U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

工业能源效率:
政策，项目和机遇
Industrial Energy Efficiency:
Policy, Initiatives, & Opportunities

能源效率论坛
中国，北京
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Energy Efficiency Forum
Beijing, China
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邝杰明 James Quinn
工业技术项目Industrial Technologies Program
能源效率和可再生能源
Energy Efficiency and Renewable Energy
美国能源部U.S. Department of Energy

工业能源消耗预测
Projected Industrial Energy Use

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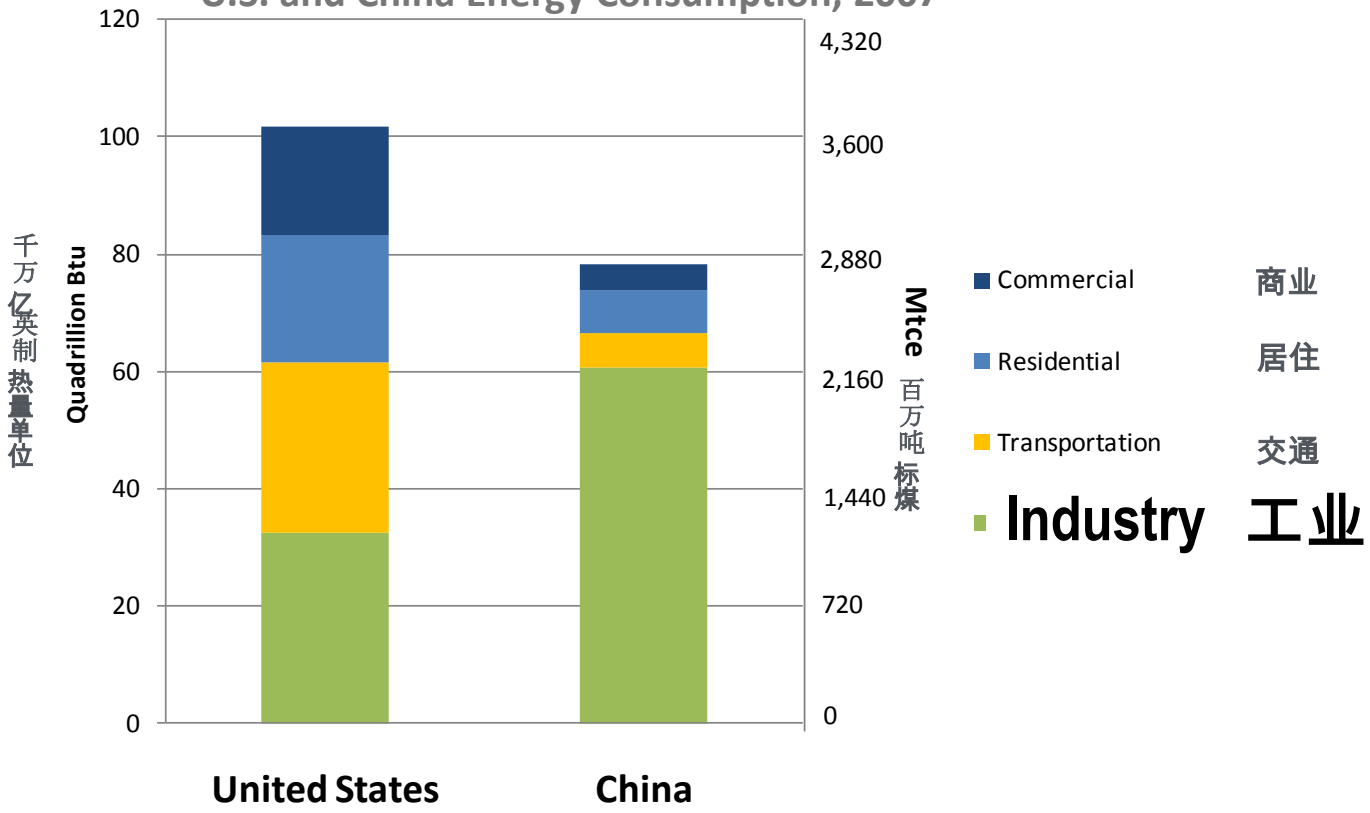
在中国和美国，工业部门的能源消耗超过其他部门的能源消耗
In China and the United States, industry consumes more energy than any other sector

美国和中国的能源消耗，2007年

U.S. and China Energy Consumption, 2007



Notes: Mtce（百万吨标煤）>> EJ（艾焦）= 0.0293; EJ（艾焦）>> Quads（千万亿英制热量单位）= 0.9478.
来源：中国国家统计局；美国能源信息署，2009年度能源展望。
Source: China National Bureau of Statistics; U.S. Energy Information Administration, *Annual Energy Outlook 2009.*

能源效率的作用
Role of Energy Efficiency

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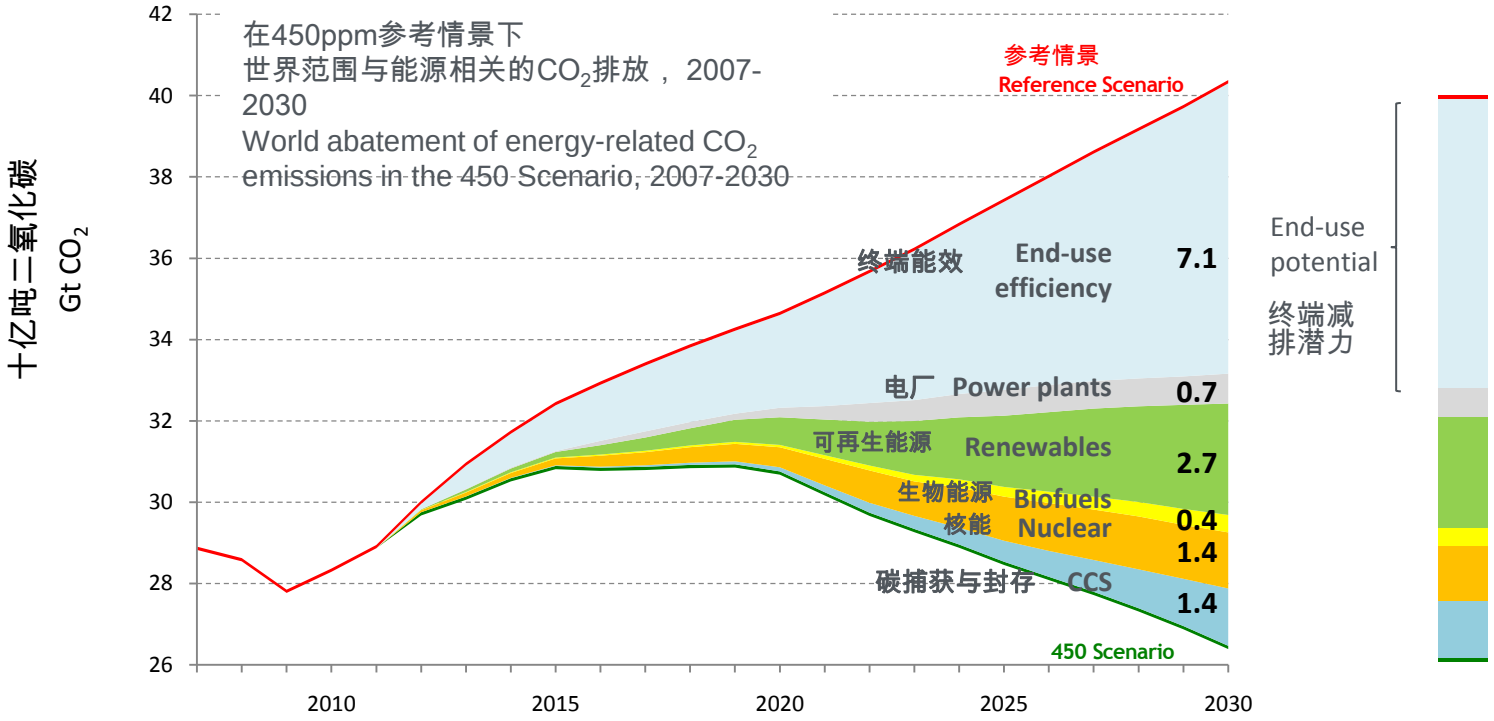
终端能效是实现温室气体减排潜力的关键因素
End-use efficiency is a key component of GHG emissions abatement potential



注：Gt 即十亿吨二氧化碳。“终端能效”包括：建筑、电器、照明、交通和工业。
Notes: Gt refers to gigatons of carbon dioxide.
“End-use efficiency” includes Buildings, Appliances, Lighting, Transportation, and Industry.
来源： OECD/IEA 2009， 2009世界能源展望。
Source: OECD/IEA 2009, *World Energy Outlook 2009*.

工业能效政策是关键
Industrial Efficiency Policy Is Critical

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美国政府通过以下政策支持工业能源效率：
U.S. government supports industrial energy efficiency through:

- 能源科学的基础研究
  Fundamental research in energy sciences
- 先进技术开发
  Advanced technology development
- 自愿协议项目配置最佳实践经验和创新技术
  Voluntary programs to deploy best practices and innovative technologies
- 工业数据收集
  Industrial data collection
- 能力建设
  Capacity building
- 贸易、市场和资金支持
  Trade, market, and financial support
- 与政府、企业以及国际组织建立伙伴关系
  Partnerships with government, industry, and international organizations

美国近期有关资金的法案
Recent U.S. Funding Legislation

2009美国经济复苏法案
American Recovery and Reinvestment Act of 2009

2009年，美国国会通过了刺激全美经济的法案。所有政策和措施共7870亿美元，其中约有2700亿美元来自美国政府的直接投资，包括：

In 2009, Congress passed a stimulus package to jump-start all sectors of the U.S. economy. Measures are nominally worth $787 billion with roughly $270 billion in direct government investment spending, including:

- 约170亿美元投资于提高能源效率和开发可再生能源
  About $17 billion for energy efficiency and renewable energy

- 超过2亿5千万美元投资于热电联产、信息与通讯技术和高端材料的开发
  Over $250 million for combined heat and power, information & communication technology, and advanced materials

基础研究和先进技术的开发
Basic Research and Advanced Technology Development

- **U.S. Department of Energy's Office of Science**
- **U.S. Department of Energy's Industrial Technologies Program**
  - Energy-Intensive Processes
  - Advanced Materials
  - Waste Heat Recovery
  - Nanomanufacturing
  - Sustainable Manufacturing
  - Combined Heat & Power

Pacific Northwest National Laboratory researchers developed a new binder for use in Titanium Powder Injection Molding.

- **美国能源部科技办公室**
- **美国能源部的工业技术项目**
  - 高耗能工艺
  - 高端材料
  - 余热回收
  - 纳米制造
  - 可持续生产
  - 热电联产

太平洋西北国家实验室的研究人员开发了新型粘结剂用于钛粉喷射塑型。

Industrial Technologies Program

Providing resources to help manufacturers manage their energy use and increase efficiency

- Tools
- Training
- Assessments
- Standards
- Information

工业技术项目

向制造业生产商提供丰富的资源，帮助他们管理能源消耗并提高能源效率

- 工具
- 培训
- 评估
- 标准
- 信息

能力建设
Capacity Building

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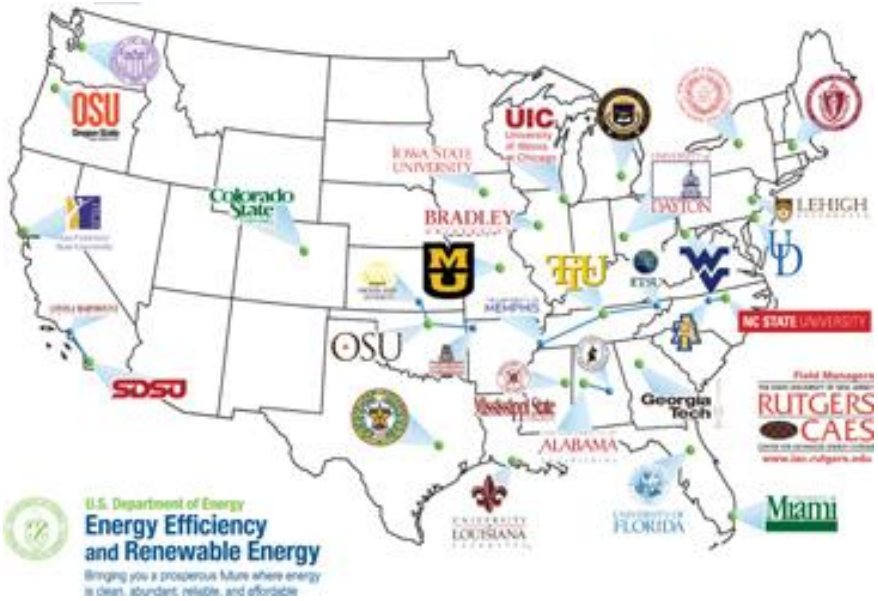
Industrial Assessment Centers (IACs)

- DOE's 26 university-based IACs train engineering students for careers in industrial energy efficiency.
- IACs serve 300 small and medium enterprises (SMEs) per year (<1 TBtu/yr) and typically identify savings worth about 8%-10% of total energy use.

工业评估中心（IACs)

- 美国能源部的26家基于大学的工业评估中心，对工程系的学生进行培训，以培养在工业节能领域的专业人才。
- 工业评估中心每年评估300家中小型企业（这些企业的年均能耗低于1TBtu, 即3.6万吨标煤）。工业评估找到的典型节能潜力约占总能耗的8%-10%。



工业技术项目：全国倡议
Industrial Technologies Program: National Initiative

- 公司自愿承诺在10年内降低25%或更多的能源强度

  Companies take voluntary pledge to reduce energy intensity by 25% or more over 10 years
- 参与公司可获得帮助其实现目标的多种资源，包括：

  Gain access to enabling resources, including:
  - 量身定做的能源评估

    Tailored assessments
  - 软件工具

    Software tools
  - 专业培训

    Specialized training
- 可获得全国性的认可

  Receive high-level recognition

“节能从现在开始” —— 领导者项目

评估结果
Assessment Results

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- 自2006年以来，已经完成超过2600家工厂的自愿能源评估。
  Over 2,600 voluntary plant assessments have been completed since early 2006.

- 平均而言，能源评估中找到的节能机会可以帮助工厂降低其能源账单的8%。
  Identified opportunities could reduce a plant's energy bill by ~8%, on average.

- 找到的年均节省能源成本的潜力为13亿美元（88.8亿人民币）；年均节能潜力为180万亿Btu（即650万吨标煤）；年均减排潜力为1120万吨二氧化碳。
  Annual identified savings: $1.3 billion in energy costs (RMB 8.88 billion); 180 trillion Btu (6.5 million tons of coal equivalent); 11.2 million metric tons CO_2.

- 在推荐使用的节能方法中，已有三分之一被工厂使用，另外三分之一正在实施或计划的过程中。
  A third of the recommended measures have been implemented and another third are in progress or planned.

- 从2007年开始，美国能源部认可了377家工厂，他们的节能超过其总能耗的7.5%；同时，213家节能超过其总能耗的15%的工厂也得到了认可。
  Since 2007, DOE has recognized 377 plants that have cut their energy use by over 7.5% and 213 plants by over 15%.

工业能源之星
Energy Star for Industry

作为自愿性的项目，工业能源之星帮助工业提高他们的环境和能源效绩。

This voluntary program helps organizations improve their environmental and energy performance.

- 能源管理资源/指南
  Energy management resources/guidance
- 分工业的工具，小组会议，以及9个工业部门的能效指南
  Industry-specific tools, focus meetings, and guides for 9 industries
- 对于名列前茅的工厂（能效表现处于其工业部门的前25%）给予认可。
  Recognition for firms in top quartile of each sector

跨机构的合作项目
Inter-Agency Initiative

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

E3: 经济、能源和环境
E3: Economy, Energy, and Environment

- **向当地的制造商、水电煤气公司以及商业机构提供培训、评估和技术支持，有助于：**
  Brings together local manufacturers, utilities, and business communities to provide training, assessments, and implementation support. Benefits include:
  - 提供绿色的工作机会 Create green jobs
  - 刺激当地经济 Stimulate the local economy
  - 可持续发展 Foster sustainability

- **自去年，节能试点项目（美国圣安东尼奥市和哥伦布市）正在投入资金和资源。**
  Pilots (begun last year) are finding funding and opportunities for energy-saving projects.

工业数据收集
Industrial Data Collection

收集工业能耗和排放的数据
U.S. agencies collect data on industrial energy use and emissions

- **美国能源部能源信息署**

  DOE Energy Information Administration

  收集、分析并传播独立的、公正的能源信息，以促进良好的能源政策决策。

  Collects, analyzes, and disseminates independent and impartial energy information to promote sound energy decisions.

- **美国环保署**

  U.S. Environmental Protection Agency

  从美国工厂（年排放量超过2.5万吨的工厂）中收集温室气体排放数据。正在考虑扩大到其他部门。

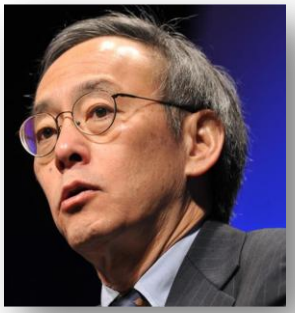
  Collects data on greenhouse gas (GHG) emissions from U.S. facilities that emit ≥25,000 metric tons per year. Extension to additional facilities now under consideration.

支持国际工业能源效率
Support for International Industrial Energy Efficiency

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

组织/机构 Organization/Agency	能力建设 Capacity Building	贸易和市场开发 Trade & Market Dev.	财政支持 Financial Support
美国国务院 U.S. State Department	■		
美国国际开发署 USAID	■		
美国环保署 U.S. EPA	■		
美国能源部 U.S. Department of Energy	■		
美国商务部 U.S. Department of Commerce	■	■	
美国贸易发展局 USTDA	■	■	■
世界银行 World Bank	■		■
亚洲开发银行 Asian Development Bank	■		■
国际金融公司 International Finance Corporation			■

工业技术项目的战略伙伴关系
ITP' Strategic Partnerships



中美关系是成功的关键

"中美都是大国，清洁能源是我们这个时代最巨大的机会之一。通过中美合作，我们可获得更多的成功。"

能源部长- 朱棣文（Steven Chu），2009年七月

U.S.-China relations are key to success

"The U.S. and China are two great nations, and clean energy is one of the great opportunities of our time…working together, we can accomplish more than acting alone."
-- U.S. Energy Secretary Steven Chu (July 2009)

关键的合作机会
Key Partnership Opportunities

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

国际能源效率合作论坛 (IPEEC)
International Partnership for Energy Efficiency Cooperation (IPEEC)
论坛进一步促进能源效率改进的行动
Forum to facilitate actions that yield energy efficiency improvements

能源管理行动网络（EMAK）Energy Management Action Network (EMAK)
促进国际能源管理政策　Promotion of energy management policies worldwide

能源管理标准—ISO50001 Energy Management Standards – ISO 50001
到2011年，62个国家在巴西、中国、美国、英国的领导下来创建新的能源标准
62 countries working under U.S., Brazil, China, U.K. leadership to create new standard by 2011

亚洲清洁发展和气候合作组织 (APP)
Asia-Pacific Partnership on Clean Development and Climate (APP)
组建有关铝、水泥、钢铁、建筑、清洁化石燃料、采煤、发电、输电、可持续能源和分布式发电的任务工作组，强化节能减排。
Task forces on aluminum, cement, and steel as well as buildings, clean fossil, coal mining, power gen and transmission, renewable energy, and distributed generation

关于气候和能源的经济大国论坛
Major Economies Forum on Climate and Energy
国际合作的技术行动方案
Technology Action Plans for global partnerships

中美合作
U.S.-China Working Together

- **2009年中美清洁能源倡议**
  U.S.-China Clean Energy Initiatives (2009):

  - 能源效率行动计划致力于提高建筑、工业设施和终端电器的能源效率；建立标杆和对标体系，进行现场能源审计和培训。
    Energy Efficiency Action Plan commits to improving efficiency of buildings, industrial facilities, and consumer appliances; develops benchmarks, on-site energy audits, and training programs.

  - 清洁能源研究中心是中美联合的研究与信息交换中心。
    Clean Energy Research Center (CERC) is a joint research & information clearinghouse.

  - 能源合作项目利用私有领域的资源在中国进行清洁能源项目的示范。
    Energy Cooperation Program leverages private-sector resources to demonstrate clean energy projects in China.

建设性的合作
Constructive Collaboration

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合作机会 Opportunities:

- 能源管理 Energy Management
- 工具和培训 Tools & Training
- 能力建设 Capacity Building
- 评估标准 Assessment Protocols
- 信息产品 Information Products

Thank You

谢谢！