Dear readers, as we did in previous years, we hope our exquisite cover illustration can better your understanding of CSG’s development. This year’s Report cover is designed under the philosophy of “CSG Dream, To-Top Road”. The cover delivers three folds of meanings:

An abstract three phase AC concept responds to CSG Logo. CSG is on the road to top, and it requires a dynamic, sustainable approach.

Scenes of power generation, power transmission and power consumption. The three scenes refer to a harmonious power eco-system consisting of power source, power grid and clients.

The letter E refers to CSG’s mission of establishing itself as a leading international power company with focus on Excellence, Efficiency, and Environment.
In recent years, air pollution has caused constant smoggy weather across much of China, raising great public concerns in related to environmental issues. The CPC Central Committee has called for stronger initiatives to promote green, circular and low-carbon development, and strongly opposes sacrificing the environment in exchange for short-term economic growth. You might ask “What has CSG done in promoting green development?”

Transformation of the electricity development model is significant as it drives the company to adopt a smart, efficient, reliable and green grid development plan and process. We are leveraging CSG’s platform role for optimized resources deployment and its instructive role to upstream and downstream industries to make every effort at reducing the consumption of fossil fuels and making every watt of power generated greener. To realize this goal, CSG has continued to further the “Green Actions” program. In 2013, the fossil fuel consumption for generation of electricity sold by CSG dropped to 215g standard coal/kWh, which equals a CO2 emission level of 572g, or about 18% lower than the national level. This is the result of the concerted efforts by various stakeholders. On the power supply side, CSG has endeavored to realize energy-efficient power generation and dispatch, and to optimize hydropower in Yunnan. These efforts have avoided a route of 19 TWh, and enabled 131.4 TWh of power transmission from the West to the East, setting a historical record. On the other hand, CSG has been actively promoting the development of clean energy, especially renewable energy including hydropower, wind power and solar power. By the end of 2013, the installed capacity from non-fossil fuels accounted for 47% of the grid’s total, the generated power accounted for 38% of the grid’s total, resulting in a 11% and 22% higher total than national averages respectively. On the power grid side, CSG spared no effort in the development of planning, management, technology development and operational growth programs and has successfully cut the overall line loss to 6.02% (according to the parent company’s statistical scope), reaching the same level with advanced countries such as the US and France. On the customer side, we have strived to provide more energy conservation services and helped them to save a total of 930 GWh in 2013. In the future, CSG shall continue to implement the energy conservation and emission reduction strategies now in motion, we will actively support the low-carbon pilot province/city projects and provide a green force for a beautiful China.

In the current campaign, CSG has firmly established service awareness and the understanding of CSG as a service provider and a transparent organization, and is working to ensure that all its activities served to ensure the safe and stable operation of the grid, appreciation of stake assets, decrease of customer’s ouages and improved customers’ satisfaction. In 2013, the average grid-wide outage time dropped 8.8% than the previous year, and, in particular, outages in the western region dropped by 56%. Free CSG power supply bureaus were awarded national-level 5-star companies in power supply stability, accounting for half of all awards ed up CSG companies. The results were a result of the an independent, third-party customer satisfaction survey focused on CSG. They revealed an overall rating of was 81 points, 4 points higher than the year before. CSG ranked top in the customer satisfaction surveys in the Guangdong, Guangxi, Yunnan, Guizhou, Guangzhou and Shenzhen areas.

At the same time (in this year), we have carried out 28 rectification projects and 7 special campaigns with a principal focus of “serving for the underprivileged, ensuring power for affordable housing schemes; supporting the rural areas’ development towards a well-off society and in supporting business development”. CSG staff visited 1.13 million people in urban and rural areas, all of whom live on governmental subsidies, and the company carried out voluntary power safety checks for 1.11 million customers in these categories. Additionally we have arranged one customer service manager for each of the 702 affordable housing communities in the five provinces and regions in CSG service area. Among the new communities scheduled to have power access in 2015, CSG accomplished installation of standard power supply facilities in advance, for 450 communities, giving access to power inside 31 days on average. We made an investment of RMB 20.5 billion to renovate and upgrade rural grids in 2013, and have improved power quality for 840 thousand rural clients. CSG has been actively supporting local development plans and delivering high quality power supply to key projects. We established the “Quick Power Access” service brand and have appropriate delivered power supplies to a number of key clients with power demands above 100 kVA 32 days in advance of the installation date promised. We have also conducted energy conservation diagnoses for 1,025 businesses. Moreover, we have launched education campaigns to establish closer relationships with the public and strengthen our brand image.

CSG’s performance in corporate social responsibility is already at the top-level among all SOEs. What will CSG do to further efforts in this area in the future?

Fulfilling corporate social responsibilities is a complex strategic process, and a systematic project and a project of this scope asks for everyone’s participation. In the past few years, CSG has systematically implemented responsible management practices, responsible business practice, installed responsibility integration processes, encouraged responsibility dissemination and follow-up research in responsibility sharing and has developed a strategy-driven social responsibility management model. CSG’s “Strategic-driven social responsibility management” efforts were documented as a business case and recognized as one of the 10 best social responsibility practices among central enterprises. (question: By whom?) For the next steps, we will continue to comply with the “Implementation guidelines for the harmonious development strategy of central enterprises in the 12th 5-year plan” . We shall bring CSG’s social responsibility practices in-line with international standards and guidelines from the perspective of both the stakeholders’ interests and the company’s business features. CSG’s responsibilities consist of six parts: Core responsibility: political responsibility; basic responsibility: historical responsibility; special responsibility and common responsibility. To accomplish these goals we shall earnestly work to raise the quality of our work around them. We have also established a social responsibility implementation mechanism to impart specific requirements to every level, every profession, every post in CSG so that everyone may be involved in the practice of social responsibility and in building our brand image. “A myriad of twinkling lights symbolizes the great rapport of CSG” and in our society.
Guide to Reading This Report

This report consists of the Introductory Chapter, the CSR report and the Summary. The Introductory Chapter is composed of the feature report on social responsibility and an update on implementation of the Mid-to-Long-Term Development Strategy; the CSR report systematically discloses CSG’s practice of corporate social responsibility programs in the year 2013 including power supply, environmental protection, economic performance and social harmony; the Summary gives a detailed account of the company’s sources of responsibility, responsibility management and outlook for 2014.

From Left to Right

LIAO Jianhua Vice President and Board Chairman of the Guangdong Power Grid
YE Xiang Vice President
WANG Lianggen Vice President
QI Dacai Board Director/ Vice President
XIAO Rong Board Director/ Vice President
ZHANG Jun Board Director/ Vice President
ZHOU Jingui Board Director/ Vice President
HUANG Anhui Board Director/ Vice President
SUN Xiaoyi Head of Discipline and Inspection
LU Nanfeng Chief Accountant

Feature Report: Responsibility Implementation of Mid-to-Long-Term Development Strategies

Power Supply Responsibilities
To ensure a safe, stable, reliable and quality power supply for the sustainable development of the economic society is CSG’s core responsibility. To maintain public safety and public interests in view when confronting serious and/or unexpected natural disasters is CSG’s principal political responsibility.

CSG is committed to universal power service. Our special responsibility is to facilitate coordinated development between urban and the rural areas.

To cooperate with stakeholders ensuring a win-win situation and is the shared responsibility of CSG and all sectors of the community.

Environmental Protection Responsibilities
CSG’s responsibilities are to build a green power grid, to facilitate energy conservation and enhance emission reductions and to facilitate a coordinated and sustainable development of enterprise, community and environment.

Social Harmony Responsibilities
CSG is committed to universal power service. Our special responsibility is to facilitate coordinated development between urban and the rural areas.

CSG’s fundamental economic responsibilities are to strictly carry out the national policy on tariffs, pay special attention to management, ensure security, appreciation in terms of value, cost reduction and efficiency improvements of State-Owned assets, and to prioritize social benefits.

Economic Performance Responsibilities
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Origin of Responsibility/ Responsibility
About Us/About the Report/ Party Endorsement
2013 Key Performance Index Table
United National Global Compact Performance/ GRI Index/Report Glossary
Feedback Form/Innovative Report Compilation
Report Rating/The Third Party Endorsement
2013 Key Performance Index Table
2013 Key Performance Index Table
We have focused on reducing customer outages and raising their level of overall satisfaction. In response to issues of most concern, we have designed four power services to solve the electricity issues of most concern to the public:

- **Electricity stability**: CSG ensures timely service to these communities, providing one-stop and point-to-point services to affordable housing communities. CSG has been providing one-stop and point-to-point services ahead of schedule. Waiting time has been reduced with waiting time reduced by 33 days, on average, 32 times per year. CSG ensures timely service to these communities, providing one-stop and point-to-point services to affordable housing communities. CSG has been providing one-stop and point-to-point services ahead of schedule. Waiting time has been reduced with waiting time reduced by 33 days, on average, 32 times per year.

- **Electricity safety**: CSG has been strengthening rural grid renovation to improve security checks to resolve any potential threats to them and their power plant. The company has invested a cumulative sum of RMB 780 million to upgrade 11,308 distribution transformers to prevent the overload and/or short-circuit of the 10 kV line. CSG has adopted the model of supplying power in rural areas to improve power supply capability and quality. Since 2012, in order to meet rural residents' increasing demand for power, CSG has been implementing energy conservation and special visits, collecting feedback and suggestions. The company has completed renovation of service centers, maintenance emergency repair and maintenance management improvement projects and improved special repair projects for the economic development of the area.

- **Electricity consumption**: China's development needs larger electricity consumption. CSG has been focusing on electricity usage and usage trends. By making the four service measures the focus of solving the electricity issues of most concern to the public, CSG's service received positive recognition from the people and has been ranked the top utility service provider in public opinion surveys done by local governments.

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**Four Power Services**

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Feature report on responsibility—popularizing power services in CSG’s vast rural areas

CSG has been recently implementing the Central Government’s policy and the CSG undertaking to development strategy, and has developed “Rural Poverty Power Development” according to the principles of conditional development of urban and rural power grids and regional management. The core goal is to ensure the power delivery and provide a full range of professional services and local power bases to improve the level of rural grids, reduce support to rural grid development and reforms, and to continue to improve the management and service level in rural areas.

Strategic development of rural power grid reform

CSG has taken advantage of the construction of electric power transmission and distribution industry and has developed the comprehensive and systematic reforms in the power networks of the rural areas, making more and more rural areas enjoying high-quality and safe supply of power, and improving the power quality of the rural areas. In the year of 2011, the power delivery to the rural areas was 98.99%, exceeding the national standard for the rural power delivery by 1.65 percentage points.

Driving force and impact of rural power grid reform

CSG is dedicated to building a whole rural areas and also takes a considerable technical measure including rural grid management, special projects to upgrade voltage in remote areas and remote projects to improve rural electricity quality. As a result, the power supply reliability and the passing rate of the overall voltage in rural areas are significantly improved.

Table 1: Voltage level of rural areas

<table>
<thead>
<tr>
<th>Year</th>
<th>Overall voltage passing rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>94.17%</td>
</tr>
<tr>
<td>2013</td>
<td>93.98%</td>
</tr>
</tbody>
</table>

Electricity brightness’s new horizon

Qualities of power in rural areas have continued to improve. Rural residents in Guangxi, for example, have acquired the technology of household lighting (from cheap kerosene to electricity) and use of electric appliances. People in rural areas can now obtain light, heat, and cooking all in one. The improvement of economy and living standards in the countryside is expected to be evident through the following facts:

1. The realization of the fact that power has altered the living standards of people in the countryside. Power supplies and distribution networks have been taken over by the municipal power supply bureaus and managed directly. As a result, an integrated management structure combining general management departments with unified management system; municipal power supply bureaus have taken the county power bureaus in their administrative areas as their subordinate organizations and manage them directly. As a result, an integrated management structure combining general management departments with unified management system; municipal power supply bureaus have taken the county power bureaus in their administrative areas as their subordinate organizations and manage them directly.

2. CSG departments at all levels have been diligently carrying out their management responsibilities and integrating rural grid services into the area’s overall administration organization. A “one company, one customer service” management style has been actively adopted. For some years, CSG’ s rural power supply companies have been actively working for a rural grid reform.

3. CSG’s provincial companies have actively supported the power supply companies in the Shaanxi, Gansu, Qinghai, Yunnan, and Sichuan provinces to carry out power grid improvement projects and reform programs.

4. In the year of 2011, the rural power supply companies have completed a new rural grid project which is safe, reliable, energy saving, and environmentally friendly, and increased the power delivery to the rural areas by 1.65 percentage points.

5. The power delivery to the rural areas has been 98.99%, exceeding the national standard for the rural power delivery by 1.65 percentage points. The power delivery reliability and the passing rate of the overall voltage in rural areas have significantly improved.

6. The comprehensive and systematic reforms in the power networks of the rural areas have been carried out, and the rural grids have been improved to the level of urban areas. The power supply reliability and the passing rate of the overall voltage in rural areas have significantly improved.

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Implementation of CSG Mid-to-Long-Term Development Strategy

CSG’s To-the-Top campaign has come at the most critical and challenging period of our time. We have furthered the implementation of strategy and unified management; strengthened top-level structures; constructed an advanced management system and moved toward key steps for the actualization of CSG strategies with the goal of becoming an international leading power grid company that excels in service, management and corporate image.

Deepening the unified management structure

CSG has systematically summarized the experiences of the early phase of the “To-the-Top” campaign, deepened unified management, focused on establishing a business management system with CSG characteristics and pushed corporate management toward a lean model.

Established a unified institution system at CSG headquarters. 14 panel discussions were held on institutional centralization with 2,362 suggestions dealt with. 261 problems in 4 institutional coordination addressed and 237 institutional items resolved. CSG has also regularly examined and clarified institutions to identify effective ones and simplify redundant ones. In 2013, CSG abolished 6,192 institutions representing a 40% reduction from the year before, further strengthening system integrity as well as coordination between institutions.

Established an all-round CSG business management network. CSG has systematically identified business/management related factors, built four structures i.e. framework, structural, delivery structure and support structure and revised eight factors such as business frameworks, organizational structures, business processes, management mechanisms and work standards.

CSG has issued the integrated corporate management framework, clarified and unified the guidelines and future directions, categorized and standardized the company’s core businesses including 75 level-one businesses, 237 level-two businesses and 636 business items. On such a basis, CSG has optimized, integrated and implemented the overall design for corporate business under the guidelines of the three operational principles; mapped out a business blueprint for five business models and laid the foundation for fully realizing a normalized and standardized CSG business pattern.

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CSG’s management, currently, may be said to lag behind international counterparts. Therefore, CSG has been diligently incorporating management improvement actions with strategy implementation in order to leverage the “To-the-Top” campaign to optimize operations.

Pushing forward management improvements

CSG has successfully completed all stages and areas of the management improvement scheme, realized the transition goals on schedule and met the requirements of the management improvement scheme of the SASAC.

CSG has supported the Guangzhou Power Supply Bureau and the Shenzhen Power Supply Bureau’s endeavor to catch up with world-leading power companies, identifying key areas for improvement.

CSG has continued to do comparative research related to performance assessment. CSG has selected 13 key internationally advanced power companies as benchmark counterparts and carried out in-depth research related to their characteristics and on how these characteristics affect the companies performance and image.

CSG has won 18 awards in the power sector for management innovation, including 5 top awards. Among them, the “Framework design and application of unified management for a conglomerate”, an award which recognizes one of the top 10 power sector management innovation achievements in 2013 by China’s Electricity Council.

Strengthening the management information process

To realize the goal of integrating informationization with corporate strategy and new advanced management systems, CSG has optimized the information management business model paying greater attention to business linkages, horizontal coordination and grass-roots needs to effectively enhance the quality of information management and related services. In 2013, CSG has won an A-level award in the area of informationization quality assessment for central enterprises, indicating that CSG has stepped into the first tier among central enterprises in this field.

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Every watt counts

Whenever you want electricity, just insert the plug into the socket or turn on the switch and the power is on. It seems so simple and easy. But, do you know that transmitting every watt of electricity safely is actually not easy? Electricity is different from other tangible objects. It is generated in a power plant and transmitted to thousands of homes through power cables. The generation, transmission, dispatching and sale of power all happen instantaneously and simultaneously. Electricity is difficult to be stored in large amounts and is irreplaceable. Therefore the responsibility exists at every second to ensure a safe, stable, reliable and quality power supply.

Comparisons of per capita power consumption in China and selected major developed countries

In 2013, China’s power consumption per capita was 3,911 kWh, equal to that of the US in 1961, the UK in 1961, Japan in 1975 and South Korea in 1966, or 78% of the internationally accepted amount of power consumption per capita when a country is fully industrialized. (Source of information: China Electricity Council)

CSG has always considered grid safety and stability as the company’s lifeline and followed the service principle of “customer-first, realizing a win-win in terms of harmony”. In practice, CSG has continued to minimize customers’ outage time, provide quality services, enhance customer experience and ensure a safe, stable, reliable and high quality power supply for sustainable economic and social development.

Ensuring power availability and quality for all customers

- Safe power generation
- Reliable supply
- Contingency management
- Grid construction

CSG members carefully checking insulators before laying the UHV transmission line

Washing power equipment in the air

Ensuring power supply to the flower market during the Spring Festival

Climbing over snow and ice to observe the weather conditions
CSG has always considered grid safety and stability as its lifeline. While in 2013 China, as a whole, saw an increase in major production safety incidents, CSG had no equipment or power safety incidents, no major security incidents that caused widespread negative impact on society or the company, and no serious operation errors; additionally, the total number of power safety incidents of all kinds, at all levels, dropped nearly 40% over the year before, making 2013 the safest production period in recent years.

Power grid operates stably

CSG considers the prevention and control of grid operation risks as the core safety task and has been strengthening real-time control of operational risks to realize risk anticipation, and has implemented thorough measures and correct contingency response plans to optimize performance. Though under high safety and risk prevention pressures and real-time control of operational risks to realize risk anticipation, and has implemented thorough measures and correct measures to prevent and control grid operation risks as the core safety task and has been strengthening nearly 40% over the year before, making 2013 the safest production period in recent years.

CSG has successfully handled various complex malfunctions and safeguarded the power grid’s operation.

- Improving the headquarters- provincial-level two-tier deployment and risk precaution consultation mechanism in-place; deepening the rolling operation linkage by season, month, week and day; closely monitoring power grid risks caused by natural disasters, outage and equipment defects.

- Adhering to the three “Don’ts” in everyday risk management and control, i.e., don’t arrange operations that damages grid stability, don’t arrange operations that might cause general and/or above general risk of power safety incidents, and don’t arrange operations that might result in customer outages with serious negative impacts.

- Identification of ying 39 key prevention and control tasks, successfully overcoming the risks brought on by the long-time near-limit operation of the West-to-East Project cables and the change of power grid characteristics before and after the operation of the two major hydropower transmission projects.

- Targeting the 10 major grid operation risks; CSG has continued to improve the closed-loop risk management and control mechanisms including timely prevention before incidents happen, effective response during incidents and continuous improvement after incidents; as a result CSG has effectively prevented and controlled grid operation risks and ensured a safe, stable and reliable power supply.

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Sound Operation of Facilities

CSG’s facility assets take up over 80% of its total assets therefore, asset management has a direct bearing on the safety and reliability of the power grid. According to the principle of assets life cycle management, CSG has controlled the risks and enhanced management of facility assets with the objective of long-term, sound operation.

Strategies for Facility Management Enhancement

Drawing upon advanced ideas in the philosophy of assets management, CSG has adopted the top level design for its assets formulated strategies of the life cycle management of said assets leading to prolonged life and sound operation of facilities. At the same time this has decreased the net rate of asset retirement and assures optimal results of risk management as well as increased efficiency and cost controls.

Making use of the assets during their life cycle

- The cost of operation of facilities is maintained at such factors as their characteristics, type of management of power grid operations and weather. Facilities operation and maintenance procedures have been formulated scientifically for better/lean management, efficient control of risks and sound operation.

Enhancement of Facilities’ Sound Operation

CSG has enhanced the management of facilities by improving their maintenance and control, including standardization of ledger information, formulation of maintenance manuals, key diagnosis and repair of all major new and old facilities. Sound operation is assured thanks to such means as monitoring, preventive trials, regular inspection, special maintenance and technological upgrading.

Optimal Results of Risk Management, Efficiency and Cost Control Programs

<table>
<thead>
<tr>
<th>Annual Plan</th>
<th>Project Construction</th>
<th>Supplies and Procurement</th>
<th>Maintenance and Repair</th>
<th>Asset Retirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating investment planning and management</td>
<td>Engineering design and construction</td>
<td>Disposal of facilities</td>
<td>Safety management of facilities</td>
<td>Management of facilities</td>
</tr>
</tbody>
</table>

Performance assessment and continuous improvement
- The operational indices of main facilities are the best ever, whose availability coefficient has been improving year-by-year.

Enhancement of Facility Maintenance

Preventive Trial & Regular Inspection
- 100% of facilities have been subject to preventive trials and regular inspection.

Technological Upgrading
- RMB16.401 billion has been put into technological upgrading in 2013, resulting in better stability and more sound operation of facilities.

Key Plan
- 100% of the key elements of the annual work plan have been carried out, composed of 103 projects items in 34 categories and 5 programs focused on specific aspects of the master plan.

New Technologies and Equipment for Facilities Inspection

Index Express

<table>
<thead>
<tr>
<th>Index</th>
<th>Accomplishments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Injuries</td>
<td>One accident</td>
</tr>
<tr>
<td>Casualty Rate in related to Personal Accidents</td>
<td>1/316 (person/1000 persons per year)</td>
</tr>
</tbody>
</table>
● **Standardization of Safe Production Management**

CSG has continually improving the Safe Production and Risk Management Systems, enhancing systems applications and consolidating the basis for safe production management. As a result, accidents and malfunctions have been reduced significantly and safe production has witnessed a stable positive trend.

**Safe Production and Risk Management**

- CSG has improved the closed-loop management model for safe production and risk management, managing and controlling various risks to the letter. In 2013, CSG effectively controlled 54 major risks and eliminated 10 serious hidden dangers, enhancing safe production.

- In 2013, the power safety incidents of Grade II level, or above, have declined greatly. There was one incident at Grade level, 80% down year-on-year; 22 incidents at Grade level, 42% down year-on-year; 81 incidents at Grade III level, or down by 35% year-on-year.

- CSG has promoted Safe Production and Risk Management Systems in the production process by organizing 28 units in the eastern and western regions to carry out “one-to-one” partner assistance campaigns, thus improving the construction and application of the system at a grassroots level. We have promoted the verification of the entire system in 79 units of CSG in prefecture/municipal-level cities, improving overall safety management and performance.

- CSG has dedicated itself to evaluating the safety management of subsidiaries and branch enterprises, and, as well, enhancing safety supervision and management from the following perspective: safety supervision, emergency and power supply management, systems management, and comprehensive management, etc.

- CSG has implemented the procedure of “making things clear” and “interviewed” accident-related subsidiaries and branch enterprises, and penalized them based on their responsibility.

### Promotion of Standard Operation

CSG has promoted standard operations across the whole organization and compiled 577 operation guidebooks related to 20 specialties, incorporating high-level trade standards, enterprise systems and requirement risk management systems with work procedure for specific posts. These guidebooks provide specific work procedures for staff, enabling them to know “what to do” and “how to do it”.

- The project monitor for the power transformation and operations team kept three separate records every day, each one monitoring distinct/different management requirements because many overlapped at the grassroots level. This complexity increased the burden on the monitor but, after the implementation of a standard operation process, the monitor only needs to keep one record.

- CSG has improved the closed-loop management model for safe production and risk management, enhancing safe production.
Power Quality Management

Customer expectations of a higher quality delivery of their power supply has posed a challenge for units working in these areas and demonstrates crews are achieving higher demand expectations for power quality. By enhancing power quality management and working mechanisms, CSG has improved both overall power quality and client satisfaction.

- **Frequency and voltage** are main indicators for power quality. In 2013, the passing rate of 50±0.2Hz frequency and 500 kV voltage for the entire grid were 100% and 99.9999% respectively, ranking top in the country.

The passing rate of 50±0.2Hz frequency

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

The passing rate of 500 kV voltage

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>99.9997%</td>
<td>99.9999%</td>
<td>99.9999%</td>
<td>99.9999%</td>
<td></td>
</tr>
</tbody>
</table>

- **Power Supply**

- **Social harmony**

- **Green Energy**

- **Economic**

Reflection on Accidents: The Alarm is Sounding!

CSG insists on a people-oriented strategy and highly values safe production but, three personnel accidents still occurred in CSG’s service area in 2013, which claimed four lives. One accident happened within the organization, causing the death of one staff member in charge of communications acceptance; the other two accidents were related to other units, causing the death of three workers.

### Personal Injuries

<table>
<thead>
<tr>
<th>Description of Accidents</th>
<th>Nature of Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the Quing Bureau of the HRY Power Transmission Company inspected and accepted the newly built ±500kV Niucai Converter Station, one member of the information team fainted and fell.</td>
<td>The accident happened due to ignorance of occupational safety practice, inadequate of operational regulations, and improper safety management.</td>
</tr>
<tr>
<td>When the Guangzhou Power Supply Bureau of the Guangdong Power Grid Corporation changed the insulating oil conductor of some ±500kV lines and carried out technological transformation of power cable poles in Jiha district, the construction unit and its subcontractor violated operation regulations, which led to two deaths by electric shock.</td>
<td>The accident happened due to both subcontractors ignorance of occupational safety practice, inadequate knowledge of operational regulations were determined to be at fault. The proprietory unit’s safety management and supervision was found to be ineffective.</td>
</tr>
<tr>
<td>When the Sunyx Power Supply Bureau of the Hainan Power Grid Corporation organized the outsourcing construction unit to repair a 10kV Nanbin line damaged by Typhoon “Haiyan”, the newly set pole fell down, causing one worker to be sliced on the head, which was listed as a general personal accident.</td>
<td></td>
</tr>
</tbody>
</table>

### Problems

CSG as the proprietor unit

- Poor execution of access to systems for by outside units
- Ineffective safety supervision of construction sites and areas needing management focus and establishment of stricter control procedures for areas where construction quality is critical
- Lack of safety awareness on the part of some staff

Relevant units

- Poor safety management; chaotic construction sites
- Inadequate education and skills training of workers on related to occupational health and safety practices
- Lack of safety awareness and training of contract workers; unqualified contract workers

### Measures

- Identification of the hidden dangers of accidents of the same type in prevent recurrence of similar accidents
- Management improvement of externally commissioned projects and strict examination and verification of potential construction contractor’s ability in safety management and construction organization; contractors who were with a bidding with the record of contract breaches ing will be un disqualified from on future bidding opportunities
- Enhanced safety supervision of construction sites; intensive training on safety regulations for on-site workers and staff in charge of the projects
- Application of Safe Production and Risk Management systems, improving risk management and heightened controls to achieve safer production
Enhanced Power Supply Reliability

Reducing the System Average Interruption Duration Index (SAIDI) is the core competency of CSG. We have tried our best to reduce the SAIDI ratios by formulating strategies scientifically designed to ensure reliable power supply and improve management to maximize reliability of power delivery.

- In 2013, CSG’s annual SAIDI in urban areas was 2.31 hours/household, decreasing by 28.04% year-to-year. In rural areas, SAIDI was 5.77 hours/household, decreasing by 27.79% year-to-year. Correspondingly, the reliability rating for service in urban areas (BS-I) was 99.9736%, while BS-I in rural areas was 99.9341%.

- According to statistics released by the National Energy Administration and China Electricity Council in June, 2013, among the 2012 National Best Power Reliability Companies, Foshan Power Supply Bureau, Guangzhou Power Supply Bureau, Zhanjiang Power Supply Bureau, Dongguan Power Supply Bureau and Jiangmen Power Supply Bureau were listed as Grade A, while Dalian Power Supply Bureau, Huizhou Power Supply Bureau and Shenzhen Power Supply Bureau, were listed as Grade B.

- In 2009, there were five companies selected nationwide, among which three were from the CSG group. In 2010, there were five companies selected nationwide, among which two were from the CSG group. In 2011, there were five companies selected nationwide, among which two were from the CSG group. In 2012, there were ten companies selected nationwide, among which five were from the CSG group.

- CSG has organized nine National Best Power Reliability Companies in the eastern region to communicate with fourteen Power Supply Bureaus in the western region. In 2013, SAIDI in the western region was 15.58 hours, decreasing by 24.71 hours year-on-year, down 61.33%, surpassing the eastern region for the first time.

- CSG has paid attention to client experience in outages. As the first enterprise to carry out management of power supply reliability for low voltage clients, too, CSG has included low voltage switches in SAIDI systems and calculations and has formulated the concept of Evaluation Regulation of Power Supply Reliability for End Users, providing a comprehensive reflecting of SAIDI for various types and categories of clients.

- CSG has focused on the demonstration zone for high power supply reliability with 93 square kilometers in four core areas (Shenzhen, Futian, Luohu and Yantian) and including the Qianhai Development Zone. The demonstration zone will gradually roll out the system to reach a city-wide scale. SAIDI in the demonstration zone has been reduced by 27.6 minutes, reaching the international advanced level. SAIDI in Futian District will reach 6.5 minutes, ranking top internationally.

Strategies for Enhancing Power Supply Reliability

After years of efforts, the power supply reliability in a number of CSG’s service areas has been close to, or reached, the international advanced level. There are major differences within the five provinces and regions in South China in terms of the mix of urban and rural areas and sectors. It is becoming more challenging to enhance power supply reliability through management and technical means. To some degree, higher levels of power supply reliability requires more investment in both management and hardware. CSG has balanced numerous restricting factors and formulated strategies for enhancing power supply reliability, with the aim of meeting the demand of local economic and social development and people’s production and lives.

- Having learned from the experience of leading international power enterprises, CSG has summarized the successful practices of its units at grassroots levels and identified 25 key measures, in six aspects, designed to enhance power supply reliability.

Further Reading

The international standard for outages excludes the following situations: outages caused by major events or power generation system failures, outages due to clients’ fault, and outages/problems resolved within five minutes.
### Comprehensive Outage Management

CSG has carried out comprehensive outage management analyses and program development, intensified statistical analysis of outages, and spotted major outage factors at the source, avoiding repeated, temporary and prolonged outages.

#### Analysis of Scheduled Outages and Outages Due to Malfunction from 2011 to 2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Scheduled outage</th>
<th>Outages due to malfunction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>4.11</td>
<td>63.58%</td>
</tr>
<tr>
<td>2012</td>
<td>3.97</td>
<td>37.80%</td>
</tr>
<tr>
<td>2013</td>
<td>2.82</td>
<td>28.77%</td>
</tr>
</tbody>
</table>

- CSG has carried out off-load inspection and maintenance when clients take a rest, without influencing their life and production.
- CSG has standardized compilation of the annual comprehensive outage plan, coordinated management of infrastructure construction, renovation, maintenance of the main power grid and revision of the power distribution grid to reduce repeated outages.
- CSG has strictly implemented the annual outage plan, and has carried out strict inspection and approval of temporary outages. Every measure has been taken to minimize temporary outages.
- CSG has enhanced analysis and evaluation of outages; carrying out a monthly statistical analysis of repeated, prolonged and temporary outages, fulfilling company social responsibilities and continuously improving outage management efficiency.

#### SAIDI of the Guizhou Power Supply Bureau Dropped by 22-odd Hours

Based on the analysis of reliability index, the Guizhou Power Supply Bureau has strengthened the process monitoring of comprehensive outages, attaching great importance to the monitoring of time, range and times of outages. It has established a regular tracking mechanism, publishes a monthly reliability index and monitors the situation of all units and analyzes operations time and times of major outages so as to improve actual delivery rates. The SAIDI from the overall assets was 12.64 hours, decreasing by 22.07 hours, with a reduction rate of 63.58%.

### On-load Operation

Abiding by the principles of safety and reliability, CSG has made detailed plans according to specified management models and promoted on-load operations, step-by-step, continuously reducing SAIDI.

- In terms of on-load operation of transmission lines in the main power grid, CSG has improved the technical level and has carried out operations such as on-load altering of monolithic and insulator strings, on-load processing of overcharged drainage boards and on-load inspection of faults.
- In terms of the on-load operation of the power distribution grid, CSG has carried out 36,730 on-load operations, representing a 48% increase and has reduced outages by about 2.8725 million hours/household, equivalent to a SAIDI measure of 2.54 hours.
- CSG has introduced advanced technology, methods and facilities, making breakthroughs in numerous facets of on-load operations.

#### “Special Forces” on High Voltage

With a complicated occupational environment and threats to personal safety, on-load operations demand good skills, physical fitness and a sound psychological nature on the part of operators, and they are a team who are honored as “power special forces”.

ZHENG Ruidong, leader of Operations Team Three for the On-load Operation Subsidiary of the Yunnan Power Grid Corporation, has been engaged in on-load operations for more than 20 years. He has successfully solved many emergencies involving high-voltage transmission lines with his team ensuring successful operation of the “west-to-east” plan and “power transmission from Yunnan to Guangdong”. He was honored as the “Walker on High Voltage” and “Special Doctor on High Places”.

ZHENG Ruidong changing the insulator on 500kV high voltage transmission lines.

#### On-load Operation

<table>
<thead>
<tr>
<th>Subsidiary</th>
<th>On-load Operation of the Distribution Grid</th>
<th>SAIDI Reduction (10,000 households)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shenzhen Power Supply Bureau</td>
<td>14724</td>
<td>136.63</td>
</tr>
<tr>
<td>Guangzhou Power Supply Bureau</td>
<td>1613</td>
<td>12.00</td>
</tr>
<tr>
<td>Shandong Power Grid Corporation</td>
<td>6394</td>
<td>49.17</td>
</tr>
<tr>
<td>Shanghai Power Grid Corporation</td>
<td>4838</td>
<td>10.90</td>
</tr>
<tr>
<td>Jiangsu Power Grid Corporation</td>
<td>618</td>
<td>1.03</td>
</tr>
<tr>
<td>Shandong Power Supply Bureau</td>
<td>6928</td>
<td>69.06</td>
</tr>
<tr>
<td>Hainan Power Grid Corporation</td>
<td>1615</td>
<td>8.46</td>
</tr>
<tr>
<td>Total</td>
<td>36730</td>
<td>287.25</td>
</tr>
</tbody>
</table>
Rapid Power Supply Restoration

Abiding by the principles of “power supply restoration first, then quick-repair”, CSG will replace dysfunctional lines with backup power transmission lines. CSG has always made great efforts to repair lines and restore power supply within the shortest time possible.

- Rapid restoration enhancement at six linkage points: fault reporting, diagnosis of faults, fault location, fault disconnection, restoration of faults, and power restoration.
- CSG has promised information integration and has built a pilot platform for monitoring of services and dispatching appropriate personnel, achieving visualized monitoring of the entire outage process and power restoration, and enhancing restoration efficiency.
- CSG has rolled out centralized monitoring of outages. CSG 95598 Customer Service Call Center is supported by power supply bureaus at the prefecture/municipal-level cities and carries out centralized monitoring of outages, delivers malfunction information, provides timely information to clients and integrates power supply restoration. The timely restoration rate of outages received by the service has raised to 95.4% from 82.6%.

“Tailor-made” Toolbox Saves Time for Repair Work

Finding the right tool in a complex tool box can be tedious and time-consuming. To better serve clients, the Inspection and Maintenance Team of the Qingxiu Subsidiary of Nanning Power Supply Bureau tailor-designed special toolboxes with drawers, making it easier for staff to check and find tools. This innovation has helped emergency teams save eight minutes in average on repair restoration assignments.

Guangxi Power Grid Corporation uses this innovation as a case study and encourages staff, at all levels, to make suggestions to design and introduce innovative measures to reduce SAIDI.

Reliable Distribution Grid Construction

Because of the complexity and precision required in their design, the distribution grid has historically been short of investment. Urban and rural distribution grid construction needs to be strengthened. CSG has optimized the investment structure and attached greater importance to clients’ consumption demand and to power supply reliability. Priority has been given to prominent distribution grid projects which have significant and positive impacts.

- CSG has invested RMB34.5 billion in construction of new distribution grids. In 2013, the company built, put into operation, 35 kV- and under-transmission lines with a total length of more than 70,000 km and capacity of 7 million KVA.
- CSG has upgraded the distribution grid and has enhanced capacity of the grids. In 2013, the coverage rate of loop network in the distribution grid reached 57.4% and the rate of supplying power with backup transmission lines was 47.5%.

Kunming Power Supply Bureau Builds Reliable Distribution Grids in Main Urban Areas

The Kunming Power Supply Bureau has invested RMB 233 million to replace 108 10kV overhead lines in major urban areas with underground cables, in two batches. The Bureau has built 105 new switching stations, installed underground cables spanning the equivalent of 119.42 km and has installed 36 new power distribution transformers. As a result, area SAIDI has been reduced by 1.57 hours.

Protection of Power Facilities

Criminals frequently and maliciously steal and sabotage power facilities, posing threats to the safety and stability of power grids. CSG has cooperated with public security departments to establish an integrated prevention system. We have created and carried out a special campaign and have called for support of the public, firmly cracking down on power facility larceny and sabotage. The number of cases has been decreased year-by-year.

In 2013, there were 4,773 cases of power facility larceny and sabotage, representing a year-on-year decrease of 42.2%. Still, this figure resulted in the direct economic loss of RMB 58.72 million despite achieving a 36.2% reduction. There were no cases involving 10kV and above power facilities.

Cases of Power Facilities Substage | Case Number (Unit:Case) | Damage to Power Facilities (Unit:RMB10 thousand)
---|---|---
2009 | 16,259 | 14,964 |
2010 | 12,890 | 6,258 |
2011 | 8,220 | 4,22% |
2012 | 6,100 | 36.2% |
2013 | 6,096 | 3872 |

Ensuring the Power Supply for Major Events

By summarizing the experience of power supply for major events, CSG has improved the process, institutionalized procedures, developed and put into use standards and manuals, and established norms and specialized mechanisms for ensuring power supply for special events.

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>The 1st China-South Asia Expo</td>
<td>November</td>
<td>Guiyang, Guizhou</td>
</tr>
<tr>
<td>The 15th Annual Meeting of The China Association for Science and Technology</td>
<td>October</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The 1st China-ASEAN Expo</td>
<td>October</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The 9th Cross-Strait Economic, Trade, and Culture Forum</td>
<td>October</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The 9th Cross-Strait Economic, Trade, and Culture Forum</td>
<td>October</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The 10th China-ASEAN Expo, China-ASEAN Business and Investment Summit, and Nanning International Folk Song Festival (two meetings and one festival)</td>
<td>October</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The 1st China-ASEAN Expo</td>
<td>October</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The 10th China-ASEAN Expo</td>
<td>October</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The whole grid</td>
<td>March</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The whole grid</td>
<td>April</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The whole grid</td>
<td>May</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The whole grid</td>
<td>June</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The whole grid</td>
<td>July</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The whole grid</td>
<td>August</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The whole grid</td>
<td>September</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The whole grid</td>
<td>October</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The whole grid</td>
<td>November</td>
<td>Nanning, Guangxi</td>
</tr>
<tr>
<td>The whole grid</td>
<td>December</td>
<td>Nanning, Guangxi</td>
</tr>
</tbody>
</table>

Further Reading

The Maximum Penalty for Larceny and Sabotage of Power Facilities is a Death Sentence

The Criminal Law of the People’s Republic of China stipulates that whoever sabotages any power facility, but causing no serious consequences, shall be sentenced to a fixed-term of imprisonment of no less than three years but not more than 10 years; those causing serious consequences shall be sentenced to fixed-term imprisonment of not less than 10 years, life imprisonment or death.
In the Global Village, We are Changing for You

In today’s world the global mobile Internet business is booming. In 2013, the number of smart-phones owned by Chinese people reached 580 million, representing a year-on-year increase of 60%; the number of WeChat app users was over 500 million. According to the data released by People’s Bank of China, the electronic payment had a 29% year-on-year increase in 2013 within China among which online payments rose by 28% and mobile payments by 300%. According to the data released by China Internet Network Information Center, average time Chinese netizens spend on the Internet has reached 2.17 hours per week with 79% of mobile users using their mobile phones to surf the Internet.

In 2013, the mobile Internet has entered the 4G era, with more information, faster transfer and wider application prominent features. Thanks to the new scientific technology, our life is easier and more convenient. We can have instant communication in this global village. Customers look forward to better power services: two-way interaction and point-to-point communication with power supply companies whenever and wherever possible; quick settlement of the electricity bills and clear and speedy information access. With the increasing influence of new media and other new media, every one all of us is arow “news agencies” and therefore, power services are facing greater pressure of collective public opinions.

Channels are more diversified.
Information is more transparent.
Costs are lower.
Response is faster.
Communication is more environmentally friendly.
Communication is more smoother.

Facing various challenges such as disclosure and misuse of customer information in the Internet era, we have carried out customer information management and privacy protection programs to ensure information security.

We have attached greater importance to service innovation, strengthened efforts to expand remote service channels, and enhanced channel management. A service model with the feature of “informative, graphical, mobile and intelligence” has been established to provide a more convenient and better consumer experience as related to electricity consumption.

The number of entity business halls has decreased from 4652 to 4531 in recent times.
Remote services share has increased from 38% to 44%.
Remote visits by customers has reached 6.20 million.
The number of electricity bills paid by remote payment has reached 112,000.

Opportunities

Complaints from customers spread more quickly and widely: flaws in services are likely to cause trust issues.
Power services have more diversified channels, cover wider areas and face more complex and difficult management challenges.
Service information is more transparent; information security risks, such as disclosure of business secrets and customer information, are increasing.

Challenges

Rapid Power Supply Restoration

Customer Complaint Management

CSG has perfected customer opinion feedback mechanisms, collecting customers’ opinions and suggestions via channels such as hot-line 95598, third-party satisfaction surveys, discussions with major customers and representative user/client surveys. CSG has carefully analyzed and solved the problems with which customers are faced most often and we work continuously to identify other points with which customers are not satisfied. In 2013, the number of complaints decreased to 25 million customers compared with that of 2012, with a coast of 62/one million customers.

Customer Satisfaction Evaluation

CSG has collected customer satisfaction data from various channels and multiple perspectives so as to objectively and authentically understand service quality, analyze customer comments and address customer problems. In 2013 the third-party satisfaction index was 81 points, 4 points higher than that of 2012, and CSG’s customer service is ranking top internationally.

- CSG has strengthened the diagnosis and analysis of customer satisfaction measures. It specifies satisfaction diagnosis from the perspectives of eight indices related to power services as well as four customer types; namely industry, commerce, residents and others, and analyzes and ranks customers’ issues to establish response priorities.
- According to the priority of customers’ issues, CSG maps out action plans for targeted rectification and improvement, assigns responsibilities to specialized departments such as planning and construction, production and operation, as well as marketing and services, to ensure satisfactory levels of rectification.

Achievements

- The number of entity business halls has decreased from 4652 to 4531 in recent times.
- Remote services share has increased from 38% to 44%.
- Remote visits by customers has reached 6.20 million.
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Analysis of Factors Influencing Customer Satisfaction

<table>
<thead>
<tr>
<th>Year2013</th>
<th>Year2012</th>
<th>Reasons for satisfaction (%)</th>
<th>Reasons for dissatisfaction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable power supply</td>
<td>51</td>
<td>27</td>
<td>46</td>
</tr>
<tr>
<td>Payment/cost</td>
<td>20</td>
<td>30</td>
<td>29</td>
</tr>
<tr>
<td>Customer communication</td>
<td>24</td>
<td>25</td>
<td>29</td>
</tr>
<tr>
<td>Maintenance, quick repair and malfunction response time</td>
<td>21</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>Staff and others</td>
<td>10</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Hot-line services</td>
<td>9</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Electric pricing</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Complaint handling and other problem solving services</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Safe power supply</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Analysis data are based on the results of a 2013 Gallup customer satisfaction survey.

Customer Satisfaction Indices

Third Party Customer Satisfaction Index

Eight Index in Customer Satisfaction

<table>
<thead>
<tr>
<th>Index</th>
<th>Year2012</th>
<th>Year2013</th>
<th>Increased by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable power supply</td>
<td>80</td>
<td>81</td>
<td>1</td>
</tr>
<tr>
<td>Business hall services</td>
<td>79</td>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>Bill payment</td>
<td>84</td>
<td>85</td>
<td>1</td>
</tr>
<tr>
<td>Staff and others</td>
<td>79</td>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>Customer communication</td>
<td>84</td>
<td>85</td>
<td>1</td>
</tr>
<tr>
<td>Maintenance, quick repair and malfunction response time</td>
<td>77</td>
<td>78</td>
<td>1</td>
</tr>
<tr>
<td>Payment</td>
<td>80</td>
<td>81</td>
<td>1</td>
</tr>
<tr>
<td>Salesforce</td>
<td>71</td>
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</tr>
<tr>
<td>Customer satisfaction index</td>
<td>65</td>
<td>66</td>
<td>1</td>
</tr>
</tbody>
</table>

Note Analysis data are based on the results of a 2013 Gallop customer satisfaction survey.
Emergency Management

Due to the complex population distribution and mixed environment and impact of the events of nature, these five provinces and regions in CSG’s service area in South China (Guangdong, Guangxi, Yunnan, Guizhou and Hainan) are frequently struck by extreme weather and natural disasters. For example, high temperatures, drought, low temperatures, rain, snow, frost, rainstorms, typhoons and earthquakes … all posing huge threats to people’s lives and property safety...making the and safety and stability of the power grid crucial as well.

Confronted with serious disasters and emergencies, CSG has given top priority to public safety and other consumer interests by enhancing the disaster prevention and emergency response capability of the power grid through new technology; thus the company has minimized the damage resulting from natural disasters to both the power grid and the public.

Comprehensive Emergency Management Improvement

On the basis of newly developed emergency management platforms within its service areas, CSG has ensured the efficient and orderly operation of emergency response mechanisms and continues enhancing its emergency management capacity.

- Formulating the CSG Emergency Manual; clarifying responsibility between departments, systems initiation and procedures.
- Enhancing cooperation for handling emergencies among power grids, provincial units and local units; through realizing initial information sharing within CSG and with governmental agencies.
- Organizing cross-functional emergency rescue teams by taking into account local circumstances; improving 24-hour service hotline mechanisms; and enhancing emergency response capacity by having needed supplies at-hand.
- Having experience sharing meetings and emergency drills against wind, earthquake and frost emergencies; CSG staged 1,568 emergency drills in 2013, with 16,055 personnel participating.
- Formulating the CSG Emergency Drill Plan; improving the simulation of disaster and emergency response procedures, and preparing for emergency disposal.
- Ensuring the efficiency and accuracy of emergency reports, and ensuring that the official emergency reports and the reports from auxiliary departments are consistent.
- Ensuring the smooth and effective operation of the CSG network and the special hotline.
- Providing public services to the best of organizational capacity, after disaster occurrence and during the period of emergency.
- Carrying out the review and update of emergency and special disaster prevention and mitigation regulations, and training for emergency response personnel.
- Organizing cross-functional emergency rescue teams by taking into account local circumstances; improving 24-hour service hotline mechanisms; and enhancing emergency response capacity by having needed supplies at-hand.

Response to Natural Disasters

In response to snowstorms, sleet, an earthquake in Diping, Yunnan, and strong typhoons such as Usagi and Haiyan, CSG was prepared in advanced issued warnings in time and simultaneously initiated emergency response measures to ensure power supply to key clients and places. CSG repaired facilities quickly and in a planned, orderly manner, restoring power supply to stricken areas.

Learning from safety drills and assessment of the experiences of the U.S. Department of Homeland Security, Guangzhou organized the first large-scale outage emergency drill in China on October 30th (YEAR?). All governmental agencies cooperated to restore social order and reduced simulated losses within the shortest possible time. Such a drill had enhanced cooperation between CSG and governments at various levels in emergency response, improved the contingency planning system in Guangzhou and strengthened emergency response capacity to large-scale outage.

CSG's Emergency Management System

CSG staged 1,568 emergency drills in 2013, with 16,055 personnel participating.

Preparation Before Disaster
- Doing preparations, including spotting hidden dangers, carrying out special inspections and maintenance, strengthening poles and towers, removing fallen trees and illegal buildings.
- Organizing cross-functional emergency rescue teams by taking into account local circumstances; improving 24-hour service hotline mechanisms; and enhancing emergency response capacity by having needed supplies at-hand.
- Formulating the CSG Emergency Manual; clarifying responsibility between departments, systems initiation and procedures.

Emergency Drill Process

- Road traffic was chaotic. Subway stations were crowded with passengers.
- Subway Line 3 was suspended.
- Most traffic lights in Tianhe, Yuexiu, Liwan and Haizhu District were cut; Subway stations were crowded with passengers; power supply was restored for the seriously stricken areas; Emergency Power Generation for key clients no longer needed, ceased.
- The Guangzhou South Railway Station, 220kV Guanghuabing Line and Guanghuadada Line were subject to practice chain trips.
- Power supply was restored for the seriously stricken areas. Emergency Power Generation for key clients no longer needed, ceased.
- The Emergency Command Center took immediate action to distribute resources and deal with the various emergency situations. The Guangzhou Power Supply Bureau repaired dysfunctional facilities as quickly as possible.
- The Publicity Department sent passengers trapped in the subway and who were injured to the hospital.
- Power supply was restored for the up impacted area.

- The Guangzhou South Railway Station, 220kV Guanghuabing Line and Guanghuadada Line were subject to practice chain trips.

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Power Grid Construction

Power grid construction involves many issues and often problems related to land use, such as site selection and cable tunnels. CSG has engaged in communication with stakeholders in terms of construction project approval, land expropriation and compensation, and communication with communities. Power construction tasks have been fulfilled in ways designed to ensure power supply for production and life.

- **Power Grid Planning and Investment**

  According to the CSG Development Plan (2013-2020) formulated by The National Energy Administration, CSG has identified a “west-to-east” technological road-map and main grid frame scheme while taking into consideration sustainable development factors including power grid safety and optimal allocation of energy and environmental resources.

  By 2013, CSG has implemented 21,496 projects with 45.51 million kVA of newly-increased transformer capacity, and installation of 11,814 km of transmission lines.

- **Key Project Construction**

  CSG has strengthened standardized management of power grid construction to ensure that projects are safe, high-quality and environmentally-friendly. In 2013, 12 key projects were put into operation on schedule.

  **2013 CSG’s Award-winning and High-quality Projects**

<table>
<thead>
<tr>
<th>Project</th>
<th>Award</th>
<th>Awarded by</th>
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</thead>
<tbody>
<tr>
<td>National Incident Project</td>
<td>The Examination and Approval Committee for National Engineering Construction Quality Awards</td>
<td>The China Electric Power Construction Association</td>
</tr>
<tr>
<td>A 500kV Jiangxia Power Transformer Substation Project in Liuzhou, Guangxi</td>
<td>Excellent Project in the Sector of Power Sector</td>
<td>The China Electric Power Construction Association</td>
</tr>
<tr>
<td>A 500kV Lingshuai Power Transformer Substation Project in Liuzhou, Guangxi</td>
<td>Excellent Project of Power Sector</td>
<td>The China Electric Power Construction Association</td>
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<tr>
<td>A 500kV Yimeng Power Transformer Substation Project in Shenzhen, Guangdong</td>
<td>Excellent Project in the Sector of Power Sector</td>
<td>The China Electric Power Construction Association</td>
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<tr>
<td>A 220kV Qinyun Power Transformer Project in Foshan, Guangdong</td>
<td>National Excellent Project</td>
<td>The Examination and Approval Committee for National Engineering Construction Quality Awards</td>
</tr>
<tr>
<td>A 220kV Nianhe Power Transformer Substation Project in Zhuhai, Guangdong</td>
<td>National Excellent Project</td>
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</tr>
<tr>
<td>A 220kV Zishan Power Transformer Substation Project in Zhuhai, Guangdong</td>
<td>National Excellent Project</td>
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<tr>
<td>A 220kV Shizishan Power Transformer Substation Project in Zhanjiang, Guangdong</td>
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<td>A 220kV Zhongshan Power Transformer Substation Project in Zhanjiang, Guangdong</td>
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<tr>
<td>A 220kV Jiangmen Power Transformer Substation Project in Zhanjiang, Guangdong</td>
<td>National Excellent Project</td>
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</tbody>
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**Nuozhadu and Xiuloudi DC Transmission Projects Completed Ahead of Schedule**

On September 3rd, the first phase of the Nuozhadu DC Transmission Project was completed and put into operation well ahead of schedule. It spans three provinces, namely Yunnan, Guangxi and Guangdong, with transmission lines running 1,400 km, and a transmission capacity of 3,000 MW. It is CSG’s second ultra-high voltage DC transmission line.

On October 12th, the Xiuloudi DC Transmission Project was put into operation, also well ahead of schedule. It runs from Yunnan to Guangdong via Guizhou and Guangxi, with transmission lines running 2,215 km, and a transmission capacity of 4 million kW. As a ±800kV Governmental and Social Power Transmission Project, it forms a large power network in the world, with a facilities automation rate of 97%.

The two projects shown in the accompanying photographs have transmitted clean power to the Pearl River Delta area from the Three Gorges and Lancang River basins in Yunnan, playing an active role in optimal allocation of resources between West China and East China, thus easing power shortages in Guangdong Province.

**Stakeholder Expectation and Demand Communication and Response Result**

A: Governmental Planning Departments

  Citizens Living close to the Substation

  Steep slope terrain nearby, with the substation in the valley, project schedule ahead of time.

  We have adopted design methods to reduce electromagnetic exposure.

  They expect the substation planning to be reasonable and save precious urban land resources.

B: Social Groups

  Groups may have many misunderstandings about power grid facilities, for instance, the substation may be believed to be dangerous but in fact is not. It has high levels of radiation and will cause noise pollution.

  On the basis of green power grid philosophy, we have highlighted green conservation, environmental protection, high efficiency and harmony in planning and design. The substation was open to the citizens, media and other stakeholders, effectively giving reassurances to the stakeholders.

C: Governmental Planning Departments

  Optimal design of the substation won recognition from the government and ministries.

  The Examination and Approval Committee for National Engineering Construction Quality Awards

  We have reassured commercial tenants of the safety of the substation. Citizens and visitors are impressed by the design of the substation.

Further Reading

On The Electromagnetic Environment of Power Transmission and Transformation Facilities

Transformer substations and transmission lines exert influence on the ambient environment by their electromagnetic effect rather than by radiation. It has been proved that the environmental protection standards of our on-site electromagnetic effect is much lower than recorded international and national values. It is up to the national and international standards of environmental protection.

For more information, please visit CSG website and click on Electromagnetic Radiation under the Feature Report on Power Science (http://www.csg.cn/dkgp/lndx_1111.html)

**Communication with Stakeholders about Power Grid Construction**

Power is indispensable to people’s productivity and lives. However, many people have misunderstandings about power facilities, a number are unwilling to have transmission lines close to their houses. CSG has actively communicated with stakeholders in terms of problems in this regard, responding to their expectations and demands in the hope of winning their understanding and support.
CSG’s power grid is of large scale and ultra-high voltage, covering long distances, with a mixed operation of AC and DC. Eight AC and seven DC cable tunnels of 500kV-and-above have been built for the “west-to-east” plan. The power grid spans nearly 2000 km from east to west, with the maximum transmission capacity of over 26.5 million kW. As the most complex of modern power grids it boasts various kinds of power, such as hydropower, thermal power (including coal, oil and natural gas), nuclear power, pumped storage power and wind power, very complex and thus difficult to harness. CSG has engaged in independent research to achieve the technological innovations needed to ensure the safety and stability of the grid and promote its transformation into a smart, efficient, reliable and green power grid. CSG was awarded the 3rd Session Technical Innovation SOE Prize in 2013.

Technological Innovation Achievements

CSG invested RMB 2.628 billion in R&D in 2013, taking up 0.59% of revenues gained from main business sources and representing a year-on-year increase of 51% in the area. Achievements with independent IPRs and patents are on the rise year-by-year, earning CSG the China Patent Award for three years running.

- The ±800kV Ultra-High Voltage DC Transmission Technology and Facilities Development and the Application Project won the 2013 China Power Technology Prize.
- The AC and DC Parallel Operation Key Technology R&D and Application Project won 2013 Guangdong Best Technological Innovation Prize.
- In 2013, CSG played the leading role in the National Key Smart Grid Project—The Wanxian Island New Energy Micro-grid Demonstration Project, with an aim to build the smart micro-grid for Wanxian Island, Dongao Island and Dawanshan Island. The Project has coordinated various energy sources on the island, including wind, solar energy, firewood and storage power so as to build an integrated and self-contained smart micro-grid system that can meet the needs for power on the island. Island power sources are comprised of power generation, transmission, transformation, distribution and usage.

Inauguration of the World’s First Multi-End Flexible DC Transmission Project

On December 29th 2013, the first ±800kV Multi-End Flexible DC Transmission Demonstration Project in Nanxun County was put into operation, a symbol of success for China, as we conquered a number of challenges such as control and protection of multi-end and flexible DC transmissions and more. China is the first country in the world that has mastered this key technology and that has applied it commercially.

The system has linked multiple wind farms located on the sea and on isolated islands bringing the electricity generated to the continent. Such DC transmission systems have enabled clean energy to be connected to the grid and improved its utilization efficiency. To achieve the project premise, that of savings on investment, reducing the consumption of marine resources and meeting the demand of the islands for power, surplus power is transmitted to the continent.

Islanded Operation Mode of the First Ultra-high Voltage DC Transmission Line in the World

On September 11th, 2013 the first ultra-high voltage DC transmission line, the ±800kV Yunnan-Guangdong DC Transmission Line, was switched to the “islanded operation mode” for the first time, symbolizing that Chinese power technology and management has reached new heights. Under the islanded operation mode, power can be transmitted from the generating-side to the consumer-side through a DC system, effectively reducing the influence of the system on the main-grid, thus enhancing the safety and stability of the power grid. Meanwhile, the methodology has enabled Yunnan to improve its power transmission capacity by 700 thousand kW, making a great contribution to the absorption and use of local hydropower.
CSG has contributed to National ecological preservation through green power programs. We have dedicated ourselves to energy conservation and emission reductions by taking responsibility for both the power generation side and customer side of the process. Energy conservation publicity, green development promotion, circular and low-carbon development are the means used to measure our effort toward building a Beautiful China.

### Environmental Performance of Each Kilowatt Hour/Unit

- **Fossil fuels are non-renewable.** With the aim of minimizing fossil fuel consumption per unit of power generated and sold, we have devoted ourselves to ensuring a green power supply. In 2013, CSG’s fossil fuel consumption per unit power sold was equal to 215 grams of standard coal and 572 grams of CO₂, lower than the National average of 263 grams and 700 grams respectively.

- **Trends In Fossil Fuel Consumption Per Unit of Power Sold**
  - Unit: g standard coal/kWh
  - CSG: lower than the National average.

- **Fossil fuel consumption per unit power sold**
  - 215 g standard coal/kWh
  - 18.3% lower than the National average.

### Overall Energy Conservation and Emissions Reduction Performance

- **“West-to-East” hydropower reached**
  - 92 billion kWh, representing a year-on-year increase of 4.7%.

- **Energy-efficient power generation and dispatching**
  - Saved 5.61 million tons of standard coal, representing a year-on-year savings increase of 9.4%.

---

**Contribution to “A Beautiful China”**

CSG has contributed to National ecological preservation through green power programs. We have dedicated ourselves to energy conservation and emission reductions by taking responsibility for both the power generation side and customer side of the process. Energy conservation publicity, green development promotion, circular and low-carbon development are the means used to measure our effort toward building a Beautiful China.
Global climate change has triggered increasingly severe extreme weather globally. According to the World Bank 2013 Report, extreme weather change, over the past decade, has led to annual economic losses of USD 200 billion, and the trend is continuing to grow.

Blizzards hit many European countries, resulting in traffic tie-ups and claimed over 260 lives.

Typhoon "Hayyan" inflicted heavy damages with over 6,000 lives lost and loss of about 10 billion USD in the Philippines alone.

Summer saw unprecedented high temperatures and droughts in many places in South China, causing the loss of over RMB 46 billion.

According to the IPCC Fifth Assessment Report:Climate Change 2013 (AR5) issued on September 27th 2013, global warming is an undeniable fact. Since the beginning of the 20th Century, global temperatures have risen by 0.85°C. Human activities are the major cause for global warming. Greenhouse gases emitted from the burning of fossil fuels have reached record highs.

China is at the lower end of the industrial chain in terms of economic globalization. It has consumed massive resources and provided quality products at reasonable prices to the world, which has caused life-threatening air, soil and water pollution and threatened people’s health, both mental and physical. The Central Government attaches great importance to climate change by virtue of reducing carbon emissions through such measures as industrial restructuring, promotion of independent innovation, optimization of energy utilization and improvements in energy efficiency.

China’s energy consumption per unit GDP is 2.5 times of the world average.

Climate Change

We care about climate change in the hope that the earth will be our shared home well into the future.

Smog

We are concerned about emissions and smoggy weather; we hope that soon, we can all breathe freely.

Wide-spread smog is attracting increasing attention from the public. According to the 2013 China Climate Bulletin issued by The China Meteorological Administration, there were 36 days of inclement weather inflicted by smog in 2013... on average; 27 days more than in previous years, reaching an unprecedented 0.85 days more than in previous years, reaching an unprecedented 0.85%.

It is estimated that, from power generation to consumption in the five provinces and regions in CSG’s service area, the energy conservation and emission reduction potential on the power grid side... takes up a total of 6% overall; on the power generation side, 35%; and on the customer side, 53%. (Note: these % are NOT expressed in a way that makes sense, but should be read as...)

CSG’s major measures of energy conservation and emissions reduction on the power generation side: 10%: Power mix optimization 20%: “West-to-East” plan development 30%: Energy-efficient power generation and cogeneration 40%: Support for new energy development

CSG’s major measures of energy conservation and emissions reduction on the customer side: 10%: Support for customers in energy conservation 20%: Support for electric vehicle industry 30%: Energy conservation publicity

Outdoor air pollution causes 350,000 to 500,000 people in China to die prematurely annually.

Statistics issued by The China Meteorological Administration revealed that smog prevailed in 25 provinces and 100+ small- and medium-sized cities in December of 2013. Visibility in some areas was less than 10 meters. PM2.5 in many cities was seriously excessive. PM2.5 of Shijiazhuang was as much as 653 mcg/m³ and air quality fell into the category of "serious pollution".

(Reference: PM2.5 less than 10 mcg/m³ can be counted as safe according to The World Health Organization. The daily average of PM2.5 concentration in the U.S. is 35 mcg/m³. China, 75 mcg/m³.)

"The furthest distance in the world is that where I cannot see your face when I take you by the hand."

Posted by netizens who complained about smog

"We will make great efforts to tackle air pollution with effective measures, which is the common concern of the general public... We will get rid of this devil."

Quoted by Li Keqiang
Premier of the State Council

"Sustainable development is defined as a development plan/process which meets the needs of current generations without compromising the ability of future generations to meet their own needs."

Quote from Gro Harlem Brundtland, (Former Prime Minister of Norway and Chairman of the World Commission on Environment and Development).
### Energy Conservation and Emissions Reduction on the Power Generation Side

Power generation plays an important role in energy conservation and emissions reduction in China. By enhancing power generation efficiency and increasing the clean energy sources employed by our power plants, we can effectively reduce the emission of greenhouse gases and air pollutants.

#### Power grid operates stably

Five provinces and regions in CSG's service area boast abundant hydropower resources, with huge development potential existing for new energy... and considering the relative scarcity of coal..., on which CSG has based plans to optimize its energy portfolio, CSG can increase use of clean energy for power generation and grid connections... for example, increased use of hydropower, nuclear power and new energy. As of 2013, CSG’s installed capacity of non-fossil energy use has accounted for 46.5% of the total newly installed capacity, 30.9% higher than the National average.

#### ”West-to-East” Plan Development

West-to-East power transmission has enabled energy in West China to complement energy in China’s service area to meet the needs of various regions. In 2013, The Xiluodu DC Transmission Project and The Xliuodu DC Transmission Projects were completed... in advance of schedule termination dates... for power generation in advance, greatly enhancing CSG’s capacity to transmit power from west to east. Previously ”West-to-East” power stood at 92 billion kWh for the whole year, resulting in an equivalent to a reduction of 27.79 million tons of standard coal, 73.91 million tons of CO₂ and 7.39 million tons of SO₂.

### Coal-fired Power Generation, an Important Means of Clean and Efficient Utilization of Coal

Data in the tables are preliminary statistics.

#### 2013 National Power Generation Constitution (Unit: 100 Million kWh)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Thermal</th>
<th>Hydropower</th>
<th>Nuclear</th>
<th>Wind Power and Others</th>
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<tr>
<td>2013</td>
<td>1490</td>
<td>2.20%</td>
<td>41900</td>
<td>5630.2</td>
<td>2857.2</td>
</tr>
<tr>
<td>2012</td>
<td>8963</td>
<td>11.9%</td>
<td>2057.2</td>
<td>5630.2</td>
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#### Nuclear Power Connected to the Grid

After the Fukushima nuclear accident in Japan, the international community is paying increasing attention to nuclear power safety. China has become more strict and prudent in the development and use of nuclear power. Newly-built nuclear power units in China must meet third generation safety standards and all new nuclear power projects have to meet the highest global safety standards.

CSG has provided grid-connecting services for the qualified and newly-constructed nuclear power projects. In 2013, nuclear power generated in CSG’s service area reached 46.44 billion kWh, accounting for 41.48% of the National total.

#### Power grid operatAClean Thermal Power Development Promotes stably

Production and consumption of coal in manufacturing and power generation are main causes for environmental pollution and greenhouse gases thus the resource mix of China has resulted in the fact that coal will be the major fuel for power generation for a long time into the future. CSG has promoted the rapid development of clean coal-fired power for a reduction of greenhouse gases and pollutants. 2013 saw CSG’s thermal power unit desulfurization of 5.118 million tons, representing a year-on-year reduction of -19%.

- Thermal power plants will also be connected to an on-line supervision system to track desulfurization and coal consumption as planned.
- CSG has been helping thermal power units in its service area to reduce coal consumption to 300g/kWh, representing a 1g/kWh year-on-year reduction.
- CSG has been urging power plants in Guangdong, Guangxi, Guizhou and other areas to conserve energy by building efficient power consumption management systems and upgrading to energy-efficient technologies including vacuum pump systems and big cold-end technologies.

#### Coal Consumption for Power Supply (Unit: 100 Million tons)

- Greenhouse gases such as CO₂, SO₂ and NOx, and PM₁₀ are produced when coal is burned directly, exerting negative impacts on the atmosphere and human health.
- Technological means have been adopted in coal-fired power plants to reduce the impact of the use of coal, for instance, desulfurization, de-nitrification, smoke removal and dust removal, all designed to reduce emission of greenhouse gases and pollutants, having met with tangible results.
- Coal transportation by means of train, car, ship and so on is being replaced by power transmission from source to consumer, significantly reducing loss and pollution caused when transporting, coal in the power generating site.

#### Further Reading

To know more about the resources in the five provinces and regions in CSG’s service area, please refer to P.45 of the CSG 2013 Corporate Social Responsibility Report.

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**Note**

1. Mal power unit desulfurization of 5.118 million tons, representing a year-on-year reduction of -19%.
2. Data for 2013 are preliminary statistics.
Energy-Efficient Power Generation and Dispatching

CSG has been dedicated to energy-efficient power generation and dispatching for three years, giving priority to renewable energy, nuclear power and efficient thermal power in power generation, through which CSG tries its best to supply power for the economic and social development of China’s citizens with minimum consumption of primary energy and with lowest emissions of harmful residuals. Thanks to the completion of the smart grid technical system for energy-efficient power generation and dispatching in 2013, CSG decreased fossil fuel consumption by an equivalent of 5.61 million tons of standard coal, or an emissions reduction of 14.92 million tons of CO₂ and 110 thousand tons of SO₂.

<table>
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<td>(Unit: 10,000 tons)</td>
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In 2013, five provinces and regions in CSG’s service area reduced redundant power by 19 billion kWh. How did CSG deal with such an amount of hydropower?

The year 2013 witnessed the declining growth of power demand and commissioning of large hydropower stations. Therefore, hydropower supplies will exceed power grid demand and, during the flood season, the situation will be worse. In early 2011, we predicted that the redundant hydroelectricity in large hydropower stations will reach 20 billion kWh based on the hydrological forecast and digestion capacity of the power grid. CSG has made full use of the “best-in-class” platform under the framework agreement, and has taken different factors into account, such as the supply- and- demand balance in the five provinces and regions, cable transmission capacity and water supply forecasts. In addition, CSG has adopted such measures as “best-in-class” power increments, DC project commissioning acceleration, river basin terrace optimization and optimal hydropower and thermal power dispatching. In this way, CSG has made great efforts to minimize transmission of redundant hydropower from Yunnan to other provinces and regions as far as is possible. The year 2013 witnessed the a reduction of 19 billion kWh of redundant hydropower from Yunnan, an equivalent of saving 7.6 million tons of standard coal, or a reduction of 118.93 million tons of CO₂.

Support for New Energy Source Development

CSG has supported the development and utilization of new energy sources by increasing new energy and renewable energy in installed capacity locations. With the construction of supporting projects, power generated from new energy, and connected to the grid, has been secured. The installed capacity of new energy in 2013 reached 5.81 million kwh, making up 2.86% of the total.

- Guiding principles, service manuals, detailed rules and standards have been issued to support new energy development.
- Concession and efficient grid-connecting service has been provided for new energy sources, distributive photovoltaic power, in particular, has been a focus of this effort.
- The year 2013 saw the newly-installed photovoltaic (solar) power capacity of 300 thousand tons, and the newly-installed wind power capacity of 1.1 million kWh.
- The first citizens-invested distributive photovoltaic project in GuiLin, Guangxi was successfully connected to the grid and generated power for the community.
- The CSG Synthesis Energy Corp., a 35 MW Roof Photovoltaic (solar) Demonstration Project at the Shunde Midea Refrigeration Plant in Foshan city, successfully connected to the grid and put into operation.
- The power generated is mainly consumed by the plant itself, while a small amount of surplus is transmitted to the CSG power grid.

Energy Conservation and Emissions Reduction on the Power Grid Side

As a platform for optimal allocation of regional energy, CSG has done its utmost to reduce power transmission loss, conserve energy and reduce emissions to ensure the power supplied is environmentally-friendly.

3C Green Power Grid Construction

CSG has made great efforts to build 3C (Computer, Communication, Control) green grid programs. Systems, technological R&D and other factors are taken seriously to work toward the most-efficient, resource-saving and environmentally-friendly power grid possible.

- Green power grid construction standards have been formulated based on the issuance of The Power Grid Standard Design and Typical Construction Guiding F.Y.C.
- The Green Power Grid Construction Guiding Principles and Action Guidelines have been formulated and are being implemented.
- 74 projects and 345 models have been selected for demonstration.

We have maintained sincere and close relations with resident consumers. Environmental impact assessments on facilities, including power transformer substations, have been carried out before construction.

Protection of Biodiversity

CSG has adhered to the principle of environmental protection in power grid construction by adopting various measures to preserve biodiversity, including along transmission lines, to preserve the harmony between power grid construction and ecology.

The First “3C” Power Transformer Substation Built in Guizhou

The First “3C” Power Transformer Substation was put into operation, which optimized internal layout of facilities and is of the enclosed type, covering an area 37%less than other transformer substations of its kind. It has employed heat insulating materials, environmentally-friendly tubes, rain recovery devices, Gas Insulated Switchgear (of low consumption) and, additionally, noise reduction facilities. The perceived noise of the main transformer has been reduced by 20%.

Power Grid Planning

Before the Project

An environmental assessment was undertaken. All power grid construction projects passed the environmental protection assessment upon completion, with a pass rate of 100%. CSG saw no breach of laws and regulations regarding environmental protection throughout the year.

After the Project

Many advanced technologies have been employed such as aerial surveying in materials transportation and high-security type wiring, effectively avoiding harming along the transmission lines. Construction wastes and bio-impact/life wastes are classified and stored to effectively avoid littering. Noise reduction facilities were added to the project to ensure the vegetation and ecological balance of the community.

Green Energy
Energy-Efficient and Environmentally-Friendly Operations

Line Loss Reduction

CSG has strengthened lean management of line loss from the perspectives of planning, management, and technology to operations.

1. The number of power supply enterprises at the county-level, with a line loss rate of over 10%, has been reduced by 2%.
2. A total of 14 power supply bureaus at the prefecture/municipal level have passed the line loss evaluation test.
3. With measurement of the automation system, CSG has equipped all its direct supply areas and direct management areas with power plants, distribution transformers and user-invested transformers.
4. 2013 witnessed the procurement of 20.796 amorphous distribution transformers, making up 65.8% of the total installed.
5. Thanks to optimal operation, energy storage loss was lowered by 390 million kWh, and line losses in the "west-to-east" plan, by 400 million kWh.

The overall line loss rate for the whole grid (statistics from the parent company) was 6.02%.

CSG Comprehensive Line Loss Rate (Unit: %)

<table>
<thead>
<tr>
<th>Year</th>
<th>Korea</th>
<th>The U.S.</th>
<th>China</th>
<th>France</th>
<th>The U.K.</th>
<th>Russia</th>
<th>Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td>7.95</td>
<td>6.23</td>
<td>6.35</td>
<td>7.01</td>
<td>6.23</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td>5.35</td>
<td>6.06</td>
<td>7.08</td>
<td>6.88</td>
<td>6.88</td>
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<tr>
<td>2011</td>
<td></td>
<td></td>
<td>5.35</td>
<td>6.06</td>
<td>7.08</td>
<td>6.88</td>
<td>6.88</td>
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<tr>
<td>2012</td>
<td></td>
<td></td>
<td>5.35</td>
<td>6.06</td>
<td>7.08</td>
<td>6.88</td>
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<tr>
<td>2013</td>
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<td>5.35</td>
<td>6.06</td>
<td>7.08</td>
<td>6.88</td>
<td>6.88</td>
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</tbody>
</table>

Green Office

CSG has taken solid measures to save energy and reduce emissions.

Proper Disposal of Waste

In line with the principle of circular economy, CSG has abided by national standards and has properly disposed of, recovered and re-used waste to the maximum extent possible.

1. CSG's waste emission is strictly limited to by National Standards so as to reduce environmental pollution.
2. Nearly 100% of waste oil from transformers is recovered and re-used.
3. 100% of SF6 gas is recovered and re-used.

Further Reading

Transformer oil is the product of distilled oil, mainly composed of alkanes and aromatic hydrocarbons, with the functions of insulation, heat dissipation and arc suppression. It will cause serious soil and water pollution if it is handled without care. Waste oil can be reused in paper making, the rubber industry, paint and varnish industries, and in road construction after treatment.

Proportional to the growth of turbines, the number of power supply enterprises at the county-level, with a line loss rate of over 10%, has been reduced by 2%.

Application of "Energy Monitor TM" is Used For Building Energy-Efficient Supervision Analysis Systems for the CSG Headquarters Building

Apart from energy conservation/renovation, CSG has applied the "Energy Monitor TM" Building Energy-Efficient Supervision Analysis System developed earlier by CSG Synthesis Energy Corp., to its headquarters building for scientific power utilization management. The result has been a savings of 23% in terms of power consumption...
Energy Conservation and Emission Reduction on the Customer Side

Energy conservation potential on the customer side occupies 50% of the life cycle of power. CSG has taken the initiative to raise the energy conservation awareness of customers, provided comprehensive services so as to help them save energy expenses and enhance energy efficiency efforts.

Support for the Customers in Energy Conservation in an All-around-Way

Energy-efficient service platforms, such as those of the CSG synthesis Energy Corp. and power-saving centers at various levels, have integrated advanced energy-efficient technologies from home and abroad, carried out emission reduction projects and spared no effort to provide services to customers. In 2013, CSG provided energy conservation diagnoses to 1,473 enterprises and visited over 200 major customers.

- **Energy Conservation Consultancy**
  - In-depth diagnostic has been provided to the food and beverage sector and household appliance sector. Energy conservation services have been provided to many famous companies such as Midea, Coca-Cola Co. Ltd and others in Guangzhou.

- **Comprehensive Utilization of Energy**
  - CSG has worked with The Junliang Cement Company in Nanning, Guizhou, on its power generation needs along with investigations of the residual industrial heat and pressure. CSG has applied an installed capacity of six MW with an annual power supplied of 30,000,000 kWh.

- **Industrial Energy Conservation**
  - CSG has upgraded 994 injection molding machines for Shunde, reaching savings of 50% in power use, saving over 7 million kWh annually.

- **Building Energy Conservation**
  - CSG carried out over 840 projects focused on a new generation of "Energy Monitor TMs" Building Management Systems, which has been applied successfully in energy conservation demonstration projects including CSG’s headquarters building as well as a big hotel in Junliang.

- **Lighting Energy Conservation**
  - CSG has renovated 200 thousand LED street lights and 1.5 million LED lamps.

- **Energy Efficiency Management**
  - CSG has undertaken the Foukan Power Ordinal Management Project to realize digital, on-line and visual power management experience for future use.

- **The Energy Conservation Agreement with Shaoguang Iron & Steel Co. Ltd of Baosteel**
  - In August, 2013, CSG Synthesis Energy Corp entered into a framework agreement on an energy conservation project implementation with The Shaoguang Iron & Steel Co. Ltd so as to build the latter into an exemplary company in the sector. The project combined other aims with that of saving 100 million kWh and reducing energy consumption by 10%.

Support For The Electric Vehicle Industry

In response to the governmental policy, CSG has actively supported the development of electric vehicles.

As of 2013, CSG has built and operated 18 charging stations locations and battery replacementing stations, one experience center, and 3,256 charging posts, all serving over 730 thousand vehicles, with a power charged value of 213,400,000 kWh and a mileage count of 94,400,000 km, saving a total of 9.44 million tons of standard oil and reducing 15 thousand tons of atmospheric CO₂.

A Win-Win Solution for Clients and Companies

CSG has built nandudu.com, a one-stop and comprehensive energy conservation service website, dedicated to providing information and services to the industry and the public in entertaining and informative ways. The services include energy-saving technologies and product promotion, product certification and training. Optimal solutions are provided to power-consuming clients, promoting mutually-beneficial cooperation with energy-saving companies and, as of 2013, there were 220 registered members and 102 contractual members.

Energy Conservation Publicity

CSG has publicized various energy conservation policies to the public through such channels as media, internet, microblogs, WeChat, seminars, energy conservation exhibition halls and business halls. In 2013, CSG’s “A Beautiful China” public service announcement that was broadcast 881 times on CCTV, sharing our philosophy and ideas with about 134 million people.

Spreading the Concept of a Green Philosophy

Shenzhen Power Supply Bureau billboards dotted bus stops with 3,000 environmentally-friendly reminders. The promotion was interactive and once citizens took away all of the temporary materials posted, a screen of "For A Blue Sky" would be unveiled, spreading the CSG energy conservation philosophy and calling on citizens to save power.

Promotional Tips For Family Energy Conservation

The Shenzhen Power Supply Bureau initiated the Family Energy Conservation Tips Campaign, where humorous and lively Kungfu postures were employed to explain/demonstrate energy-saving tips in the hope that each family would find energy conservation interesting.

Promoting Energy-Saving Technology

The CSG Synthesis Energy Corp. had advanced green and low-carbon technologies, products and services on display at the China International Green Innovative Products & Technologies Show that some wide-ranging ideas for energy promotion might arise.
Golden Bee 2020

Bees have been living in harmony with the environment and society on the earth for 120 million years. They collect honey and spread pollen, serving as an excellent example of harmony with nature. The Golden Bee 2020 concept was born in China as a visionary and sustainable action plan encouraging the development of a vision based on the concept of the labor of the Golden Bee and the inspiring spirit of the benefits the example of this type of collaboration could bring to our community.

Accomplishments of Golden Bee 2020

Based on the development and goals of CSG, we have made a list of concrete actions related to the power generation side, power grid side and customer side. We have spared no effort to realize the goal of Golden Bee 2020 with a number of measures, including optimal resource allocations, development of green service quality practices and standards, providing assistance to companies in development of their green production policies and projects and cooperation with them in both joint and independent low-carbon industrial program development.

Energy Conservation and Emission Reduction Performance

<table>
<thead>
<tr>
<th>Item</th>
<th>Power (100 million kWh)</th>
<th>Standard Coal (10 thousand tons)</th>
<th>CO₂ (10 thousand tons)</th>
<th>SO₂ (10 thousand tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Increment Generated by Non-fossil Energy</td>
<td>5653</td>
<td>17756</td>
<td>47231</td>
<td>341</td>
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<tr>
<td>Replacing the non-efficient Generator with efficient Ones</td>
<td>–</td>
<td>1196</td>
<td>3134</td>
<td>23</td>
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<tr>
<td>Energy-efficient Power Generation and Distribution</td>
<td>–</td>
<td>2001</td>
<td>5312</td>
<td>38</td>
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<tr>
<td>Power Grid Loss Reduction</td>
<td>302</td>
<td>943</td>
<td>2508</td>
<td>18</td>
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<td>Energy Conservation of the Customers</td>
<td>83.6</td>
<td>277</td>
<td>694</td>
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<tr>
<td>Total</td>
<td>–</td>
<td>22173</td>
<td>58879</td>
<td>425</td>
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Overview of CSG ’s Total Energy Conservation and Emission Reduction Performance with Upstream and Downstream Firms

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<tr>
<th>Item</th>
<th>Power (100 million kWh)</th>
<th>Standard Coal (10 thousand tons)</th>
<th>CO₂ (10 thousand tons)</th>
<th>SO₂ (10 thousand tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Increment Generated by Non-fossil Energy</td>
<td>1134</td>
<td>3413</td>
<td>9079</td>
<td>66</td>
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<tr>
<td>Replacing the non-efficient Generator with efficient Ones</td>
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<td>27</td>
<td>71</td>
<td>0.5</td>
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<td>Energy-efficient Power Generation and Distribution</td>
<td>–</td>
<td>561</td>
<td>1492</td>
<td>11</td>
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<td>Power Grid Loss Reduction</td>
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<td>61</td>
<td>163</td>
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<tr>
<td>Energy Conservation of the Customers</td>
<td>9.3</td>
<td>30</td>
<td>80</td>
<td>0.6</td>
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<tr>
<td>Total</td>
<td>–</td>
<td>4692</td>
<td>10885</td>
<td>79.1</td>
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In adherence to all legal compliance standards outlined and provided for our operation, including reflection of all cost reduction and efficient improvements of assets invested/used, we have striven to make steady progress for the maintenance and appreciation of assets designed to assure steady and sound development in our responsible areas and to create more value for stakeholders at all levels.

In adherence to all legal compliance standards outlined and provided for our operation, including reflection of all cost reduction and efficient improvements of assets invested/used, we have striven to make steady progress for the maintenance and appreciation of assets designed to assure steady and sound development in our responsible areas and to create more value for stakeholders at all levels.

Electricity is seen as the foundation for economic and social development, while power consumption is the "barometer" of regional economic and social development/trend. Each kilowatt hour in the five provinces and regions in CSG's service area contributed to RMB 11.2 of GDP output in 2013.

Compared with similar data of developed countries, the contribution of each CSG kilowatt hour to GDP is relatively low, for the reason that our regional economy is located at the lower end of the global industrial chain. To create more economic value with each kilowatt hour, we must rely on economic restructuring and innovation in attracting new users to our, now, innovative and attractively priced facilities positioned to keep them open via new "value-added" concepts.

1. GDP of 2013 was calculated from preliminary data.
2. The American data on ratio of output value of unit electric energy consumption were calculated on the exchange rate of USD/$1 to RMB 6.2, the German data, 1 Euro/RMB 8.5.
Operational Performance

Against the backdrop of a declining economic growth rate and power consumption, CSG has accelerated economic development, made transformation and ensured growth with meticulous operation and management, and the company has passed the annual performance evaluation by SASAC. Year 2013 witnessed CSG’s EVA of RMB 4.14 billion, and debt asset ratio of 65.6%. It is important to note that the company has been listed in the internationally recognised Fortune 500 list for the past 9 years in a row.

Legal Compliance

CSG has been operating in accordance with relevant laws and regulations, promoting the integration of legal work and business operations and management. We have set up an “over-all auditing” system, pressed ahead with an anti-corruption philosophy, monitoring system and a clean operations action plan, carried out efficient supervision in all areas and have received responses, supervision and support from stake-holders. CSG has received the highest credit rating AA+ for four consecutive years and there has been no major incidence of misconduct, tax evasion or other allegations of misconduct in 2012.

Legal Risk Management

CSG has established and continually improves its long-term legal risk prevention system by identifying legal vulnerabilities in key areas. Making use of “legal clinics” to ‘project’ possible problem areas, we have provided innovative legal evaluations and services and have enhanced our legal risk evaluation and prevention capabilities.

Improvements to the Legal Risk Prevention System

Carrying out legal risk examinations in all areas … especially key ones; aligning legal risk prevention with the key links in business process and integrating legal risk prevention into business operation.

Identifying business areas with high legal risks; formulating legal risk awareness, prevention, counseling and creating a control handbook for 41 posts designed to provide information, raise awareness and improve legal risk management system.

Development and implementation of stringent contract management to exercise whole-process contract risk assessment and management.

Improving internal auditing and auxiliary services; strengthening the internal auditing division in terms of its service orientation, enhancing the legal risk prevention system and improving the legal risk prevention system.

Proper Settlement of Legal Disputes

CSG has made significant efforts such as signing commitment letters and adopting a specific strategy for each case and successfully has reduced the number of legal disputes in which it was held responsible by 25.52%. New major cases of legal dispute caused by breach of laws or regulations have been brought under effective control.

Improved Internal Auditing

In accordance with the principle of auditing and rectifying at the same time, CSG has adopted an innovative auditing concept and made full use of auditing’s supervision, guidance and service functions to enhance standardized management and business efficiency. We completed 3,575 auditing projects in 2013, proposing 5,629 pieces of management advice, and, in the process, rectifying misused capital of RMB 120 million while adding revenue and saving expenses of RMB 140 million.

Further Reading
A Clean, Corruption Free and Self-disciplined CSG

The Central Committee of the Communist Party of China has attached great importance to clean practice and inclusion of integrity in the construction of programs and entities; too, it has deepened the presence of anti-corruption and clean practice work ethics. Following the “eight regulations” put forward by the Central Committee of CPC, CSG carried out education campaigns among CPC members and improved the rules and regulations on clean practice and integrity. It has also set up a long-term anti-corruption mechanism to prevent and deal with corruption at the source.

CSG has carried out a long-term discipline and integrity education, organized clean practice seminars and held pre-assignment consultations. It has enhanced clean practice and integrity awareness by using various media and launched a discipline-focused education month themed as “We Desire a Clean and Clean to Serve the People” in order to educate all CPC members.

CSG has effectively set up rules and regulations to prevent corruption. An accountability system was introduced to strengthen enforcement. We gave priority to rectification of “four malpractice” possibilities as examples, standardized operation through institutional building of vigilance and has tightened the loopholes where corruption might take hold.

CSG has consolidated the function of Monitoring and Management Committee to monitor and inspect the implementation of “eight regulations”, strengthens corruption risk prevention and control, and intensified the supervision of the leader’s decision-making process and main business operational activities.

CSG has punished corruption cases in strict accordance with laws and regulations. We made greater efforts to investigate cases and rectify malpractices, punishing typical ones. We conducted in-depth analyses to identify the institutional causes so as to eliminate the root of corruption.

Efficiency Supervision

According to the system of “3s & 11” (the management of important events, important cadres’ appointments and dismissals, important project arrangements and large amounts of funds). Too, CSG has incorporated supervisory efficiency in key fields and major links where such points as fixed asset investment and construction and supplies procurement bidding may open opportunities for corrupt practice. By taking into consideration the actual needs of reform and development to improve the development quality and efficiency of the company, CSG can better monitor concerns in this area.

CSG has assigned ombudsmen for key projects of fixed asset investment and construction to standardize key project management procedures. They identified 589 problems and put forward 460 supervisory proposals.

CSG has sent supervisory committees to provincial companies, an act which has strengthened overall supervisory effectiveness.

CSG has created an indirect economic benefit of 357 million RMB through efficiency supervision.

Building Mental Defenses Against Corruption Through Warning Education

In August of 2013, CSG launched a discipline education month themed as “We Desire a Clean and Clean to Serve the People”. To better guard against corruption, the Qingshui Power Supply Bureau of the Yumen Power Supply Grid organized 115 CPC cadres, newly appointed officials above the section chief level, staff working in important posts and some of the heads of Power Supply Bureaus to visit the anti-corruption and integrity building education base in Qingshui. They listened to the confessions of prisoners and watched education videos on corruption cases, which helped them to enhance clean operation and integrity awareness.

Cracking Down on Power Larceny

In recent years, power larceny is increasingly characterized by large-scale crimes, smart and complicated technologies and a growing number of cases. There have even emerged professional power theft groups sometimes using the name of “power saving companies”, We face increasingly greater challenges in cracking down on power larceny.

Power larceny prevention is a long-term and arduous task, one which requires the awareness of integrity in power use and the illegality of power theft. Only by pooling the efforts of everyone can we eventually succeed in preventing power larceny. In 2013, CSG handled 5,576 power larceny cases, collecting evaded power bills of RMB 46.03 million and reclaiming RMB 86.82 million in power tariffs derived from illegal power use.

Power Larceny Causes Harm to Oneself and Others

- Infringing the lawful interests of business operators
- Endangering the security of power grids, damaging power supply equipment and affecting customers of the whole line
- Infringing the lawful interests of business operators
- Causing loss to public resources and infringing on the interests of users
- Highly dangerous and likely to cause personal injury or death
- LIABLE to a fine of three times of the bill to respond punishment
- Subject to legal punishment when the case is serious

Facilitating precise line loss via monitoring with information technology and conducting real-time monitoring to identify power larceny customer suspects

Launching surprise, spot inspections and strengthening inspection tours so as to find loopholes in a timely manner

Cooperation with police

- Carrying out random inspections, with local public security departments and constructing a work network to crack down on power larceny
- Launching special campaigns against power larceny and punishing power larceny crimes in strict accordance with laws and regulations
- Promoting power safety and anti-crime legislations at local levels and strengthening power law enforcement by administrative means

Public participation

- Carrying out publicity campaigns against power larceny and illegal power use and distributing publicity materials to enhance public awareness
- Signaging major and serious power larceny cases through various media to foster a social atmosphere against power larceny

Discovery of Power Larceny

- Reporting

- Dial 110

- Power Larceny Prevention Needs Extensive Participation

- Award

- A reward valued at 5% to 20% of evaded power bills
- The maximum reward is RMB 500,000

- Dial 95598

Power Larceny is Illegal and Costly

- LAI from Dongguan City, Guangdong Province and WU, the manager of a fruit and food trade market in Wenzhou District, Zhejiang Province, received malicious power larceny. From May 22, 2010 to Oct 31, 2011 what they were assessed, they had, altogether, stolen power measured at 1.55 GigWh. In Oct 2012, LAI was convicted of larceny by the First People’s Court of Dongguan City, Guangdong Province and sentenced to 13 years in prison with a fine of RMB 360,000. WU was convicted of larceny and sentenced to 5 years of imprisonment with a fine of RMB 80,000. Because power theft was illegal, LAI and WU received their due legal punishments.
Cost Reduction and Efficiency Improvement

Confronted with complicated economic situations at home and abroad, as well as sluggish power consumption growth in the five provinces and regions, CSG has adopted the intensive growth pattern and carried out steady steps to cut down on costs and improve efficiency. We have focused on cost efficiency and management, preventing waste from the outset and enhancing operation efficiency.

How does CSG establish an efficient logistics management system to cut costs and improve efficiency?

We have cancelled the practice of using secondary warehouses and transformed the triarchy of “primary and secondary warehouse (first aid) + regional logistics platform warehouse (central warehouse).” To coordinate the operation of all warehouses. We carried out the pilot program of replenishment procurement and set up “fixed storage and dynamic replenishment mechanisms” and supplies accounting systems to enhance management efficiency of supplies.

The First Warehouse Built According to New Standards Was Put into Operation

In March 2013, the first primary warehouse designed and built according to “Warehouse Construction and Equipment Standards of CSG” was put into operation by the Zhuhai Power Supply Bureau. Based on a supermarket-type management model, it introduced bar code scanning for stock location and stock in and out to achieve visualized monitoring and IT-enabled storage. The role of the warehouse has been transformed from inventory keeping to logistics operation. With goods collection time shortened to eight minutes, the goods operation efficiency was greatly enhanced.

Power Market Development Promotion

Maintaining the power market order, CSG has conducted an in-depth analysis into unstable factors in the power market, has ensured open, fair and just trade practices and constructed healthy business relationship to promote a sustainable and harmonious power market development.

Our Challenges

- The reduced economic growth rate has led to slower power consumption growth.
- The reduced economic growth rate has led to slower power consumption growth.
- Problems such as the conflict between hydro and thermal power and unbalanced growth in the West and East still exist.
- Problems such as the conflict between hydro and thermal power and unbalanced growth in the West and East still exist.
- Customers now require more professional, diversified and personalized services.
- Customers now require more professional, diversified and personalized services.

Our Actions

- CSG intensified its efforts to expand the power consumption market in coordination with provincial and regional governments to promote regional industrial structure transformation and upgrading.
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- CSG carried out West-to-East power transmission project smoothly.
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- CSG integrated new energy sources into the power grid network and deepened energy-saving power generation and deployment methods to promote sustainable social development.
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- CSG carried out the national power pricing policy strictly and operated in accordance with laws and regulations and under the supervision of power supervisory body.
- CSG observed power market order and ensured open, equal and just trade practices.

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<td>100%</td>
<td>Efficiency Auditing Term</td>
<td>601</td>
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<td>Economic, Contract</td>
<td>100%</td>
<td>Legal Review Rate of Major Business Decisions</td>
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<td>Legal Review Rate of Building Documents</td>
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<td>Intergovernmental Cooperation Integrity and Clean Practice</td>
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<td>Education for Cadres</td>
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Enhancing Cooperation with Hong Kong and Macao

CSG has set up deep-level cooperation mechanisms with Hong Kong and Macao for exchange of visits among senior executives, for personnel training and for technical exchanges and cooperation.

- CSG set up power industry summit mechanisms across the Mainland, Hong Kong and Macao and participated in the 3rd CSG, CLP & GEM Power Industry Summit to jointly discuss efficient, reliable, green and low-carbon power supply means.
- CSG attended the 18th Canton, Hongkong and Macau Power Service Workshop, and exchanged ideas on E Channel, New Experience on Customer Service and Energy Saving Service.
- CSG has worked with the Macau Government to set plans for advancement of its power grid structure and to improve services.

Promotion of GMS (Greater Mekong Sub-Region) Power Cooperation

CSG has played an active role as one of China’s executive parties in the GMS cooperation. By taking part in various works of the GMS Power Trade Coordination Committee, we intensified the power grid interconnectivity with GMS countries and optimized the electricity resources in a greater area.

- In line with the status quo of power cooperation in GMS, CSG completed a “Study on Problems Related to Power Cooperation in GMS”. Some of our proposals were adopted by the relevant departments in charge.
- CSG carried out the application process for Kunming to be the permanent office location of the GMS Regional Power Coordination Centre (RPCU).

Promote the rapid economic and social development of Yunnan

According to the features of important areas like the Northern Bay Economic Zone and the Xijiang River Economic Belt, and the inclusive numbers of important customers, the Guangdong Power Grid customized its service strategy for each market segment. It has promoted the diversification of power source structures and reasonable power structure in Guangzhou and has built reliable green power grids covering the urban and rural areas in the region by coordinating with various parties. The annual power supply topped at 98.54 tWh.

Facilitate Yunnan’s development as a bridgehead

Carrying out the strategy of “going global”, the Yunnan Power Grid has facilitated Yunnan’s growth as a “green economy; a province with distinct ethnic culture and a bridgehead opening to Southeast Asia”. It properly handled power shortages in dry seasons and power surpluses during the rainy seasons and helped with Yunnan’s project of “Prospering border area and benefitting people” to build the open economic zone in the border area. The power supply totaled 172.06 tWh in 2013.

Support Guizhou to develop the Northern Bay and Xijiang River Economic Belt

The Guizhou Power Grid strengthened the construction of West-to-East energy passage to support the steady growth of coal and electricity industries in the province so that Guizhou’s resource advantages can be translated into economic benefits. In 2013, the Guizhou Power Grid sold 113.2 tWh electricity and completed 32.42 tWh power transmissions in the West-to-East project; making active contributions to local economic growth. Guizhou ranked No. 1 in terms of its economic growth rate in the country and attained its objective in the 12th Five-Year plan a full two years ahead of schedule.

Promote the rapid economic and social development of Guizhou

The Guizhou Power Grid has constantly reinforced power infrastructure facilities to provide safer, smarter, better and cleaner power. It offered support to Guizhou’s strategy of industrial and labor force transfer, making contributions to its growth as the first regional economy in China with an economic size of over one trillion US dollars. The Guangdong Power Grid’s fixed asset investment totaled RMB 23.74 billion and power supply was 499.79 tWh in 2013.

Deliver service to Guangzhou’s mission of building itself into a national central city

The Guangzhou Power Supply Bureau has been dolled to Guangzhou’s mission of building the city into a national central city. The image of a smart city and a high living quality. It accelerates power grid infrastructure construction and constantly improved and innovates power supply services. It delivered a world-class power supply network and services to assist Guangzhou’s transformation and upgrading. The annual power supply delivered was 67.26 tWh in 2013.

Support of Shenzhen’s transformation and upgrading so as to guarantee the “Shenzhen international city”.

Support the Guangdong Power Grid to develop as an International Tourism Island

The Hainan Power Grid sped up urban and rural power grid upgrading and transformation and enhanced power supply reliability to satisfy the Province’s demand for power to support its’ position as an international tourism island. It made a fixed asset investment of RMB 3.12 billion and sold 18.86 tWh of electricity in 2013, thus facilitating the Province to attain its strategic objective of “green rise through scientific development”.

Enhancing Cooperation with Hong Kong and Macao

CIG provided assistance to the CPC Central Committee Internal Liaison Department in hosting Sino-Myanmar People-to-People Communication Roundtable Forum in Kunming to boost economic and trade cooperation between the two countries, laying a solid foundation for the cooperation in the power sector.

Voice

Whenever there is a power failure, the employ-ees of China Power will come to make the repair immediately, even during the night. It is really con-vincing to see “Chinese electricity”.

Voice

—Ning Yan
Factory manager in Myanmar
CSG is responsible for delivering ubiquitous power services with an aim of boosting the coordinated development of both urban and rural areas. We pay close attention to every cooperator and build an equal, coordinated and mutually beneficial platform for such cooperation. By putting people first, we take care of every staff member and try to make the company a happy place for them. CSG has cooperated with all stakeholders to realize our "Chinese Dream" and bring light and happiness to our society.

The Dongguan Power Supply Bureau of the Guangdong Power Grid, carried out a volunteer activity "Caring for left-behind children of migrant workers". After watching power emergency repair and experiencing meter readings, a child named Cai Nuo made up his mind to become an electricity engineer when he was grown up.

The Yixing Power Supply Bureau of the Guizhou Power Grid held a donation activity at the Dalu Primary School, Pomei Town, Ceheng County. Safety lectures were delivered at construction site to improve contractor’s on-site operational safety practices. Experienced employees are coaching newcomers.

The whole journey of every watt of power, from production to consumption, would be impossible without the sincere cooperation and hard work of all stakeholders. As enterprises are cells of society, CSG is bonded with other social sectors by electricity. We utilize the resources allocation function of power grid and build an electricity ecosystem in which such stakeholders as staff, clients, supply chain providers, community, and media, as well as government, conduct cross-sector cooperation, share values and coexist harmoniously. We do our utmost to send every watt of electricity to thousands of households, thus winning the awareness, recognition and support from our stakeholders and contributing more to social harmony.
Public Welfare

The power grid has linked CSG to thousands of households. With a sense of responsibility, we consider it our priority to improve people’s living standards. By visiting communities, rural areas, schools, hospitals, enterprises and low-income families, we try our best to repay society for its support of us and our efforts.

Poverty Alleviation

CSG has widely taken part in economic and social reconstruction of impoverished areas by focusing on poverty alleviation, partner assistance and the combination of development and collaboration. Additionally, we work to enhance the utilization rate of poverty alleviation goods and constantly help local areas to enhance their self-developing ability.

- CSG attended the Second China Charity Fair (CCF), displaying the achievements in “Electricity to Every Households” project, in ensuring power supply for disaster relief and poverty alleviation and made exchanges on charity innovation and ecological welfare.
- CSG provided 15.8 kWh free electricity to 1.38 million disadvantaged families in rural areas and low-income households in urban areas, repairing circuits and fitting lights for low-income families free of charge. In 2013 we supplied 2.46 tWh electricity for free.

Volunteer Activities

CSG set up a young volunteer team which has carried out themed volunteer activities to pass awareness of our care and love to society. Altogether 50,629 staff members have participated in volunteer activities and we have provided service up to 153,423 volunteer hours in 2013.

Support for Disaster-Stricken Areas

Facing such catastrophes as drought and earthquake and other unexpected emergencies, CSG tries its best to repair and restore electricity, give donations and help with the reconstruction of disaster-affected areas.

- When the Typhoon “Nida” occurred on July 23rd, 2013, CSG called all of our staff to make donations and the total donation was up to RMB 7.41 million.
- After the Ya’an earthquake on April 14th, 2013, we donated RMB 5 million to establish the second ethnic middle school in Ya’an County, Sichuan to help resume education for 2,700 students.

Protection of Supplier Interests

CSG strictly observes all the laws and regulations on bidding. We put in place a transparent purchasing platform and established a market bidding mechanism facilitating fair competition, standardization and efficiency, all designed to help suppliers strengthen their core competitiveness.

- We have gradually adopted a random expert selection system for major project bidding, providing technical guarantees for all-around assurance of equal and just bidding evaluation.
- We carry out credibility evaluations and set up a dynamic blacklist of suppliers to improve management at various stages, including bid invitation, purchase, along with contract signing and fulfillment to enhance suppliers’ quality assurance levels.
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- We have set up a stringent quality assurance system throughout the project cycle for all suppliers.
- We carry out reliability evaluations and set up a dynamic blacklist of suppliers to improve management at various stages, including bid invitation, purchase, along with contract signing and fulfillment to enhance suppliers’ quality assurance levels to promote the localization of core electricity equipment.

Cooperation and Win-win

Sticking to the principle of equality and mutual benefit, CSG actively builds up platforms for cooperation, broadens cooperative channels, achieves common development and creates value together with our partners. There was no complaint from our partners during all the past year.

Intensifying Cooperation with Power Plants

We conduct deep and pragmatic cooperation via our power plants by implementing “open, fair and just” dispatching. We continuously improve dispatching information disclosure and ensure the safe and stable operation of related power systems. The satisfaction rate of “open, fair and just” dispatching was 94.8% in 2013.

Urging Contractors to Enhance Management Levels

We work to strengthen contractors’ safety management and control. The “SS” management model was introduced into the construction of power grids. Encouraging contractors to enhance the ability of their staff to better manage the construction site, improve the level of safe on-site operation, perfect the engineering quality of their work and reduce the negative impact of construction on the surrounding communities.

Further Reading
CSG has been actively building its’ international exchange platform, establishing collaborative relationships with world-leading power companies and international organizations to enhance technological communication, working to achieve information sharing and to improve CSG’ s global influence and soft power.

CSG Board Chairman ZHAO Jianguo held talks with Pakistani Premier Nawaz Sharif to enhance communication related to energy themes and cooperation between the two sides.

CSG attended the 22nd World Energy Congress to discuss topics including energy industry reform, renewable energy development and their solutions.

In 2013, CSG conducted the second “Happy CSG” evaluation. According to the results, the company’ s happiness index and individual happiness index, respectively, increased 5 points and 2 points compared with those of 2011, showcasing the initial positive result of the “Happy CSG” measures.

CSG considers “establishing a happy CSG, increasing staff’ s happiness and creating an atmosphere of mutual caring between leaders and staff” a priority effort. CSG conducts research and assessments on the happiness of Company employees so as to develop a happy workplace.

Besides enhancing the material basis and confronting social and economic stress inherent in the working world, CSG has set up an improved and more reasonable salary distribution system and improved the incentive working environment; CSG has also strengthened the communications mechanisms to create a harmonious workplace atmosphere.

CSG pays attention to staff’ s physical and mental health so as to lower staff risks/chances of suffering from sub-health events/conditions and work to enhance staff’ s quality/life. CSG helps staff to evaluate their individual contributions objectively, establish correct values and increase their happiness with the resulting conditions.

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Main Organizations in Which CSG Holds Membership

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<td>China Electricity Council</td>
<td>Member at Deputy Director-General level</td>
<td>AIESEAP</td>
<td>Member</td>
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<tr>
<td>Power Sector Branch, China Institute of Internal Audit</td>
<td>Member at Vice Chair Level</td>
<td>National Committee of China Labor Security</td>
<td>Member</td>
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<tr>
<td>Board Forum for Asia</td>
<td>Diamond Member</td>
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Staff Development

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CSG cares about staff with relatively low happiness, such as middle-aged and young bachelor staff as well as those who must work over 60 hours per week or have an unsatisfactory family life. We help staff balance their work and life by lowering their work burden and by launching the staff monitoring program.

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Staff Rights and Benefits

Complying with China Labor Contract Law and other relevant regulations, CSG always respects human rights, encourages diversity, offers staff clear channels to express their opinions and concerns, and protects staff’s privacy, rights and benefits. In 2013, there were no major labor dispute within CSG.

- Focusing more on frontline, continuing to improve employment management in rural areas, and standardizing both business and employment management.

- Staff Training

Based on the competence of employees, CSG makes great efforts to develop training and assessment systems, improve the facilities of training centers all designed to unleash the potential of employees. In 2013, 6,112 team leaders at grassroots level.

Occupational Health & Safety

CSG pays great attention to occupational health and safety and the establishment of a unique safety culture, having provided a safe and healthy work environment and actively working to prevent personal safety accidents and occupational hazardous accidents. There were no occupational disease cases reported to CSG in 2013.

- Enhancing performance of the safety risk system, innovating safety training methods, hosting safety skills competitions, and building a safety culture of “risk awareness, whole staff participation, sharing, mutual help and continuous improvement”.
- In 2013, 157,000 staff were trained in safety skills.
- Organization of regular staff health checks, setting up staff health archives and strengthening the emergency response mechanisms for serious diseases of employees has been implemented.

Democratic Management

CSG holds staff representative conferences regularly to pursue transparency of company affairs as well as to assure democratic management and to protect staff’s rights to make decisions, manage and to supervise corporate affairs. Staff are encouraged to play an active role in the company’s affairs.

- Building staff representative joint meetings and approving three management systems:…including the CSG Labor Management Method…has been accomplished.
- Establishing the system of Trade Union liaisoning with staff representatives and Trade Union leaders liaisoning with grassroots units, setting up the Trade Union President’s mailbox and establishing an effective staff communication platform and mechanism to respond to staff requests on time has been effected.

Management of Executives

CSG has been strengthening the leadership and executive structure at all levels, selecting and training “outstanding executives”, and improving the leadership assessment mechanisms to support the implementation of the company’s strategies and its scientific development.

- Improving the executive selection mechanisms, optimizing the leadership and executive team structure in multiple aspects, and forming a more balanced executive structure in a constant goal.
- Developing specific post responsibility systems including the basic principle of “setting up a post, offering a mission and defining a responsibility” helps guide executive selection and training.
- Strengthening the education, training and post practice of executives to enhance their capabilities.

Career Development

CSG has set up an enabling environment for career development of its employees, guiding them and helping to match their career development plans with their own strengths and personal interests. CSG emphasizes non-material incentives to staff and recognizes staff value.

- CSG has broadened development channels for technical staff. We largely modified the Technical Experts Management Rules and improved the recruitment and administration mechanisms for technical and skilled staff. In 2013, 8 employees were appointed as senior technicians, etc as senior skilled staff with 95 model worker workshops and 95 teams were established.
- CSG organized “To-Top Cup” skills competitions which are aimed at enhancing the skills and job performance of employees through learning and training. During each competition, 15 staff are selected as CSG’s staff of outstanding skills, and nine of them are awarded the title of “Outstanding Technicians of Central Enterprises”.
- CSG has been strengthening the leadership and executive structure at all levels, selecting and training “outstanding executives”, and improving the leadership assessment mechanisms to support the implementation of the company’s strategies and its scientific development.

- Enhancing the work style of executives at all levels through activities focusing on the Party’s grassroots problem.
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Caring about the Staff

CSG cares about its staff, carrying out staff mentoring programs and organizing regular activities to promote their physical and mental health. We endeavor to establish a “Happy CSG, Home of Staff”.

Guangdong Power Grid

A 24-hour psychological consultancy hotline has been set up which provides free consultancy on stress and difficulties.

Guizhou Power Grid

Personnel carry out "home culture" programs to build up the staff culture center and organize featured cultural and entertainment activities to enrich staff's life.

Guangxi Power Grid

Established a mental health/self-help website for staff, giving lectures at the website, exchanging experiences between staff and their family.

Shenzhen Power Supply Bureau

Personnel are carrying out "let's play together and create a happy Power Supply Bureau for everyone" program through organizing various activities.

Yunnan Power Grid

Carried out a thematic activity, "the Memory of "August 1" "Xiluodu ±500KV DC transmission line" competition". Nearly 150 staff entered the final round and sang to celebrate the 64th anniversary of the founding of the People’s Republic of China.

Corporate core values are the long-term and fundamental belief of a company; they are the touchstone of a company’s decisions and actions. CSG has identified the core values as: “A myriad of twinkling lights, great reputation of CSG”. This concept which conveys the company’s commitment to serve the customers, care about the staff, protect the environment and return the support of the society, is also meant to communicate the nature of our intention to treat all stakeholders responsibly – including the government, customers, staff, business partners, environmental agencies, our various communities and the public.

CSG’s corporate culture has played a pivotal role in the integration and development of the company. CSG has developed a corporate culture that emphasizes safety, service and responsibility. This is done under a process in which a staff team with a commitment of “devoting myself to the brightness of thousands of homes”, is formed and an environment of actively fulfilling social responsibility is created. This then becomes the origin of CSG responsibility and guides CSG to conquer various difficulties and to continuously create value for stakeholders.

For details of CSG corporate culture, please log on http://www.csg.cn/qywh/nwwhln

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<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of people joining the Labor Union</td>
<td>100%</td>
<td>Percentage of disabled and disadvantaged staff</td>
<td>30%</td>
</tr>
<tr>
<td>Staff turnover</td>
<td>2%</td>
<td>Physical examination rate</td>
<td>100%</td>
</tr>
<tr>
<td>Average annual paid leave per capita</td>
<td>30 Days</td>
<td>Social welfare coverage</td>
<td>100%</td>
</tr>
<tr>
<td>Safety and operation of companies</td>
<td>99%</td>
<td>Dealing of employment</td>
<td>100%</td>
</tr>
<tr>
<td>Information disclosure</td>
<td>99%</td>
<td>Number of Model Workers of Central Enterprises</td>
<td>20 people</td>
</tr>
</tbody>
</table>
Responsibility Management

CSG practices social responsibility using a strategic management approach. It formulates a social responsibility work plan and management regulation, implements responsibility, responsibility practice, responsibility convergence, responsibility communication and responsibility research. Its social responsibility assists and complements its regulation management and assessment. The change approach effectively facilitates corporate responsibility practice and boosts the company’s reputation and soft power.

Responsibility Governance

Social responsibility governance is based on a three-tier linkage mechanism. The CSG headquarters leads Social Responsibility Steering Committee/the Strategy Department sets up a Social Responsibility Execution Division; CSG branches and subsidiaries have established their own Social Responsibility Sub-Steering Committees and Social Responsibility Execution Sections, and power supply bureaus have appointed a social responsibility coordinator.


Honors and awards

The CSG 2013 Corporate Social Responsibility Report of China Southern Power Grid Co., Ltd. was rated five stars by the rating panel for three consecutive years. The 2012 CSG Corporate Social Responsibility Report of China Southern Power Grid Co., Ltd. was awarded the Social Harmony Award for Corporate Social Responsibility Report and ranked number one among 1,084 reports by the 2011 White Paper for Chinese Enterprises’ Corporate Social Responsibility Report.

CSG was awarded The Innovation Award for Responsibility Communication, Top 50 Chinese Enterprises in Public Transparency at the Corporate Sustainable Competitiveness Annual Meeting and the 2013 Rating Reports Release Conference for the Top 50 Chinese Enterprises in Public Transparency.

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CSG strategy-driven social responsibility execution path

Incorporates specific responsibility practice with its specific business operation, and advances its social responsibility practice in a comprehensive manner. CSG’s practice is worth learning.

Responsibility Convergence

CSG takes concrete measures to implement the Harmonious Development Strategy Guidelines for Central Enterprises in the 12th Five-Year-Plan Period to enhance social responsibility management and promote grassroots execution. CSG branches and subsidiaries have carried out their own distinctive social responsibility practice with focuses on ten priority areas including reliable power supply, quality service, energy conservation and emission reduction.
CSG’s first Social Responsibility Week, with the theme of Responsibility Relay, is the largest campaign since the founding of the company. A Responsibility Survey gives the public a panoramic view of CSG, from its reliable power supply, to its quality services, environmental protection programs to activities promoting social harmony. The company makes use of video clips, mass media, microblog articles and comments and other message formats to improve operational transparency.


day 15: The Guangdong Power Grid Leg

Guangdong Power Grid held an Electricity Photo Exhibition and used a Mobile Business Office to offer on-site business applications and processing.

Theme: Responsibility Relay

The CSG First Social Responsibility Week 2013.5.15–2013.5.21

15 May: The Guangdong Power Grid Leg

16 May: The Guangxi Power Grid Leg

17 May: The Yunnan Power Grid Leg

18 May: The Guangxi Power Grid Leg

19 May: The Hainan Power Grid Leg

20 May: The Guangzhou Power Supply Bureau

21 May: The Shenzhen Power Supply Bureau

A Social Responsibility Communication Conference was held in Shenzhen and Campus Cooperation projects were publicized by live connections.

The company organized an Open Day to invite citizens observers to visit the Power Dispatching Center and EV Charging Stations in Foshan. Communications Campaigns were held at Power Supply Bureaus in the province.

The theme of the campaign is "Don't let the sun go down on injustice." Staff are encouraged to participate in the construction of a safe and harmonious society.

Language and Cultural Protection: The company helps the local community to upgrade production and train peasants in production skills.

The Guangdong Power Grid invested RMB 34.22 million in poverty alleviation programs in Qingxiu and Lacang counties. The company has helped the local community to upgrade production and train peasants in production skills.

Commitment

Open procurement information

Negotiation and communication

Cooperation on projects

Strategic cooperation and accountable procurement

Environment

15 May: CSG headquarters

CSG headquarters released The 2012 CSG Corporate Social Responsibility Report and launched the First Social Responsibility Week.

The Power Consumption Publicity Campaign and “Love Children and the Future” Campaigns were held at Guiyang, Anshun and Duyun.

The company formulated smart grid industry development plans, launched pilot programs on key equipment R&D and promoted marketization. The alliance is charged with the mission to develop a smart grid able to combine with a comprehensive industry chain, and work toward an innovative innovation capacity.

Communication with Stakeholders

Stakeholders

Requirements

Communication and Response Approaches

Government

Employees

Customers

Partners

The Guangdong Power Grid signed the Five-Year-Plan Power Grid Construction Strategic Cooperation Agreement with the Guangdong Provincial Development and Reform Commission, to promote the development of the Guangzhou Smart Grid and ensure power supplies to the city.

The Shenzhen Power Supply Bureau implements a motivational program to reward outstanding staff. Staff shall receive NCP (profits) and bonuses for their outstanding performance on customer service, and power grid construction. Staff can redeem the ncpa in exchange for 12 benefits including free film tickets, paid leave and a free taxi.

The Foshan Power Supply Bureau launched tariff guarantee measures. The company signed a three-party agreement with enterprises and banks. Under the circumstances that enterprises fail to pay power tariffs on time, banks will issue advance payments. Enterprises will pay capital and interest to the bank.

The Guangzhou Power Grid works with local governments and research institutes to establish the Guangzhou Smart Grid Industry Technology Innovation Strategic Alliance. The alliance will formulate smart grid industry development plans, launch pilot programs on key equipment R&D and promote marketization. The alliance is charged with the mission to develop a smart grid able to combine with a comprehensive industry chain, and work toward an innovative innovation capacity.

The company gives top priority to environmental protection efforts, and sticks to eco-friendly construction in The Huizhou Pumped Storage Project. The facility, and will continue to make every effort to remediate vegetation in nature reserve parks.

Culture and the general public

The Guangdong Power Grid invested RMB 34.22 million in poverty alleviation programs in Qingxiu and Lacang counties. The company has helped the local community to upgrade production and train peasants in production skills.

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About us

Corporate Governance

CSG is a State-Owned Enterprises Company. In accordance with Company Law and the requirements of the State-Owned Assets Supervision and Administration Commission of the State Council (SASAC), CSG has established a modern corporate Governance structure consisting of a board of directors, a supervisory board and an operations management team. The board of directors plays a key role in corporate governance. The board of directors exercises administrative authority in accordance with the Articles of Association.

CSG’s strategic orientation is: To be service-oriented, operations-based; conglomerate-type operations, and an integrated management approach. CSG is dedicated to providing a highly effective operational mode to assure State-Owned asset appreciation.

CSG’s organizational structure

CSG headquarters has 21 departments, one institution and four branches, namely the Bidding Service Center; Education Training Center; CSG EHV Power Transmission Company; and the CSG Management Team. The board of directors plays a key role in corporate governance. The board of directors exercises administration authority in accordance with the Articles of Association.

Organizational structure

Overview: CSG and its Secondary Units

China Southern Power Grid Co., Ltd. (hereinafter referred to as CSG) was established in 2002. CSG invests, constructs and operates power networks in Guangdong, Guangxi, Yunnan, Guizhou and Hainan provinces and region. The service area is of one million square kilometers, with a population of 230 million. The Company is headquartered in Guangzhou.

### Secondary units

<table>
<thead>
<tr>
<th>Secondary units</th>
<th>Main business</th>
<th>Official website</th>
<th>Company addresses</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guangdong Power Grid Company</td>
<td>Responsibility includes: investment, construction, operation, management, service and maintenance of power grids in its service area. Other main business scope includes: power trading, power dispatching, power resources optimization, power marketing, power equipment sales, commissioning, testing, Guangzhou Power Grid, Yunnan Power Grid and Guizhou Power Grid are responsible for “West-to-east” power transmission plan projects.</td>
<td><a href="http://www.gwlg.cn">http://www.gwlg.cn</a></td>
<td>No.781, Dongfeng Road, Guangzhou, Guangdong</td>
<td>020-68157905</td>
</tr>
<tr>
<td>Guangzhou Power Grid Company</td>
<td></td>
<td></td>
<td>No. 1-5, Haidian Road, Guangzhou, Guangdong</td>
<td>020-68152023</td>
</tr>
<tr>
<td>Yangzhou Power Grid Company</td>
<td></td>
<td></td>
<td>No. 1-5, Haidian Road, Guangzhou, Guangdong</td>
<td>020-68152023</td>
</tr>
<tr>
<td>Hangzhou Power Grid Company</td>
<td></td>
<td></td>
<td>No. 1-5, Haidian Road, Guangzhou, Guangdong</td>
<td>020-68152023</td>
</tr>
<tr>
<td>Hairui Power Grid Company</td>
<td></td>
<td></td>
<td>No. 1-5, Haidian Road, Guangzhou, Guangdong</td>
<td>020-68152023</td>
</tr>
<tr>
<td>Shenzhen Power Supply Bureau Co.Ltd</td>
<td></td>
<td></td>
<td>No. 116, Fuyong Road, Guangzhou, Guangdong</td>
<td>020-88260086</td>
</tr>
<tr>
<td>CSG Extra High Voltage Power Transmission Company</td>
<td></td>
<td></td>
<td>No. 116, Fuyong Road, Guangzhou, Guangdong</td>
<td>020-88260086</td>
</tr>
<tr>
<td>CSG Power Generation Company</td>
<td></td>
<td></td>
<td>No. 116, Fuyong Road, Guangzhou, Guangdong</td>
<td>020-88260086</td>
</tr>
<tr>
<td>CSG International Co., Ltd</td>
<td></td>
<td></td>
<td>No. 42nd Floor, R&amp;F Plaza, No. 35, Xingzhou Road, Shenzhen, Guangdong</td>
<td>0755-88938000</td>
</tr>
<tr>
<td>CSG Science Research Institute</td>
<td></td>
<td></td>
<td>No. 32nd Floor, Bldg. No. 3, Zhongxin Building, No. 6, Nanjing Road, Nanjing, Jiangsu</td>
<td>025-85110888</td>
</tr>
<tr>
<td>CSG Grid Synthesis Energy Co., Ltd</td>
<td></td>
<td></td>
<td>No. 42nd Floor, Bldg. No. 3, Zhongxin Building, No. 6, Nanjing Road, Nanjing, Jiangsu</td>
<td>025-85110888</td>
</tr>
<tr>
<td>CSG Financial Company</td>
<td></td>
<td></td>
<td>No. 32nd Floor, Bldg. No. 3, Zhongxin Building, No. 6, Nanjing Road, Nanjing, Jiangsu</td>
<td>025-85110888</td>
</tr>
<tr>
<td>CSG Media Co.Ltd</td>
<td></td>
<td></td>
<td>No. 739, Dongfeng Road, Yantu District, Shenzhen, Guangdong</td>
<td>0755-88938000</td>
</tr>
<tr>
<td>Dinghe Property Insurance Co., Ltd</td>
<td></td>
<td></td>
<td>No. 1-4, Floor, Building No. 12, No. 35, Xingzhou Road, Shenzhen, Guangdong</td>
<td>0755-88938000</td>
</tr>
</tbody>
</table>
About this Report

Dear readers, the Report reflects CSG’s CSR performance during the year 2013. We hope it will help you to better understand our commitment to our tasks and goals and win your support for our future development.

This Report is the seventh in a series of Social Responsibility Annual Reports issued by "The China Southern Power Grid Co., Ltd. The Year 2012 CSR Report" was released on 15th May, 2013 and the Year 2014 CSR Report will be published in May of 2015. All reports were originally written in Chinese and translated to English. Adhering to the principles of “objective, standard, transparent, and comprehensive”, the Report discloses the company’s safe and quality power supply, and its performance in ways relevant to the economic, environmental and societal responsibilities of CSG. The Chinese version will be considered as the final/authentic version and, should discrepancies occur between the Chinese and English versions, the Chinese version is the authoritative one.

Time Frame
The time frame of the Report is from January 1st, 2013 to December 31st, 2013. Part of the content extends to other years’ performance reporting data designed to enhance comparability and to support the forward looking objectives of the Report.

Report cover range
“China Southern Power Grid Co., Ltd.,” is the principle part of the business mix presented in this Report, including its subsidiaries, branches and affiliated institutes.

Compilation Basis
CSG Social Responsibility Index- CSG-CSR 1.0

References
SASAC’s “Guidelines---about Central Enterprises’ Implementation of Social Responsibility”, (No.1, 2008, Research of SASAC)
CASS-CSR 3.0 of Chinese Academy of Social Sciences
Global Reporting Initiative’s Guidelines, GRI Version 4
“China Industrial Enterprise and Industrial Association Social Responsibility Guidelines”, China Federation of Industrial Economics’

Sources
Report are based on the officially published documents, statistics reports and other published data and information sources.

Reliability
CSG guarantees there is no false record, misleading statement or substantial omissions in the Report.

Title Description
In the Report, “China Southern Power Grid Co., Ltd.” is also referred to as “CSG”, “the company”, or “we”.

Improvements compared to previous reports
- A how-to-read guide
- Expand coverage of index for better substantiveness
- The Value of 1Kwh acts as a clue
- Highlight key performance
- Disclose hot topics including mobile internet and haze weather
- Stakeholders’ comments in standardized style
- Further readings suggested
- New Glossary index

Further reading
Should you wish to know more about social responsibility of CSG, please visit the official website at: www.csg.cn, and please refer to the Social Responsibility Report published by Guangdong Power Grid, Guangxi Power Grid, Yunnan Power Grid, Guizhou Power Grid, Hainan Power Grid, Guangzhou Power Supply Co., Ltd and Shenzhen Power Supply Co., Ltd in 2013.

How to get a hard copy
You can download an electronic copy from our official website. Should you have any inquiries, or should you need a hardcopy, please send email to csr@csg.cn, or call us at (020) 38121917.

2014 Outlook

Power consumption in South China will grow relatively slowly in the foreseeable future, compliance in resource development and environmental protection will be more stringent, the power market will confront many uncertainties in 2014 and beyond and, still, the company will develop steadily, constantly boosting its core competencies to make a greater contribution to the economic development and social harmony in its service area.

On the strategic management front, the company will advance the To-Top Program and give full play to the function of the eight Comprehensive Management Committee. The company will speed up the development of advanced management systems, standardized operational systems, and IT systems.

On the power supply front, the company will constantly improve power supply reliability and strive to reduce the 8% SAIDI grid-wide and the 10% SAIDI costs in the western region. Investment in power grid construction will also be enhanced with a budget of RMB 84.6 billion. The company will also enhance risk controls, optimize contingency plans, and will develop and install better communications and connections with emergency command platforms of governments at all levels. The company will actively advance both technology and service innovation.

On the environmental protection front, CSG will leverage its green platform role of optimizing regional energy distribution and facilitate sustainable development of power supply source. The company shall achieve 161.3 billion Kwh "west-to-east" power transmission and 22.7% growth rate. The company will promote clean-side energy conservation and strive to achieve a line loss rate of 2.43% (based on the statistics about the total assets). CSG will take solid measures to meet evaluation objectives and make its contribution to regional ecological protection and a beautiful China.

On the economic performance front, the company will vigorously explore the power market in order to achieve power sales, aiming at 780.9 billion Kwh, with main business revenues at RMB 463.9 billion, and EVA at RMB 4.72 billion. CSG is committed to long-term sound development and will boost asset management to realize a 16.6% net worth ratio of retiring assets and 66% debt/assets ratio.

On the social harmony front, the company will practice delivery of electricity as its’ universal service, strengthen rural power grid upgrading to meet the power demand driven by rural economy development and living quality improvement. CSG will continue its core talents development scheme and create promotional opportunities for professionals at all levels. CSG shall improve its communication with stakeholders, expand cooperation channels for a win-win situation.
Report rating


Rating Basis
CASS-CSR 3.0 and Rating Standards on Corporate Social Responsibility of Chinese Enterprises(2016)

Rating procedure
1. Rating panel interviewed departments responsible for CSG social responsibility.
2. Rating panel had an on-site review of relevant documents cited in CSG and its branches/subsidiaries.
3. Rating panel made comments on the management process of corporate social responsibility report.
4. Rating panel commented on content disclosed in the report.

Rating conclusions
Process-orientation (★★★★★)
CSG’s Strategy and Policy Department coordinated the writing process. CSG’s management team participated and were involved in the process. The writing team identified the stakeholders and did an in-depth analysis on key issues based on results generated from interviews, workshops and seminars. The Report was planned to be released at the CSR Responsibility Week and was presented in diversified forms including hard copies, electronic versions, 2D links and in different languages.

Substantiveness (★★★★☆)
The Report covers substantive topics including “Ensuring power supply”, “Ensuring power use in rural and remote areas”, “Comprehensive outage management”, “Facilities Management”, “Improvement of power transmission efficiency” and “System and measures of green power supply”. The Report gives a detailed, substantive and well-versed analysis of CSG’s performance in the power supply sector.

Completeness (★★★★★)
The Report disclosed that 84.5% of core indicators in power supply sectors and demonstrated high-levels of completeness. Core indicators include: responsibility management, strategy management, power supply, economic performance assessments, green and environmental/social harmony measures.

Balance (★★★★★)
The Report discloses a number of negative points relative to information involving topics on: major power safety accidents and equipment accidents, and presents all in a detailed manner; correct measures on regional casualty are put forward in a positive manner. The Report is an outstanding and well-balanced one in terms of disclosing both positive and negative information.

Comparability (★★★★★)
The Report disclosed 45 key performance indicators covering 5 years of past consecutive data and demonstrated high-levels of comparability; the Report disclosed and compared indicators including SAIDI and line loss rate with domestic and international levels and, therefore, demonstrated excellent horizontal comparability.

Readability (★★★★★)
The Report is well structured, fluent, and concise. The Report is very well supported by a number of visual data presentations including tables and flow charts; in terms of layout, the Report is exquisite. The Report offered special columns on further Reading and Report Glossary Index, The Report performed very well in terms of readability for clarity of communication.

Innovation (★★★★★)
The feature report on responsibility elaborates on priorities of power sectors. The Report explains its innovation in compilations. It is, all-in-all, a very innovative report.

Overall Rating (★★★★★)
The 2013 Corporate Social Responsibility Report of The China Southern Power Grid Co., Ltd. was rated at the five-star level by the panel. The materials submitted should be regarded as an outstanding example of corporate social responsibility reports.

Suggestions
The Report should further disclose Key Performance Indices (KPI) to extend its completeness.

Endorsements from a third party

Chinese Enterprise Social Responsibility Rating Panel

CHI Xuping
Deputy Director General of the Research Bureau of SASAC

Endorsements from a third party | 175
Endorsements from a third party

YIN Gefei Deputy Director of China WTO Tribune, Director of Peking University International Social Responsibility and Sustainable Development Research Center.

CSG’s 2013 Corporate Social Responsibility Report is a high quality report as it is timely and relevant. Firstly, the Report disclosed its practice in incorporating and respecting human rights and staff management. The Report discussed priorities in the environmental protection sector (for example: smog and biological diversity) and demonstrated CSG’s commitments in diverse areas of environmental protection. The Report reflected CSG’s sincerity in its communication with its stakeholders. What impressed me most is the case study on 110kv Huahui Substation. CSG had an equal, candid and effective communication with the stakeholders during the construction process and invited the stakeholders for site visits upon project completion. CSG adopted standardized process management in the Report writing process.

ZHANG Haiyang Deputy Director of the Liaison Division, China Electricity Council.

Corporate Social Responsibility Reports reflect a company’s management capacity and demonstrate company commitment to society. CSG’s 2013 Corporate Social Responsibility Report gave a complete picture of its years of social responsibility practice and dedicated power supply service. The Report is well structured, well versed and is supported by a large number of accurate and convincing data. The Report responded to the community’s concerns by explaining its efforts in addressing smog and other weather challenges. The Report inherited its innovative legacy and introduced cartoon images and voices from a third party. All in all, this is a sincere and innovative report.

CHENG Duosheng Director of Enterprise Innovation, The China Enterprise Federation.

CSG’s 2013 Corporate Social Responsibility Report built on its past success and made new breakthroughs and innovations. Special topics on universal service and the Central Government’s preferential policies on agriculture reflected Chinese characteristics and CSG’s business nature. Further readings on the value of 1kwh act as a storyline to reflect the relationship between CSG’s operation and social responsibility. The Glossary Index is reader friendly, it helps readers to better understand electricity terms.

UN The Global Compact

CSG has observed the Ten Principles in its decision making and operations process ever since its entry into UN Global Compact in 2010. The company actively participates and supports events held by the Global Compact in China.

<table>
<thead>
<tr>
<th>Ten Principles</th>
<th>In the chapters of the Report</th>
<th>Compliance and progress made in 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Businesses should support and respect the protection of internationally proclaimed human rights</td>
<td>Staff’s Rights and interests Democratic management</td>
<td>Comply with laws and regulations, implement Labor Law and rules.</td>
</tr>
<tr>
<td>Make sure that they are not complicit in human rights abuses</td>
<td></td>
<td>Pay full respect to, and guarantee, staff’s right to know, right to participate, right to supervise and right to express</td>
</tr>
<tr>
<td>Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining</td>
<td>Democratic management</td>
<td>CSG acts in strict compliance with the Labor and Contract Laws of People’s Republic of China, and sticks to fair employment and equal pay. Frontline staff receive preferential compensation packages.</td>
</tr>
<tr>
<td>The elimination of all forms of forced and compulsory labor</td>
<td>Staff rights, occupational safety and health</td>
<td>Every plant eligible for trade union establishment has established a trade union. Every staff at grass roots level is a trade union member.</td>
</tr>
<tr>
<td>Staff’s rights</td>
<td>Staff rights</td>
<td>Carry out staff mentoring programmes, and help staff alleviate psychological pressures and strike a balance between life and work. Staff’s average paid annual leave is 9 days.</td>
</tr>
<tr>
<td>The effective abolition of child labor</td>
<td>Staff rights</td>
<td>Improve management on staff representative meeting, and reinforce democratic management at four levels: grid, province, city, and county. Staff representative meeting, taskforce meeting and joint meetings were held. Proposals made by staff representatives were collected.</td>
</tr>
<tr>
<td>The elimination of discrimination in respect of employment and occupation</td>
<td>Staff rights</td>
<td>Absolute elimination of child labor and CSG acts as an equal opportunity employer, employ any qualified people regardless of his/her disability.</td>
</tr>
<tr>
<td>Businesses are asked to support a precautionary approach to environmental challenges</td>
<td>Green and Environmental Protection</td>
<td>Fossil fuel consumption for unit power generation is 215 grams standard coal per kWh.</td>
</tr>
<tr>
<td>Undertake initiatives to promote greater environmental responsibility</td>
<td>Green and Environmental Protection</td>
<td>West-to-east” power transmission hit 92Twh. 5.61 million tons of standard coal saving achieved by energy-saving power generation and dispatching.</td>
</tr>
<tr>
<td>Encourage the development and diffusion of environmentally friendly technologies</td>
<td>Green energy Energy Efficient Operation</td>
<td>The average coal consumption of coal-fired power generation was 301 grams/KWh, representing 1 gram/KWh reduction than that of 2012. Grid-wide line loss rate was 6.026% in 2013.</td>
</tr>
<tr>
<td>Businesses should work against corruption in all its forms, including extortion and bribery.</td>
<td>Law Compliance</td>
<td>CSG actively facilitates Ethical Central Enterprise Initiatives and avoids legal risks and works with a focus on internal control enhancement, performance supervision, and puts supervision of important decision implementation in place.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSG is dedicated to establishing itself as a zero-corruption and clean company.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSG’s long term corporate credit rating is super AAA In 2013, no major law/regulation breaches happened.</td>
</tr>
</tbody>
</table>
Social Harmony

Energy Conservation and Emissions Reduction Performance during Power Generation

Environmental Protection

Power Supply

Power Transmission and Transformation Facility

Economic Performance

On-Load Operations

Power Grid coordinates and communicates with power plants and dispatches power in accordance with the Open, Fair and Impartial Power Dispatching principle. The principle enables reasonable power grid operation and ensures a safe and reliable power system.

AC Frequency

A cycle of AC changes, i.e. a sinusoidal waveform. AC frequency refers to each second changes of AC.

Operational Structure

Incidents are not deemed as serious as accidents, but incidents will have negative impacts on the production and social impacts.

On-Load Operations

Electric facilities require frequent testing, inspection and repair during long-term operation. On-load operation refers to the inspection, repair and testing of high-voltage electric facilities without cutting off the power, done as an effective means to ensure normal power supply.

Pumped Storage Power

Water is pumped from downstream reservoirs to upstream reservoirs with-off peak power at night which is released back to downstream reservoirs for power generation during the peak hours of power consumption, balancing power consumption and applying to power grid frequency modulation and conservation for accident.

Energy Efficient Power Generation

Based on the premise of reliable power supply, renewable resources of power generation are given top priority according to the principle of energy conservation and economy. Renewables are put in the order of priority based on unit energy consumption and pollutant emission, serving as the basis for power supply. Power generation systems need to take into account energy consumption and resource consumption and pollution emissions.

Green SC Power Grid

Effective utilization of modern information technologies including Computers, Communications and Control (C3) technologies, and traditional power technologies, oil in enhance safety, stability, economic operation, customer service and energy conservation of the power grid so as to make it a smart, efficient, reliable and green one.

Key Management

Guide to Reading the Report

The Management Team

Regional Economic and Social Development Promotion

An "incident" is not deemed as serious as an accident, but incidents will have negative impacts on normal power supply, can threaten safety and stability of power systems and major social incidents.

Power Safety Incidents

Generally presented with the index of reliability on service (RS), corresponding to the index of SAIDI, generally average interruption duration/hour period/loss of SAIDI emphasizes customers experience and satisfaction.

Power Supply Reliability

Closed operations refers to the inspection, repair and testing of high-voltage electric facilities without cutting off the power, done as an effective means to ensure normal power supply.

On-Load Operations

Electric facilities require frequent testing, inspection and repair during long-term operation. On-load operation refers to the inspection, repair and testing of high-voltage electric facilities without cutting off the power, done as an effective means to ensure normal power supply.

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Energy Efficient Power Generation

Based on the premise of reliable power supply, renewable resources of power generation are given top priority according to the principle of energy conservation and economy. Renewables are put in the order of priority based on unit energy consumption and pollutant emission, serving as the basis for power supply. Power generation systems need to take into account energy consumption and resource consumption and pollution emissions.

Green SC Power Grid

Effective utilization of modern information technologies including Computers, Communications and Control (C3) technologies, and traditional power technologies, oil in enhance safety, stability, economic operation, customer service and energy conservation of the power grid so as to make it a smart, efficient, reliable and green one.

Key Management

Guide to Reading the Report

The Management Team

Regional Economic and Social Development Promotion

An "incident" is not deemed as serious as an accident, but incidents will have negative impacts on normal power supply, can threaten safety and stability of power systems and major social incidents.

Power Safety Incidents

Generally presented with the index of reliability on service (RS), corresponding to the index of SAIDI, generally average interruption duration/hour period/loss of SAIDI emphasizes customers experience and satisfaction.

Power Supply Reliability

Closed operations refers to the inspection, repair and testing of high-voltage electric facilities without cutting off the power, done as an effective means to ensure normal power supply.

On-Load Operations

Electric facilities require frequent testing, inspection and repair during long-term operation. On-load operation refers to the inspection, repair and testing of high-voltage electric facilities without cutting off the power, done as an effective means to ensure normal power supply.

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Feedback form

Dear readers:

Thank you for reading our Report. CSG will make every effort to improve the Report in the future. We would appreciate if you could let us know our comments.

Multiple choice questions: (please tick your choice)

1. You overall comments on the Report is: [ ] Excellent, [ ] Very Good, [ ] OK, [ ] Poor, [ ] Very Poor
2. You think the quality of the information disclosed is: [ ] Excellent, [ ] Very Good, [ ] OK, [ ] Poor, [ ] Very Poor
3. You think the structure of the Report is: [ ] Excellent, [ ] Very Good, [ ] OK, [ ] Poor, [ ] Very Poor
4. You think the layout design of the Report is: [ ] Excellent, [ ] Very Good, [ ] OK, [ ] Poor, [ ] Very Poor
5. The readability of the Report is: [ ] Excellent, [ ] Very Good, [ ] OK, [ ] Poor, [ ] Very Poor

Open-ended questions

1. In your opinion, what improvements should the Report make?
2. Please specify information you find useful.
3. What other social responsibility information should the Report disclose?
4. Any suggestions on CSG’s social responsibility practice, please specify?

Innovative report compilation model

Process management added value to the report

We adopted process management in the report compilation process. The Report helps disseminate philosophy, improve practice and enhance management capacity. CSG watches its own social responsibility practice and service closely, pursues timely understanding and responds to requirements and expectations of the stakeholders, strives to boost its services and to meet its mission as a leading international power grid.

The report spans 3 calendar years, namely 2012, 2013 and 2014, and three stages; namely planning, writing and release.

Establish Report Writing Team
CSG Strategy and Policy Department coordinated and led the team, its main responsibilities include: report writing, coordination, summary and assessment. Other departments, branches and subsidiaries participate on the team.

Launched report writing training
The writing team held the report launch meeting and organized report writing training. The training provided the framework for social responsibility status quo and development trends in China and in the world, and it identified writing objectives.

Communications with Stakeholders.
The writing team communicated with clients, suppliers, partners, media and the general public, understood their expectations and requirements, and listened to their suggestions and comments.

Identified Substantial issues
In accordance with the mainstream reporting indices (GRI G4, CASS-CSR3.0 and CSG-CSR1.0), the team sorted out issues that should be disclosed, and identified substantial and relevant issues that concern the stakeholders and CSG most.

Preparation Stage
The team identified a monitoring mechanisms to ensure the mechanisms meet the pre-set targets.

Monitoring Stage
Follow, monitor, and collect execution update of key performance index.

Support Stage
The team organized every department to collect and compare social responsibility cases and to provide professional service to departments.

Data Collection
Identified report focus and report content, optimized report framework.

Report Writing
Write, design and print the report.

Report Release
Release the report at CSG Social Responsibility Week.

Disseminate philosophy, Improve practice, Enhance management
Key Corporate Social Responsibility Performance of CSG in 2013

### Power Generation Side

#### Year 2013 National power source structure

- **Hydropower**: 28,002,000,000 KWh (12.4%)
- **Nuclear power**: 9,027,000,000 KWh (3.9%)
- **New energy**: 1,461,000,000 KWh (0.6%)
- **Other**: 10,000,000 KWh (0.04%)

Total installed power generation capacity in China: 1,247,380,000,000 KWh

#### Year 2013 National power source structure

- **Hydropower**: 86,238,000,000 KWh (3.4%)
- **Nuclear power**: 480,000,000 KWh (0.2%)
- **New energy**: 557,000,000 KWh (0.2%)
- **Other**: 120,500,000,000 KWh (5.0%)

Installed power generation capacity in China: 225,390,000,000 KWh

### Customer side

#### Customer structure in year 2013

- **Primary industry**: 115,500,000 (1.5%)
- **Secondary industry**: 13,300,000 (0.1%)
- **Tertiary industry**: 634,000,000 (8.8%)
- **Urban and rural residents**: 8,947,000,000 (114.3%)
- **Non-CSG**: 108,000,000 (1.4%)

Total population in CSG’s service area: 316,000,000

#### Power consumption structure in year 2013

- **Primary industry**: 218,000,000 KWh (1.6%)
- **Secondary industry**: 505,000,000 KWh (4.6%)
- **Tertiary industry**: 4,349,000,000 KWh (37.1%)
- **Urban and rural residents**: 2,125,000,000 KWh (16.2%)
- **Non-CSG**: 906,000,000 KWh (7.1%)

Total power consumption in the five provinces and regions in China: 8,497,000,000 KWh

#### Environmental protection

- **Voluntary activities participation (person-times)**
- **Staff training rate (10,000 RMB)**
- **Investment in the construction and upgrading of rural power grid (100 million RMB)**
- **CSG power sales**: 7,433,000,000 KWh

#### Social harmony

- **CSG main business data**: 2013
- **Power sales (0.1TWh)**
- **Total assets (100 million RMB)**
- **Electricity transmitted from the West-to-East of China (0.1TWh)**
- **CSG staff**: 316,000

#### Economic performance

- **SAIDI of urban users (hours/household)**
- **Power saving through line-loss reduction (0.1TWh)**
- **Voluntary activities participation (person-times)**
- **Staff training rate (10,000 RMB)**
- **Investment in the construction and upgrading of rural power grid (100 million RMB)**

#### Power supply

- **Total power consumption in year 2013**: 8,497,000,000 KWh
- **Investment in power grid construction (10,000 KVA)**
- **Power sales (0.1TWh)**
- **Total assets (100 million RMB)**
- **Electricity transmitted from the West-to-East of China (0.1TWh)**

#### Key Corporate Social Responsibility Performance of CSG in 2013

- **Installed power generation in the five provinces and regions**: 225,390,000,000 KWh
- **Available annual capacity for the five provinces and regions in CSG’s service area**: 285,390,000,000 KWh