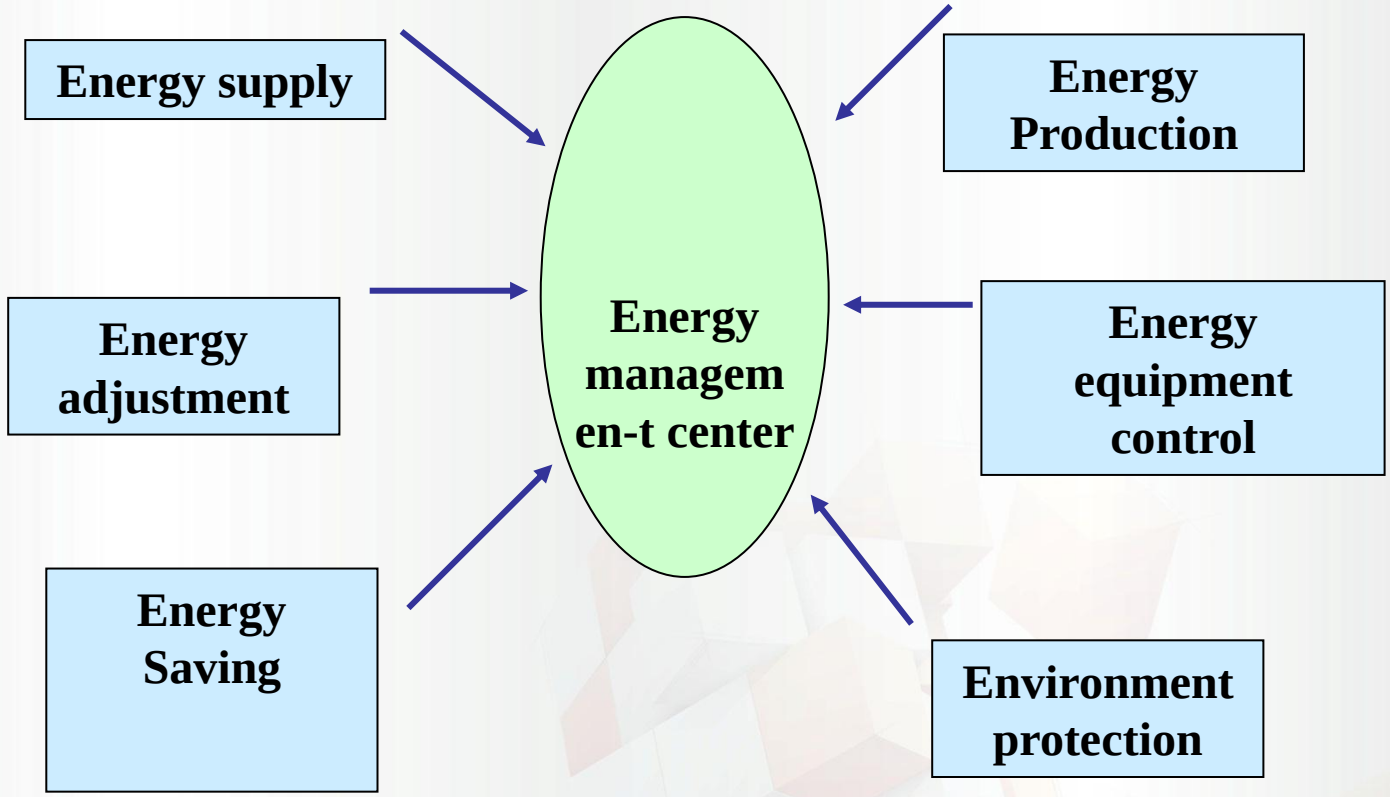
Content

The Connotation and Building Content of Energy Management and Control Center of Enterprises

The connotation of Energy Management and Control Center of Enterprises

The meaning of the energy management and control center of enterprises is in the process of production, to monitor and manage the supply,transmission and usage of energy, so as to realise the integrity of management and control,update and optimize energy balance, attain energy conservation and consumption reduction systematically.It is a comprehensive application of mordern information technology in energy management of enterprises.

The connotation of Energy Management and Control Center of Enterprises



The main use of energy management and control center of enterprises：

- **Effective monitoring and improving the security and stable operation.**
- **Systematic optimization and reducing energy cost.**
- **Improving energy management and labor productivity**

The building content of Energy Management and Control Center of Enterprises

1 The building of the operation support system of the energy management and control center

（1)The use of the energy management center in the energy production and management activities should be clear.

(2)Establishing the operation of production and business processes compatible with the energy management center mode.

(3)The establishment of the various management system, operating procedures supporting the production patterns in the energy management center.

2 The improvement and optimization of the Primary energy process and equipment

Energy process and equipment directly lead to the actual function of the effect of the energy center. So synchronized revamping or necessary optimize should be made in the energy management center.

3 Constructing featured EMS system

EMS is the core items in the energy center ,complete EMS projects should be achieved:

(1) From a system perspective , energy center should be centralized, online, real-time monitoring and adjustment.

(2) Controling effectively energy information, energy equipment status of energy generating unit.

(3) EMS is helpful to the production on the basis of the objective data.

The Constructing of Energy Management and Control Center of Enterprises in China

Construction：

In 2009, Ministry of Industry and Information Technology and Ministry of Finance began to support the energy management center demonstration projects in the industrial areas.The government allocated funds to the qualified enterprises.

The energy management and control center was built first in the iron and steel industry which has some experience and

Construction：

276 projects have been supported in the recent five years.The demonstration projects extended from steel industry to the petrochemical, chemical, nonferrous metals and so on. The scope covered 30 provinces.

The energy management and control center plays an important role in promoting the depth of integration of

The Constructing of Energy Management and Control Center of Enterprises in China

Policy:

Supporting the information technology transformation in the key energy companies.Monitoring dynamically and managing the enterprise energy production,distribution and consumption to improve and optimize the energy balance.

Goal:

The medium-sized enterprises' energy management

Measures：

- **Promoting the implementation of Energy Management and Control Center in nonferrous metals, chemicals, building materials and so on based on the experience of iron and steel enterprise.**
- **Supporting a number of medium-sized enterprises to build enterprise energy management center during "Twelve Five" period.**
- **Supervise the construction of the energy management and control center with greater efforts.**

The Example of Energy Management and Control Center of Enterprises -Baosteel

The Construction of Baosteel Energy Management and Control Center

◆In the 1980s early,the focused energy management ideas, large-scale application of computer control and the most economical allocation run has been used in the construction of Baosteel energy management and control center.

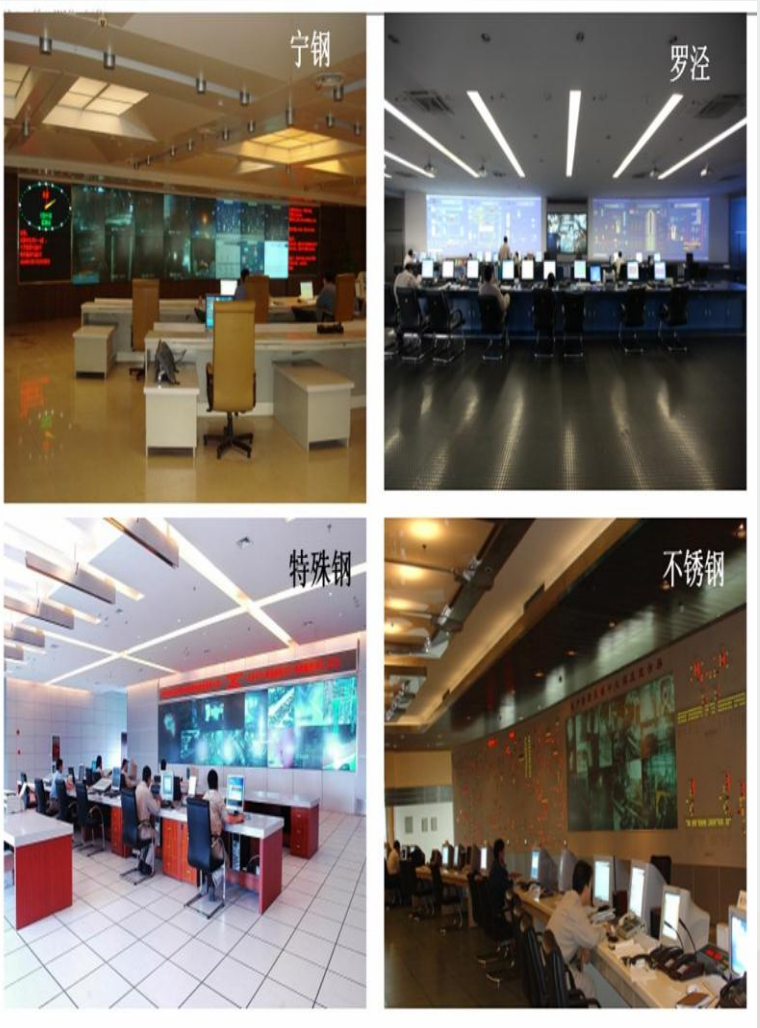
◆The energy management and control center has been developed in the projects during the second, the third and fifteen, eleven-five plan.

◆Currently the relatively complete idea has been formed which focused on energy

The Construction of Baosteel Energy Management and Control Center

赛迪智库
面向政府·服务决策

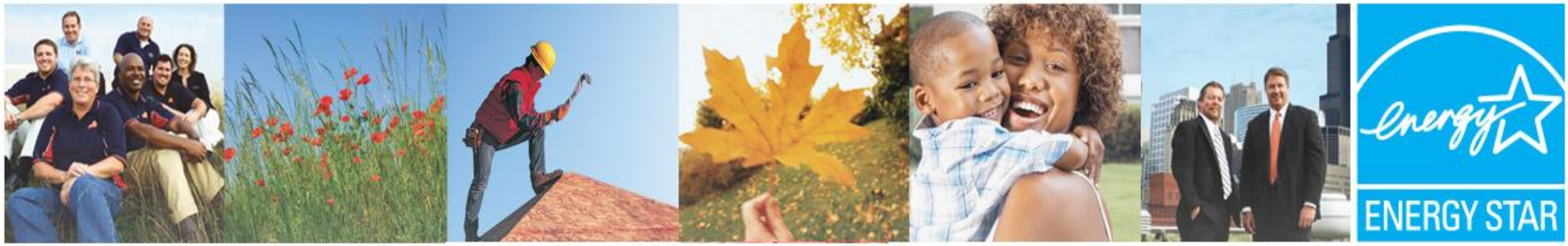
Promoting the construction of enterprise energy management center comprehensively



- **Stainless steel Energ Management System** - produced in 2004
- **Ning steel Energy Management System** - produced in 2007
- **Luo Jing relocation project Energy Management System** - produced in 2007
- **Special Steel Energy Management System** -


Thanks for listening!
www.ccidthinktank.com

Building a Sustainable Future



US-China Energy Efficiency Coordination

US-China Energy Efficiency Forum

September 25, 2013

RJ Meyers
Data Center Product Manager
US Environmental Protection Agency, ENERGY STAR Program

U.S. China Energy Efficiency Action Plan (Under 10-year Framework)

- Accelerate development and adoption of energy efficiency solutions in U.S. and China
- 8 areas of cooperation, including consumer product testing and labeling

Computers and Servers:

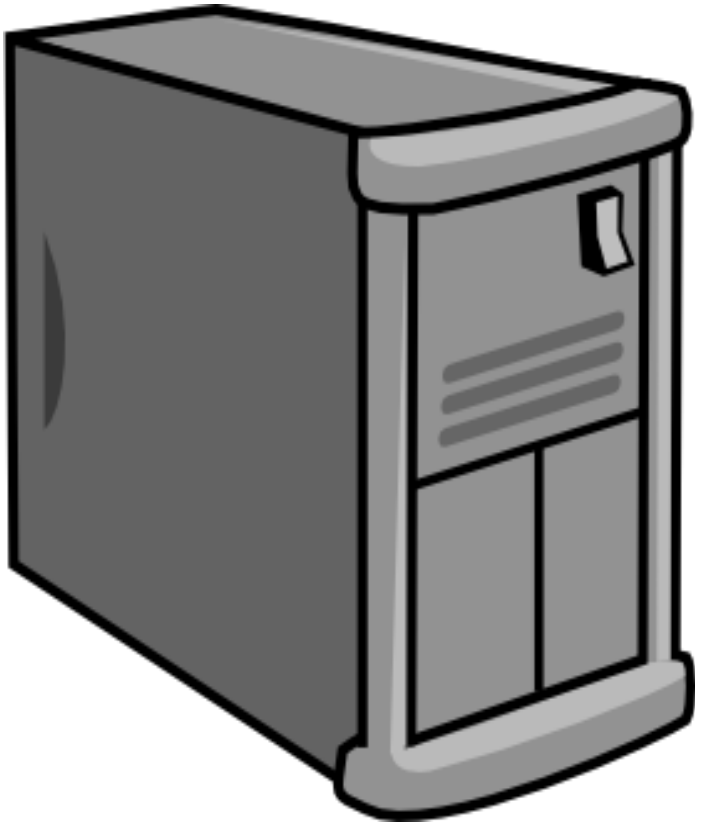
- Harmonize test procedures
- Collaborate on product verification systems
- Exchange best practices in labeling

Key Activities

- July 2010 computer standards meeting in Beijing
- August 2010 discussion at US conference
- January 2011 conference call
- April 2012 conference call

- Future Plans:
  - Participate in periodic webinars and conference calls
  - Joint review of new test procedures

ENERGY STAR Servers Testing



The Server Efficiency Rating Tool (SERT)

- Tool to measure idle and active server energy efficiency
  - Simulates typical workloads
  - Enables full comparison of server energy efficiency
  - http://www.spec.org/sert/

- Developed by the Standard Performance Evaluation Corporation (SPEC).
  - Currently in Version 1.0.2.
  - Covers most server products on the market.
  - Small license fee.

Benefits of SERT

- First total server energy efficiency tool.
- Standardized test procedure
  - Standard format, easy to transport and analyze.
- Other governments are adopting it
  - EU, Canada.
  - Interest from Japan, South Korea, and others.

The Future of SERT

- EPA is using SERT in ENERGY STAR Servers Version 2.0.
- Data generated by SERT will be used to set active mode server efficiency requirements in Servers Version 3.0.

- EPA:
  - Discuss the use of SERT with the appropriate contacts in the Chinese government.
- SPEC:
  - Discuss SERT.
  - Provide SERT training to interested organizations.
  - Open to expansions to SERT.

Thank you!

Robert Meyers

Data Center Product Manager, ENERGY STAR

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China Electronics Standardization Institute

Green Data Center Initiative

4th Sino-America Energy Efficiency Forum
Washington, USA

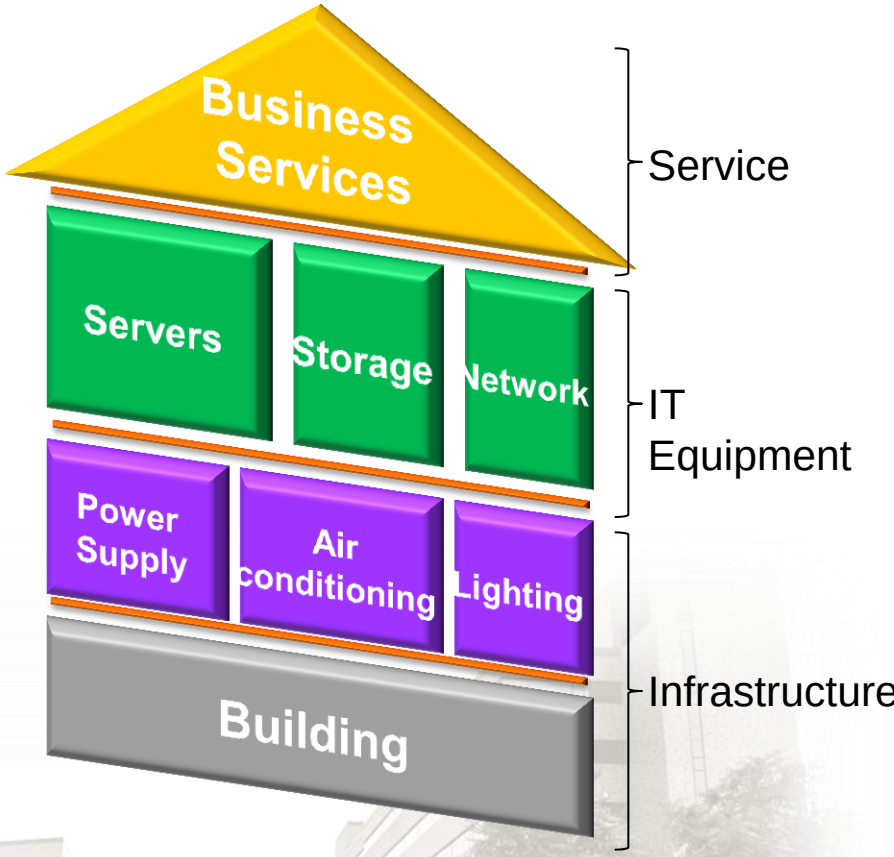
Outline

1. Data Center Energy Efficiency Analysis
2. China Data Center Market and Energy Efficiency
3. Green Data Center Initiative

1. Data Center Energy Efficiency Analysis (1/3)

1) Definition of Data Center

- **Definition 1:** A building or portion of a building whose primary function is to house a computer room and its support areas. (ANSI/TIA 942-2005)
- **Definition 2:** A physical space, to realize operation, storage, transportation, exchange and management of mass information.



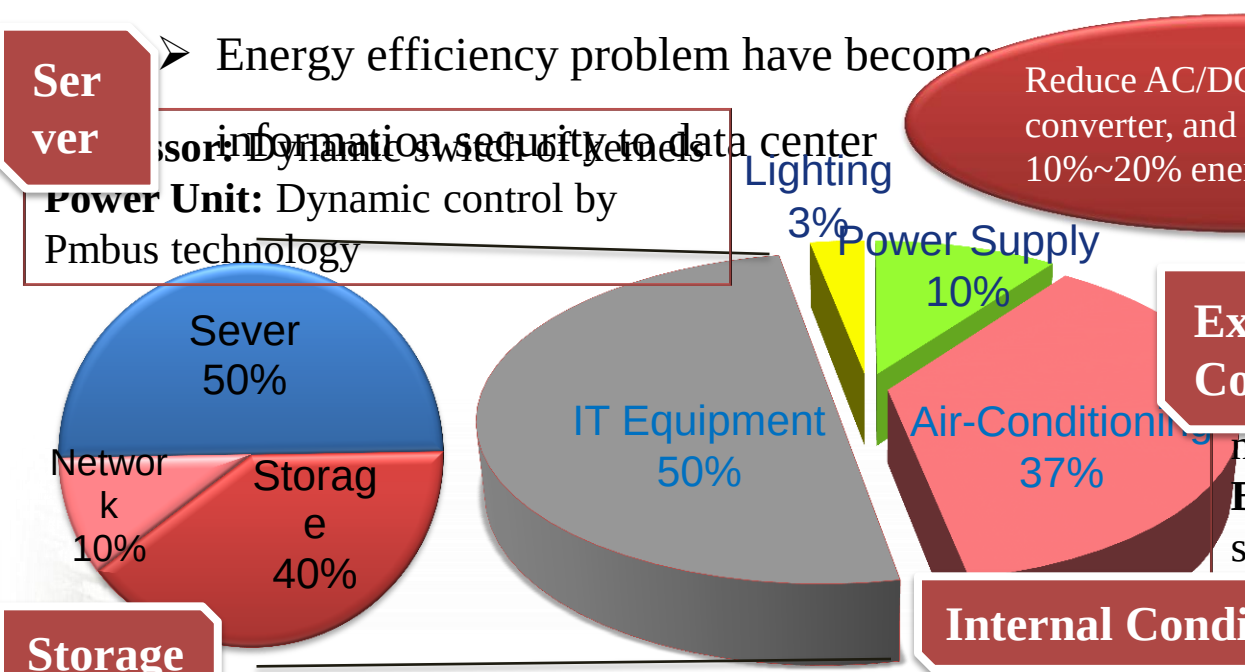
1. Data Center Energy Efficiency Analysis (2/3)

2) Energy Consumption

- Nowadays, data center are consuming 1% of total electricity power of the world
- Energy efficiency problem have become information security to data center

Server

Processor: Dynamic switch of kernels
Power Unit: Dynamic control by Pmbus technology



Storage

Storage Tech: smaller hard disk, SSD
Storage Mgt: Sleep and wake

Reduce AC/DC, DC/AC converter, and save 10%~20% energy.

External Condition

windy,
near water body
Building Design: Enclosing structure, material selection

Internal Condition

Air-conditioner management: Allocate a conditioner differently according to differe requirement of equipments.

Typical energy consuming of Data Center

1. Data Center Energy Efficiency Analysis (3/3)

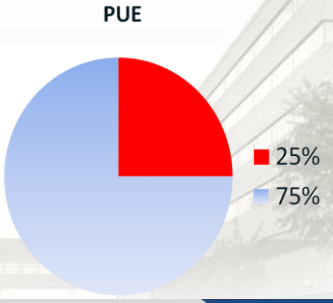
4) Evaluation

- **Power Usage Efficiency （PUE）**: the most popular indicator published by The Green Grid in Feb 2007.

$$\text{PUE} = \frac{\text{Total facility power}}{\text{IT equipment power}}$$

the green grid®
get connected to efficient IT

- At present, the PUE of international data center is on average of 2.0, the best can below 1.5
- **Energy Star:** started by EPA in Jul 2010 using PUE matrix, and only the top quarter of data centers in a particular industry will be awarded the label



Outline

1. Data Center Energy Efficiency Analysis
2. China Data Center Market and Energy Efficiency
3. Green Data Center Initiative

2. China Data Center Market and Energy Efficiency (1/4)

1) Market

- The market of China data center of 2012 is 123 billion RMB.
- 5-year-CAGR of China data center market is 18.5%.
- Telecommunication and Finance industries cover over 50% of the market.

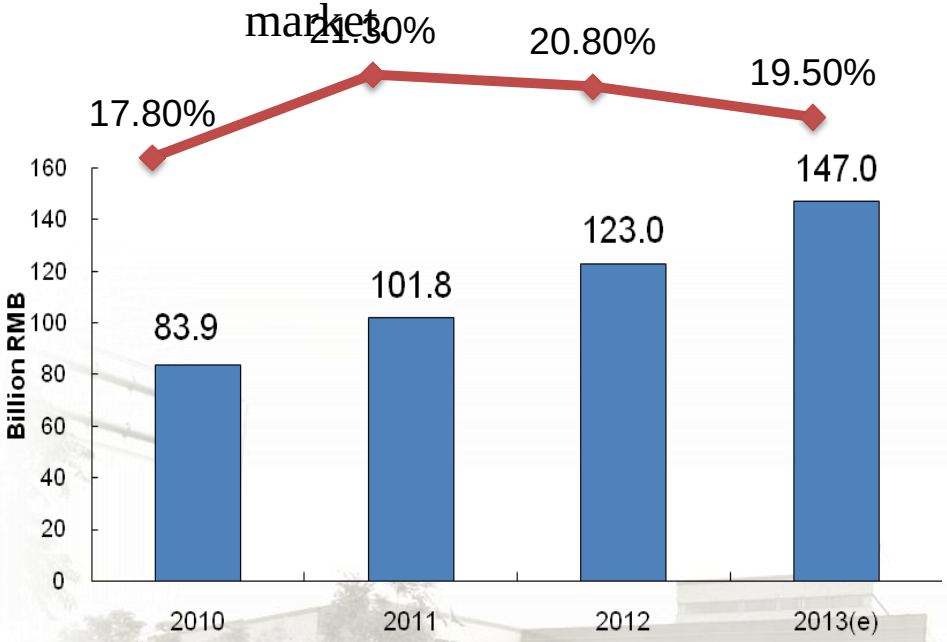


Fig. Market Value of China's Data Center

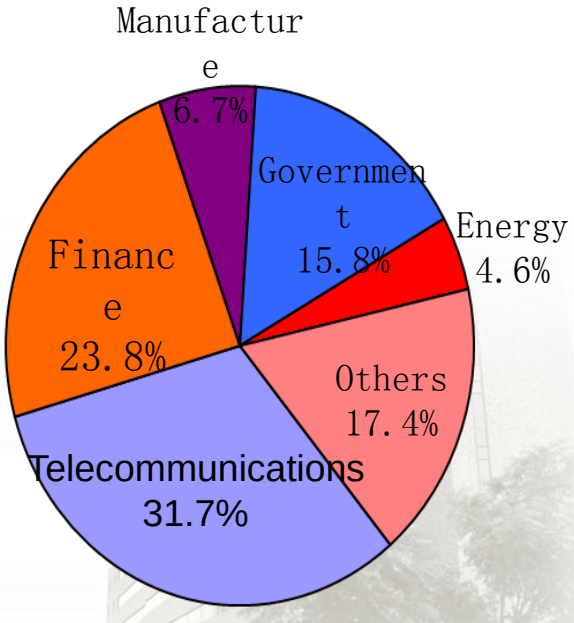


Fig. Market Share of Data Center of China, 2012

2. China Data Center Market and Energy Efficiency (2/4)

2) Trend

- As the key infrastructure of informationization, data center constructions are stimulated by the policies issued recently :
  - *Decision of China State Council on Accelerating the Cultivation and Development of Strategic Emerging Industries*
  - *Outline of the 12th Five-year National Economic Development Plan*
- With the rapid informationization process of government and enterprises, the market of data center in China is expanding at high speed, which bring with considerable pressure of er

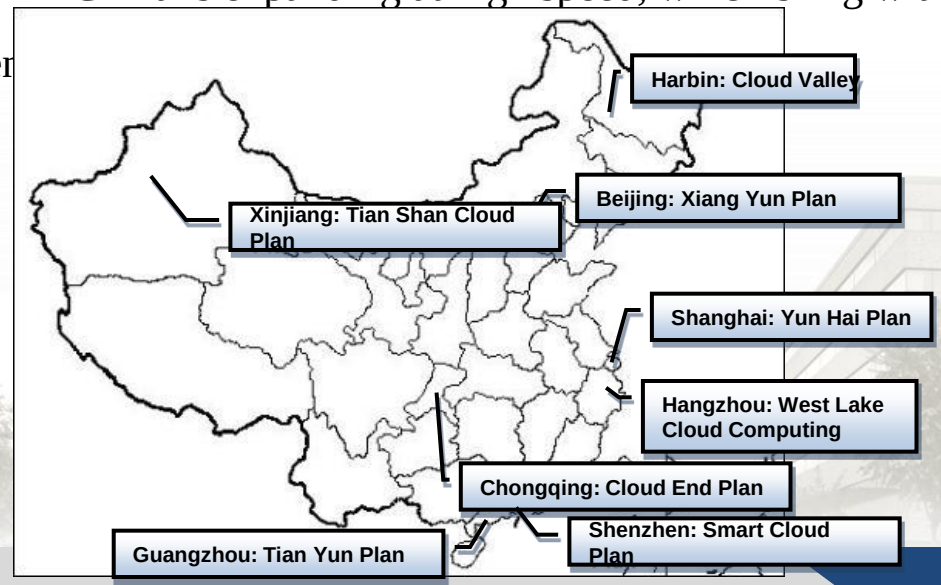


Fig. Cloud Computing Construction Plans around

2. China Data Center Market and Energy Efficiency(3/4)

3) Energy Efficiency

- China has constructed over 500,000 data centers. The PUE of China's data centers is generally ranged between 2.2 and 3.0, and the electricity consumption is up to 2.4% of total society consumption. Energy Efficiency problem have become the bottleneck in the development of data center in China
- Problem:
  - Lack of promotion of energy efficiency technology
  - Low utilization rate
- Strategies:
  - Study and develop dynamic management, virtualization, spatial distribution and other green information technologies
  - Research on green data center evaluation method to promote green

2. China Data Center Market and Energy Efficiency(4/4)

4) Policies

- Government pay high attention to energy efficiency of data centers:
  - In March of this year, MIIT issued ***Distribution Instructions on Data Center Construction***, stating that those newly constructed data centers whose PUE is less than 1.5,and the updated constructed ones with PUE less than 2.0, will be offered with key support on power supply, municipal facilities, human resource and network construction.

Accordingly, high energy efficiency products and services are expected to dominate the market gradually.

Outline

1. Data Center Energy Efficiency Analysis
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3. Green Data Center Initiative(1/4)

- **Introduction of China Electronics Standardization Institute (CESI)**

Found
- in 1963

Personnel
- 680 staffs, include 53 Dr.

Office Sites
- Headquarter (Beijing, North Second Ring)
- Science Park (Beijing, Yi-Zhuang)
- National Engineering Laboratory of electronic products (Shen Zhen)
- CESI Conformity test research Center (Guang Zhou)

We centralized manage the Chinese information technology standardization directly under the Ministry of Industry and Information Technology (MIIT).

3. Green Data Center Initiative(2/4)

CESI's Work on Data Center

- **Green Electronic Service Platform of MIIT**: funded by MIIT to provide public industry services of green electronic standardization, evaluation and data base.
- **Mirror of ISO/IEC JTC1** : we represent China to participate in the development of international standards for data center, and develop Chinese national standards
- **Development of Chinaese National Standards:**<Information Technology Resource Utilization Term>、< Information Technology Resource Utilization Key performance indicators >、< Information Technology Resource Utilization Energy efficiency requirements and measuring methods >

Cooperation with LBNL

- **Survey** on China's data center energy efficiency with typical enterprises
- **Introduce** the advanced technology and products to China

3. Green Data Center Initiative(3/4)

- **Plan**

Carry out the Demonstration Pilot of Green Data Center in typical industries

- Telecommunication, Utility, Bank, Government, Manufacture

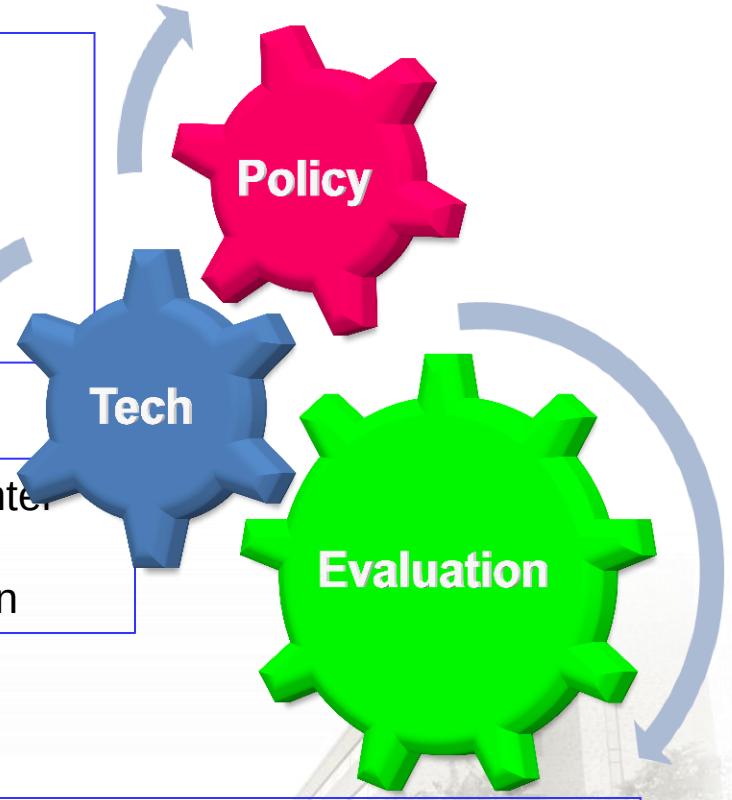
Build a classification evaluation system

- **Qualified level**:
  - The threshold of the market
- **Green level:**
  - Green Data Center Label
  - Technological application included in Government Recommended list

3. Green Data Center Initiative(4/4)

Outlook

- Accept evaluation results, and provide policy support
- Encourage development of green technology
- Direct large IT project programming an distribution



- Core of Green data cente
- Driven by policies
- Instructed by evaluation

- Promote green technology development
- Provide policy making basic
- Increase public awareness

Thanks for your attention !

中國電子學會
CHINESE INSTITUTE OF ELECTRONICS

Energy Efficiency Improvement Program for Data Centers (EEIP4DC)

Chinese Institute of Electronics(CIE)

ZONG Fang

2013/09/25

Outline

1 Introduction to CIE

2 Energy Efficiency Improvement Program for Data Center (EEIP4DC)

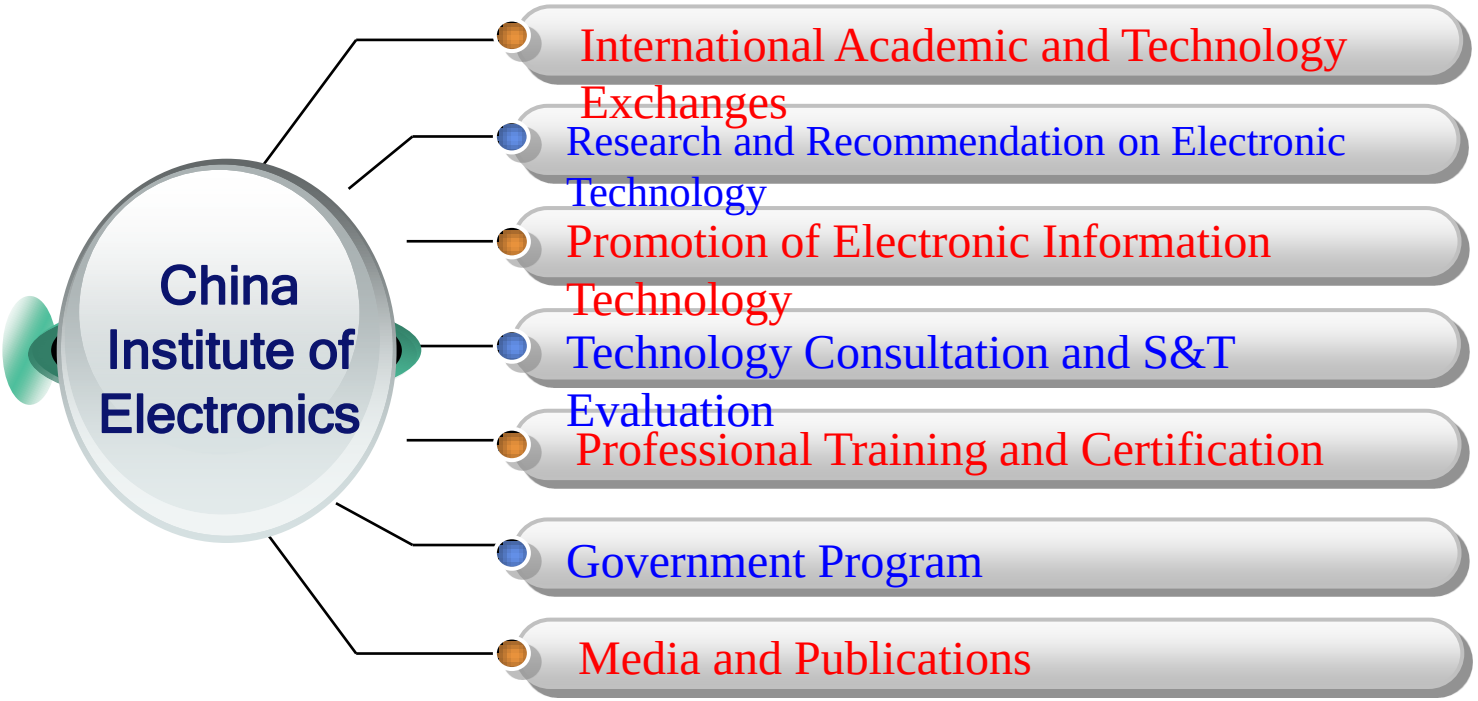
3 CIE's Plan on EEIP4DC

Introduction to CIE

Chinese Institute of Electronics (CIE), established in 1962, is a voluntary, legally registered academic, non-profit, and non-governmental organization formed by scientists, institutions and enterprises of electronic information field.

Introduction to CIE

- CIE's offerings and services



- CIE has a long history in international cooperation.
  - Member of IFIP, URSI, ICCCS, IMIA, and APNNA
  - Working relationship with IEEE, IET, ISAP, and KITE

Introduction to CIE

- In the last 5 years, CIE is focusing on hotspot in the ICT field, such as cloud computing, internet of things, and energy saving & emission reduction.

China Could Computing Conference

China Internet of Things Conference

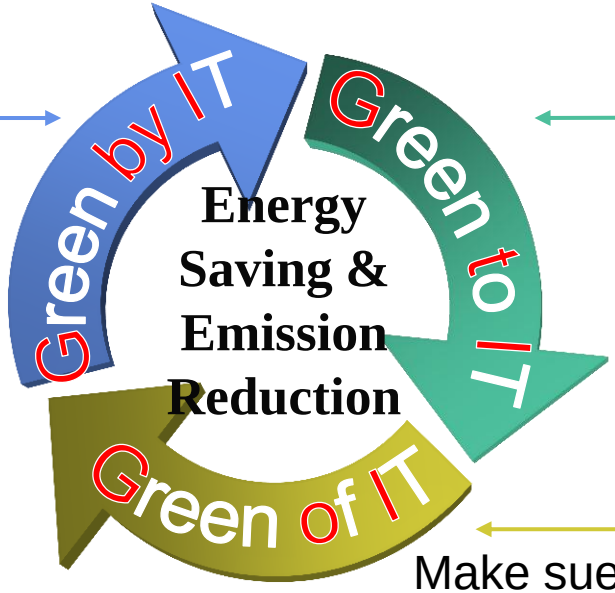
Summit on China ICT Industry Promoting Low-Carbon Economy Development

Introduction to CIE

- In 2007, CIE established China Electronics Energy Saving Council (CEESC) cooperated with Intel (China), Lenovo, and other companies and institutes.

GbI

Use ICT to provide an opportunity for **traditional industry** to save energy.



GtI

Optimize the manufacturing technology, process, and equipment of electronic and information industry.

GoI

Make sue the design process and use of products of **electronic and information industry** are energy saving.

Introduction to CIE

- CEESC's main works on energy saving and emission reduction

Government Program
- Recommended Catalog of Applied Electronic Information Technologies on Energy Conservation
- Screening and Assessments of Advanced Energy Conservation Technologies of Electronic Information Industry (A National Science and Technology Support Program funded by Ministry of Science and Technology)

Conference
- 1st Summit on Low-Carbon Economic Development Promotion of Information and Communication Industry in China
- Summit on China ICT Industry Promoting Low-Carbon Economy Development (2013)

International Exchanges
- Environment and Safety Performance Improvement of Small and Medium Electrical and Electronic Enterprises in China (Cooperated with EU)

Industry Research
- ICT Industry and Low Carbon Economic Development in China (Phase 1 in 2010 and Phase 2 in 2012)

Technology Promotion
- Energy Saving Solution for IDC, Digital Prototyping, and Product Lifecycle Management (PLM)

Outline

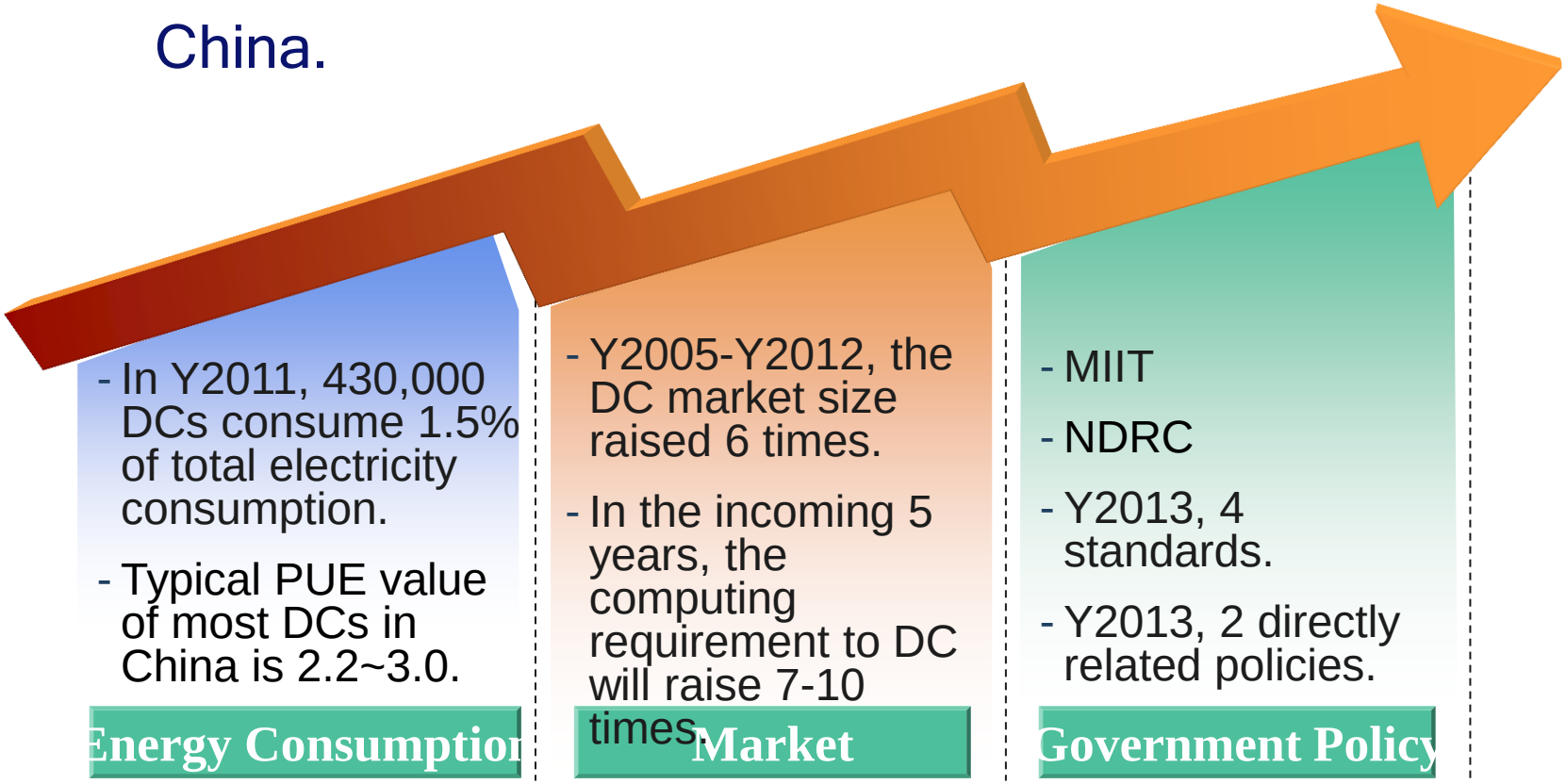
1 Introduction to CIE

2 Energy Efficiency Improvement Program for Data Center (EEIP4DC)

3 CIE's Plan on EEIP4DC

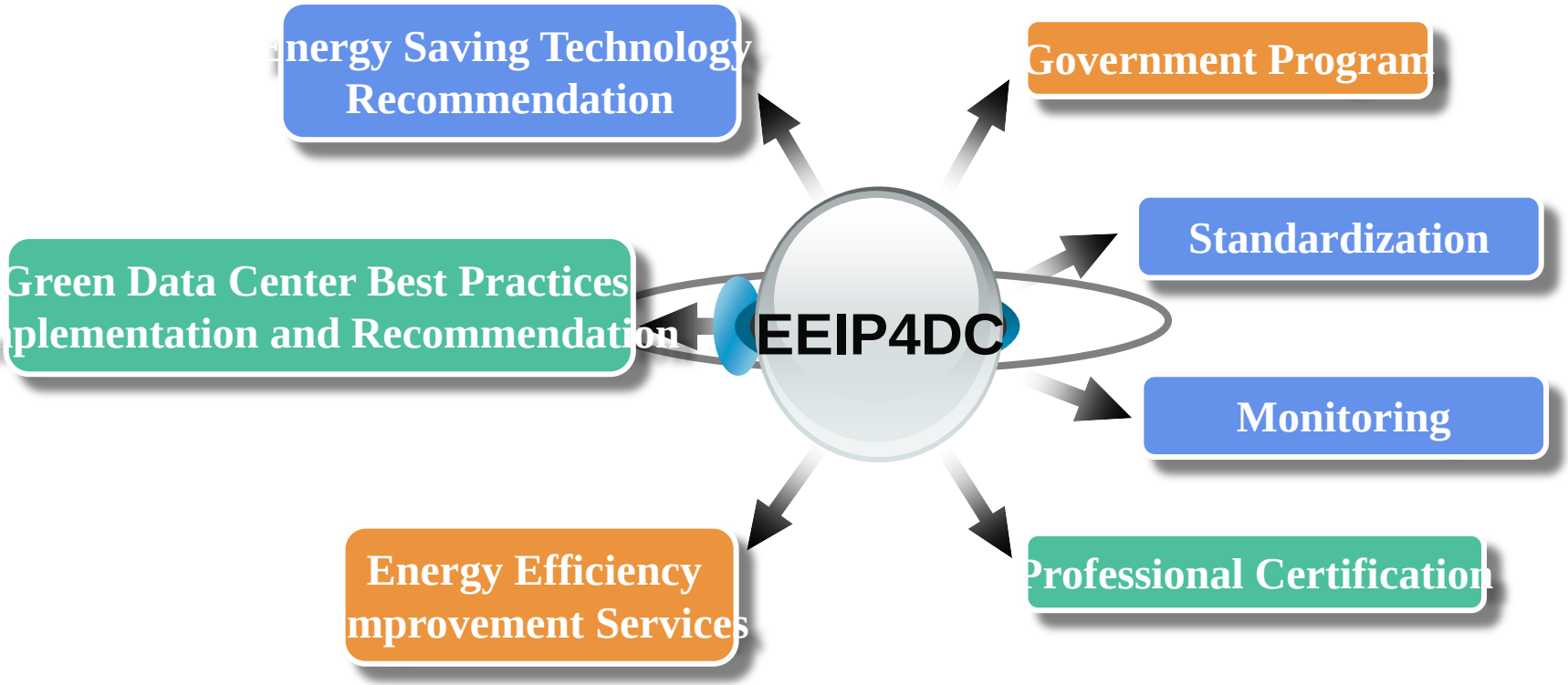
Energy Efficiency Improvement Program for Data Center (EEIP4DC)

- In the last 2 years, the huge energy consumption of data centers draws more and more attention in China.



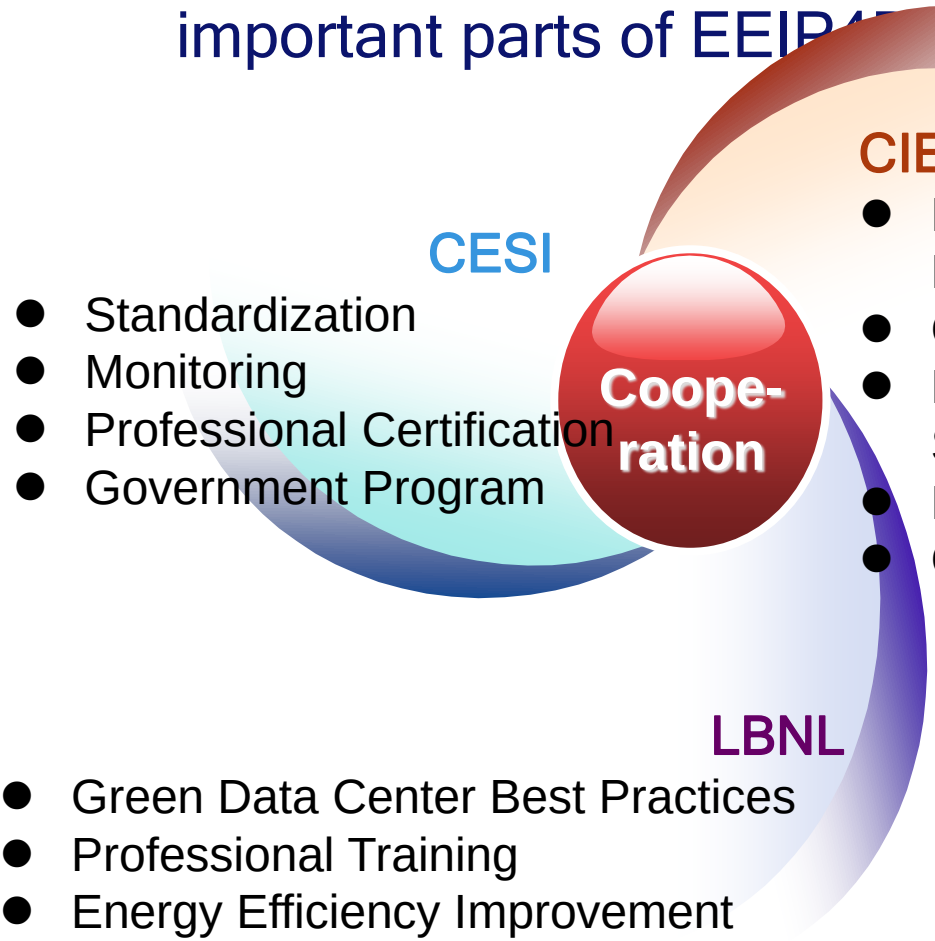
Energy Efficiency Improvement Program for Data Center (EEIP4DC)

- EEIP4DC is a half government-backed program helping data centers in China protect the environment through superior energy efficiency.



Energy Efficiency Improvement Program for Data Center (EEIP4DC)

- China-U.S. cooperation is one of the most important parts of EEIP4



Outline

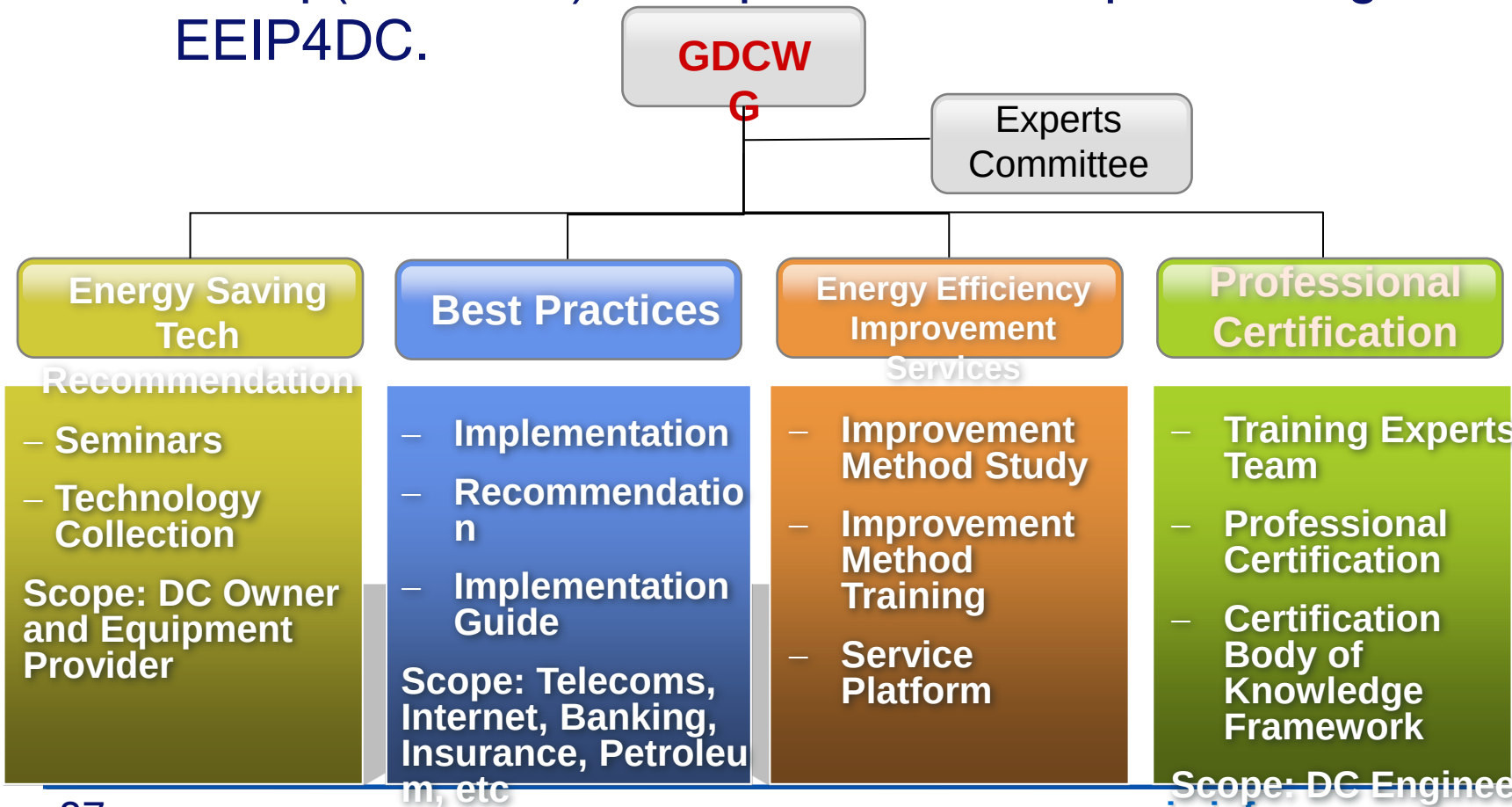
1 Introduction to CIE

2 Energy Efficiency Improvement Program for Data Center (EEIP4DC)

3 CIE's Plan on EEIP4DC

CIE's Plan on EEIP4DC

- In CIE, Green Data Center Working Group(GDCWG) is responsible for implementing EEIP4DC.



CIE's Plan on EEIP4DC

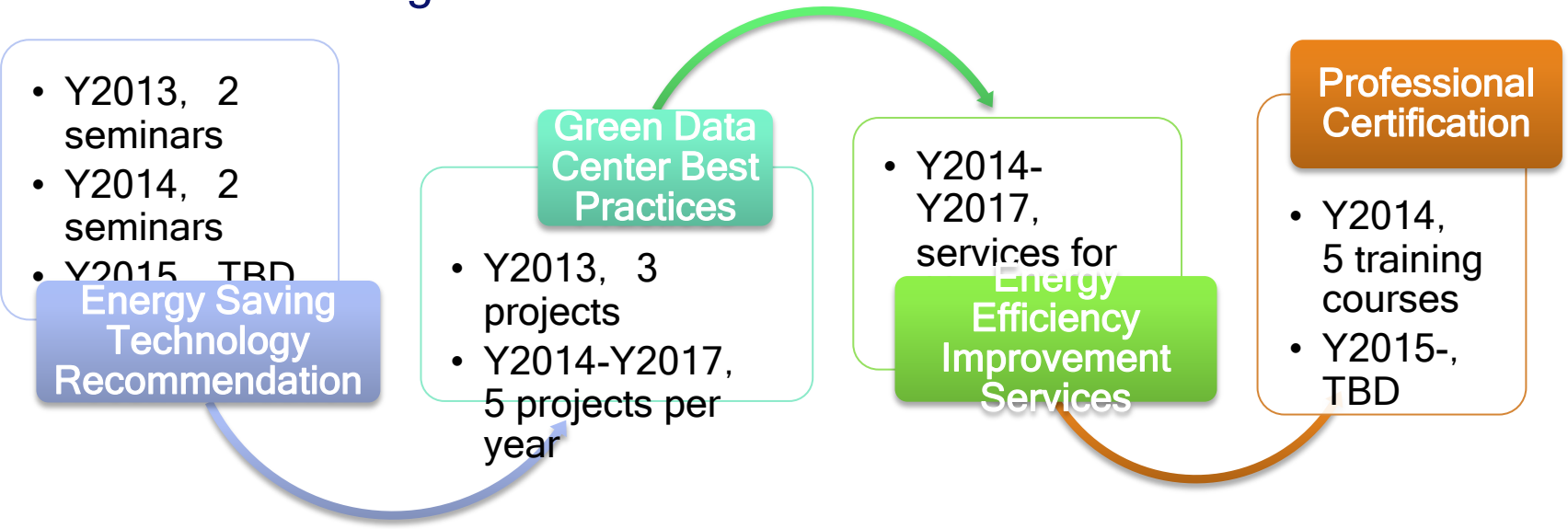
- What we have done

Experts Committee	Cooperation	Recommendation
–3 teams: policy, market planning, and technology –100 experts	–Initially planned the green data center best practices cooperated with LBNL	–Solicited 50 energy saving technology solutions for data center

CIE's Plan on EEIP4DC

CIE's plan of cooperation

- Cooperation with ECP (US-China Energy Cooperation Program) and Lawrence Berkeley National Lab in the following fields:



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Thank you for your attention!

If you have any questions, pls feel free to contact us at zongfang@cie-info.org.cn