China’s Grid Company Energy Efficiency Obligation

Worldwide Review of Energy Efficiency Obligation Schemes

Presented by Max Dupuy
Regulatory Assistance Project (RAP)

10th of December 2015
China Energy Consumption

Source: Our Finite World; based on BP Annual Statistical Yearbook
Energy Intensity by Country

Source: US EIA
Energy Intensity in China 1980 to 2013

Source: China Energy Statistical Yearbook 2014
What is Driving Energy Efficiency in China?

- Portfolio of EE policies – developing since the 1980s
- Industrial, buildings, appliances, transportation
- Headline energy intensity targets since 2004
- Air Quality Action Plan of 2013
- Coal consumption caps
- Economic restructuring
- Energy security
- “China needs an energy revolution” – President Xi, June 2014
- New round of power sector reform (launched in March 2015)
Industrial Energy Efficiency Policy in China

• Government involvement in energy conservation from the 1980s

• Industrial EE policy portfolio:
  – energy intensity targets
  – conservation agreements/targets for all large and medium enterprises
  – programs for “retirement” of inefficient industrial capacity
  – differential electricity pricing
  – energy efficiency obligation (EEO) on grid companies
  – and more...
Gridco EE Obligation

• In 2010, NDRC established EEO for grid companies
• Grid companies must achieve:
  — energy savings equal to 0.3% of previous year’s sales volumes; and
  — demand savings of at least 0.3 percent of previous year’s maximum load
• Regulation also requires the installation of:
  — load monitoring equipment on 70% of peak load;
  — load control equipment on 10% percent of peak load
Gridco EE Obligation

• Fuel Coverage:
  – electricity
  – energy savings from other fuel types may be converted to kWh equivalent

• Sector Coverage:
  – end-use energy savings from all economic sectors and from any facility
  – reduction of losses in transmission and distribution networks can also be used to meet part of the targets
Eligible Energy Savings Activities for Grid Companies Under EEO

Eligible energy savings activities for grid companies:

• directly carry out grid system upgrades and operational management improvements
• establish affiliated energy services companies (ESCOs)
• directly implement energy efficiency projects
• promote energy efficiency to end-users
• purchase energy savings by means of business transactions/trading (not to exceed 40% of total eligible energy savings)
Funding DSM under China’s EEO

Costs can be funded from several sources:

• as part of “transmission and distribution price” charged by gridco

• additional DSM surcharge collected by gridco through electricity tariffs

• revenues from “differential electricity prices”

• provincial and national DSM “special funds” established for DSM

• commercial activities of gridco-affiliated ESCOs.
EEO Results

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
March 2015: New Round of Power Sector Reform

- State Council and Communist Party Central Committee statement on policy reform. Includes five principles:
  - The need for reliability;
  - Increased use of market mechanisms;
  - Protection of residential and agricultural consumers;
  - Energy savings, emissions reductions, and increased use of renewable and distributed generation; and
  - Better governance and regulation, including better planning and strengthened regulatory capacity
March 2015: New Round of Power Sector Reform

- Grid company reform: Revenue-caps regulation piloted in Shenzhen to be extended nationally
- Direct access: Extension of provincial pilots that allow large users to bypass the grid companies and negotiate prices directly with generators
  - Buyers and sellers screened for efficiency and environmental performance
- Demand-side management: Increased investment in DSM (demand response and end-use energy efficiency)
- Improved generator dispatch: Increased efficiency, lower costs, and reduced curtailment of renewables
- Renewables integration: Improved dispatch, new mechanisms for ancillary services, and improved inter-provincial, cross-regional power trading
- Distributed generation: Increased investment in DG
  - Removal of market access barriers
- Power sector planning: Improved planning
  - Also, "power planning should take full account of environmental carrying capacity"
Gridco Incentives Regarding EE

- EE reduces grid company sales and revenue
- Gov’t evaluates SOEs primarily on revenue and profit metrics
- New “power sector reform” initiative may change gridco incentives:
  - Revenue regulation
  - Reward/penalty incentive mechanism for DSM performance
Concluding Observations

• EEO relatively new
• Significant savings
• Areas for improvement:
  – Reduce reliance on gridco internal savings
  – Improve transparency and EM&V
  – Improve gridco incentives
  – Integrate EE with power sector planning:
    EE as a power sector resource
About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power sector. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

Max Dupuy
mdupuy@raponline.org