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AES CORPORATION (A): GLOBAL SOURCING INITIATIVE

Al Naqvi finished his milestone presentation on the progress of the global sourcing initiative at AES Corporation. The presentation had gone well. The other senior executives liked the progress Naqvi's team had made during its first year. Although happy with this early success, Naqvi, knew that much work remained to be done. Now Phase II of the project was underway, and his team would have to repeat its success, if not surpass it, to meet its long-term goal of becoming a world-class supply chain management organization.

AES Corporation

Founded in 1981, AES Corporation was a leading independent power company. It owned and operated more than $34 billion of assets in 28 countries on five continents, including 118 power-generation facilities that provided approximately 45,000 megawatts of generating capacity. AES also operated 17 electric-distribution companies that delivered electricity to some 11 million end-use customers. About 27% of AES revenue came from businesses in North America, 19% from the Caribbean, 38% from South America, 10% from Europe and Africa, and 6% from Asia. The company was divided into four business segments: the *contract generation* segment consisted of, multiple power-generation facilities located around the world, which entered into long-term contracts to limit exposure to electricity price volatility; the *competitive supply* segment sold directly to wholesale customers in volatile, competitive markets; the *large utilities* segment combined generation, transmission, and distribution capabilities in three specific markets: United States, Brazil, and Venezuela; and the *growth distribution* segment included distribution facilities in high-growth, developing countries (**Exhibits 1** and **2**) that benefited all of its stakeholders and built long-term value for its shareholders.

To realize these goals, the company strove for excellence in the performance, operation, and management of each and every AES business. The 32,000 people of AES were also guided by four shared values: fairness, integrity, social responsibility, and fun. Autonomy played a key role in the firm's culture. Initially, decentralization allowed the company to expand to different continents by focusing on rapid growth and new development opportunities; however, more

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This case was prepared by Rajiv Ranjan (MBA '04) and updated by Amena Syeda (MBA '09) and Arnon Katz (MBA '09) under the supervision of Senior Lecturer Tim Laseter. It was written as a basis for class discussion rather than to illustrate effective or ineffective handling of an administrative situation. Certain proprietary information has been disguised at the request of the company.

recently, investments in Argentina, Brazil, and the United Kingdom had come under serious price and currency pressure. Although AES continued to increase its revenue through new acquisitions and operations, its bottom line suffered. The company's net income decreased to $273 million in 2001 from $795 million in 2000, and AES posted a loss of $3.5 billion in 2002.

Early in 2002, AES established a cost-cutting office with a turnaround strategy that included plans to capture scale benefits in the procurement of services and supplies. During that same year, AES also reduced its capital expenditure, planned business-development spending, and exited certain nonperforming businesses. In December 2002, the company completed a $2.1 billion refinancing of certain bank loans and debt securities, substantially eliminating all scheduled parent-debt maturities until November 2004. Also in 2002, AES changed some of its senior management positions, including the appointment of COO Paul T. Hanrahan to CEO. These changes were accompanied by a shift in its management philosophy toward a more centralized organizational structure in certain functional areas and included the establishment of a new global sourcing department. Apart from supporting immediate financial goals, global sourcing offered a more effective organizational structure along with the ability to position supply chain management as a competitive advantage.

Global Sourcing Department

Al Naqvi joined AES as the first employee in its new global sourcing department. Naqvi brought extensive experience in strategic sourcing and procurement with him to the company. Prior to starting his own company, he had worked in strategic procurement at Nabisco. Then, as CEO and cofounder of ShareMax.com, a company providing strategic sourcing solutions, Naqvi had witnessed the boom-and-bust cycle of the Internet era. Despite his many years of experience prior to AES, Naqvi had never witnessed the commitment and belief in strategic sourcing at the CEO level. In fact, it was one of the main reasons behind his decision to take up this challenge. According to Hanrahan's 2002 annual report:

> We have recently announced a major realignment of our businesses into two primary business units—Generation and Integrated Utilities. Organizing along these dimensions will allow us for the first time in AES's history to take advantage of our unique global size and scale by undertaking companywide strategic sourcing. We expect this strategic sourcing effort to result in pretax cash savings of $75 million per year.

To lead the traditional, decentralized AES purchasing organizations spread throughout the globe toward a strategic sourcing model, Naqvi recruited Brooker Farrior, Mark Leslie, Mick Tamas, Vijai Singh, and Brian Thompson as members of the global sourcing department. Farrior, Leslie, and Tamas brought extensive firsthand consulting experience in supply chain management (SCM) and strategic sourcing and a fresh, outside perspective. Singh and Thompson, both long-term AES employees, provided deep knowledge of both AES and the power-generation industry.

Naqvi set the goals and a timeline for the transformation to a world-class global sourcing organization in three phases to occur over a three-year period:

- *Phase I*: Building the team, designing the program, conducting spending analysis, and establishing a procurement function and internal controls.
- *Phase II*: Taking sourcing to the next level by applying advanced-cost modeling to understand the cost structure of its suppliers, instituting supplier-relationship management, and building the information-technology capability to aid efficient SCM support.
- *Phase III*: Completing the capability building and transitioning to a continuous improvement model including supplier development and vertical integration.

In order to continuously monitor the program, Naqvi would regularly measure the progress on three dimensions. *Cost management* would track the goal of reducing annual external purchases by $150 million while improving quality, service, and reliability. *Competence* benchmarked the organizational capability relative to a world-class standard for global sourcing and supply chain management. A qualitative assessment of c*ulture* ensured that the global sourcing organization leveraged AES values to achieve excellence through effective change management.

Progress in the First Year

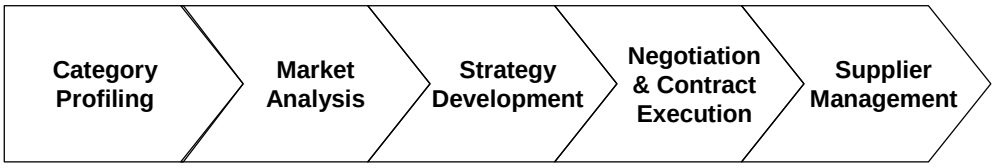
Naqvi's kick-off presentation outlined the goals, program organization, and timeline for top executives. The executive team approved his plan to build an extended team to link his program throughout the company (**Exhibit 3**). The extended team would ensure effective change management by providing high visibility and offering representation to all the parties affected by the initiative. With the team and program design out of the way, Naqvi focused on the actual task of strategic procurement.

The team first conducted a spend analysis to aggregate, cleanse, and analyze the purchasing databases from all business units. Because of the lack of an information-systems infrastructure and the cumbersome nature of the task, Naqvi engaged a consulting company to assist. The central global sourcing team, with the help of the consultants, identified 36 spend categories and selected 16 for Phase I (**Exhibit 4**). A sourcing team that included a representative from every participating site and division, was formed for each of the Phase I categories.

The sourcing teams analyzed their assigned category in further detail, performed market analysis, developed the strategy, and executed the plan through a common, structured process (**Figure 1**).[1]

[1] "Global Sourcing at AES," *AES Highlights*, July 2003, 12.

Figure 1. Strategic sourcing process.



Source: Created by case writers.

In a presentation marking the end of his first year, Naqvi reported on the success of the first phase of the transformation. Cost savings from first-year efforts totaled between 7% and 10% of historical costs. Commenting on the supply chain competence building, he highlighted the globally coordinated effort, active involvement from sites worldwide, advanced strategic sourcing training, and expanding knowledge base. While commending the team's progress, Naqvi remained cautious and foresaw challenges with change management as strategic sourcing was not yet ingrained in the culture of AES.

Electricity Meter Sourcing

As part of the second phase of the sourcing initiative, Naqvi asked Mick Tamas to coordinate an electricity meter sourcing team. **Exhibit 5** shows pictures of several types of electricity meters. Tamas had several years of supply chain and strategic-sourcing-related experience, including nine years on business process reengineering within procurement and materials management at General Public Utilities. He had also joined the utility practice of Ernest & Young in 1995, where he spent five years supporting and leading strategic sourcing initiatives.

The team's day-to-day management was handled by Moacir Cunha, out of AES's Eletropaulo distribution business in Sao Paulo, Brazil and included representatives from each participating site around the globe. The team sought to reduce the cost of purchasing meters by 10% through the development and implementation of a sustainable global meter-sourcing strategy. Expected savings would be classified in three buckets: quick wins, (realizable within 90 days), midterm savings (possible in 90 to 180 days), and long-term opportunities (requiring more than 180 days to capture).

Category Profiling[2]

The team started category profiling by looking at the prior year's purchasing data. Segmenting the data by site, supplier, and product type highlighted the key areas for focus. (**Exhibits 6** and **7**). In the previous year, AES had sourced more than 50% of its meters from two suppliers: Boltsen and Gunter. The Brazil business unit accounted for approximately 50% of

[2] Although the data was reflective of experiences at AES, supplier names have been disguised throughout the case.

meter purchases, in line with the company's distribution revenue mix; in 2002, AES served approximately 12.5 million customers through its distribution operations, out of which 6 million were in Brazil. The regional mix also helped explain why a single Brazilian company held such a significant share of overall global purchases. The importance of Brazil was underscored by Naqvi's wise decision to ask Cunha, a meter-purchasing expert from Brazilian operations, to lead the day-to-day effort.

The analysis also revealed a relatively even split between single- and three-phase meters. Residential and other small-load users tended to employ single-phase meters while large industrial users employed the polyphase meters. About 65% of purchase dollars were used for the newer style of electronic meters versus the older electromechanical style, but the mix varied widely between suppliers: 95% of the spend at the Brazilian-based Cleo went to electronic meters while all of the meters supplied by Fremens, another Brazilian supplier, were mechanical. Less than 10% of the meter spend went for automatic meter reading (AMR) devices, which enabled remote reading versus manual reading—but electronic meters could be converted for remote reading after installation if desired. The team did not anticipate a significant change in the future demand pattern for single- and triple-phase meters but expected a continued increase of electronic meters, including those with remote reading capabilities.

Industry Analysis

The U.S. electric-power industry, the last major regulated energy industry in the United States, had become increasingly competitive. In a 2000 update, the Energy Information Administration (EIA), a statistical agency of the U.S. Department of Energy reported:

> In some states, retail electricity customers can now choose their electricity company. New wholesale electricity trading markets, which were previously nonexistent, are now operating in many regions of the country. The number of independent power producers and power marketers competing in these new retail and wholesale power markets has increased substantially over the past few years.[3]

According to this update, 24 states and the District of Columbia had either enacted enabling legislation or issued a regulatory order to implement retail access that would allow consumers to choose their electricity provider.

Conducting a study on the Electricity Measurement Accuracy Program, the Canadian Electricity Association concluded that among the many challenges currently facing the electricity industry were growing competitive pressures, along with capacity constraints, changing customer and environmental expectations, and rapid technical changes.[4] The study also observed, "To

[3] "The Changing Structure of the Electric Power Industry 2000: An Update" Energy Information Administration http://www.eia.doe.gov/cneaf/electricity/chg_stru_update/update2000.html.

[4] Industry initiative: "Electricity Measurement Accuracy Program Proposal," July 2001, Canadian Electricity Association, 1.

meet the growing demands for new services such as power quality and energy management services, American utilities are replacing electromechanical meters with electronic meters and making expanded use of telemetering technology." These changes in the industry and regulation were making meters an increasingly important aspect of the overall value proposition for consumers. The newer meters boasted a number of product attributes that generally fell into four categories:

Reading features

- *Multiutility functionality*: Helped measure more than one utility such as gas, electricity and water from one meter.
- *Multitariff capability*: Allowed the utility to charge different prices depending on load and demand.

Data collection and analysis

- *Power quality analysis*: Let the user or the utility provider monitor and analyze abnormalities such as voltage sags, harmonics, or transients, which were prevalent causes for equipment malfunction and which cost money if not located and solved.
- *Consumption pattern*: Data allowed the provider to monitor and store usage levels by time of day and season to confirm or reconcile the accuracy of utility charges. Historical energy-consumption information also helped predict future energy requirements and negotiated favorable energy rates.
- *Display demand for consumer*: Recorded demand every 15 minutes and stored the maximum value in its memory as the peak demand (kW) reading for the billing period to give consumers greater insight into average demand for a day or longer period.

Central/remote access features

- *Open and terminate accounts*: Allowed utility companies to remotely connect and disconnect energy operations.
- *Communication port*: Connected the meter to a network for some remote programming, data access, and download.
- *Automatic meter reading* (AMR): Allowed remote meter reading and data transfer to and from the meter, saving the cost of visits from the "meter man."

Theft monitoring and prevention

- *Prepayment meters*: Supplied prepaid amounts of energy to the consumer and disconnect the service when the credit was exhausted and used in areas that experienced late payments or collection problems.

- *Antitheft and tamper proofing*: Protected against power theft and helped monitor meter reading tampering and maintained a log of all tampering attempts.

Out of these attributes, AMR was quickly becoming a norm for new installations in the United States. Although many U.S. utilities had installed electronic meters to support new services and rates to their customers, only a few had made the switch for their much larger installed base of existing customers. For example, in 2000, in response to its industrial and commercial customers' requests, Florida Power and Light (FPL) became an early adopter of electronic meters by replacing its 15- to 20-year-old metering technology with new meters capable of detecting and recording events such as power outage, momentary interruption, high/low voltage, and voltage/current unbalance.[5] These meters allowed FPL to react to events quickly, thereby improving customer satisfaction. FPL became a leader in demand management,[6] a feature that allowed monitoring the demand and usage pattern so that supply could be adjusted, and demand forecast improved.

Other large utility companies were following the FPL lead. In 2003, PPL Electric Utilities in Pennsylvania had installed more than a half-million automated meters at customer homes and businesses. The company planned to replace every customer's meter by the end of 2004.[7] In its March 2003 issue, *Transmission and Distribution World* magazine reported:

> Niagara Mohawk (Syracuse, New York, U.S.), a National Grid company, has engaged Plexus Research Inc. (Boxborough, Massachusetts, U.S.) for consulting engineering services to support an automatic metering reading (AMR) procurement for more than 2 million metering points. The electric AMR portion of the project also included replacing more than 1.5 million electromechanical meters in the field with 1.5 million new residential electronic meters. This purchase of new electronic metering for residential customers, assisted by Plexus Research, was the largest such purchase by any U.S. utility.[8]

AMR and energy management, although much sought-after features in developed countries, were not in high demand in most quasi-developed and developing countries. Many of these countries faced greater challenges with electricity theft and customer nonpayment. Features such as prepayment, antitheft, and the recording of tampering attempts were quickly becoming required features on electric meters in these regions.

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[5] "Industry initiative: Electricity Measurement Accuracy Program Proposal," 5.

[6] "Industry initiative: Electricity Measurement Accuracy Program Proposal," 5.

[7] http://tdworld.com/ar/power_niagara_mohawk_installs/.

[8] "Niagara Mohawk Installs Two Million Metering Points to Support AMR," *Transmission & Distribution World*, March 1, 2003.

RFI/RFQ

The team decided to extend its knowledge of the supply industry through a request for information (RFI) to the eight existing as well as the five new suppliers. Aggregation of the information collected from the RFI highlighted the level of sales as well as the focus of each supplier (**Exhibit 8**). Two of the existing suppliers offered a full product line of electronic, electromechanical, and single- and three-phase meters with sales throughout the world; however, Edsel focused on Europe, and the other, Dambger, focused on the United States even though AES had most of its needs in Latin America. One of the potential new suppliers, Kingston, also a major global player, focused on the United States but no longer produced mechanical three-phase meters. Other players focused on specific regions, some with broad product lines and others with a narrower focus. The RFI also provided insight into the specific product features offered by each potential supplier as well as key characteristics regarding quality and delivery (**Exhibit 9**).

The team also conducted an initial request for quote (RFQ) in two of the smaller regions, the United States and Argentina, to get a sense of pricing from some current and potential new suppliers. As shown in **Exhibit 10**, the existing suppliers tended to use the RFQ as an opportunity to signal a price increase. But price quotes from LPH, a new potential supplier from India, indicated a significant opportunity to lower current prices.

Moacir Cunha was struck by the differences between LPH quotes and the incumbents' quotes. In an effort to organize his thinking further, Cunha asked the team to collect wage-rate data for the countries housing the suppliers' manufacturing facilities (**Exhibit 11**).

How to Proceed

The team met to consider the findings from the category profiling and the industry analysis. Naqvi joined them to push their strategic thinking. He wanted them to consider demand-side opportunities as well the supply-side issues. How could the team affect the specifications process going forward? Which suppliers would be the best partners for the long term? What else would the team need to know to drive such longer-term opportunities?

Despite a desire for long-term thinking, Naqvi needed the team to deliver some quick wins as well. What could be done near-term without compromising long-term goals? Would an online, reverse auction conducted by FreeMarkets be an effective mechanism for achieving the needed quick wins? Alternatively, AES could continue on the traditional RFQ route with multiple rounds of individual negotiations. Either way, the team would need to consider how to aggregate the requirements into logical lots and decide which suppliers should be allowed to participate. Perhaps some should be excluded because of quality or lead-time issues.

Furthermore, Naqvi worried about the change-management issues. He wanted to anticipate them and be prepared when they arose. Although the research phase of the strategic-sourcing process provided good insight, much work remained to convert that insight into a strategy—and to positive bottom-line results for AES.

Exhibit 1

AES CORPORATION (A): GLOBAL SOURCING INITIATIVE

History and Geography of AES

AES Distribution Operations

Country	Region
Cameroon	Africa
Kazakhstan	Asia
Georgia	Europe
Ukraine	Europe
Dominican Republic	Caribbean
El Salvador	North America
USA	North America
Argentina	South America
Brazil	South America
Venezuela	South America

AES Generation Operations

Country	Region	Country	Region	Country	Region	Country	Region
Cameroon	Africa	Bangladesh	Asia	Czech Republic	Europe	Canada	North America
Nigeria	Africa	China	Asia	Hungary	Europe	Mexico	North America
South Africa	Africa	India	Asia	Italy	Europe	USA	North America
Tanzania	Africa	Kazakhstan	Asia	Netherlands	Europe	Dominican Republic	Caribbean
Australia	Australia	Oman	Asia	UK	Europe	Panama	North America
		Pakistan	Asia	Georgia	Europe	Argentina	South America
		Qatar	Asia			Brazil	South America
		Srilanka	Asia			Chile	South America
						Colombia	South America
						Venezuela	South America

AES Timeline (From 1981 to 2003)

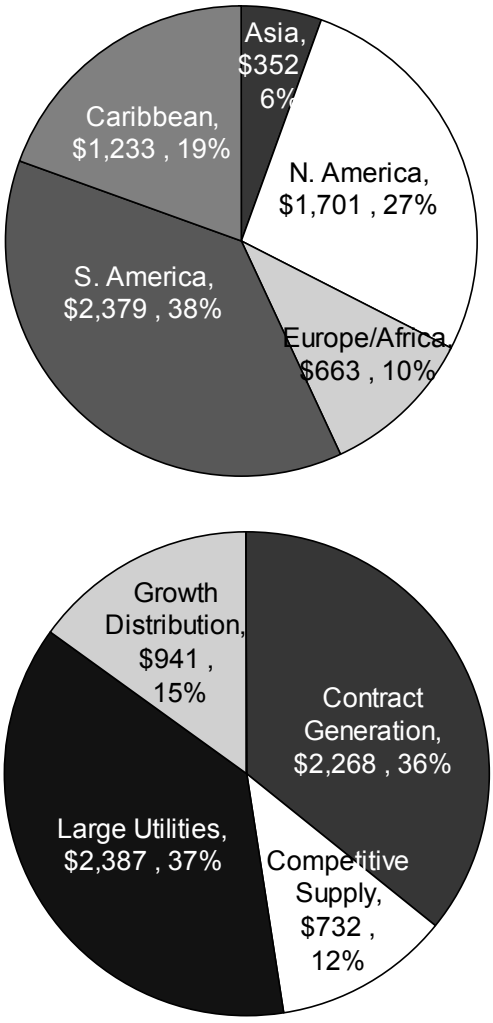
1981	1983	1986	1989	1991	1993	1994	1995	1996 -1999	2002 -2003
AES was founded	Started building massive cogeneration plants	First plant Deepwater near Houston went into operation	By 1989 AES added three more plants and started operation in Connecticut and Oklahoma	Went public	Started expansion in Latin America and China	Won a plant development contract with the Puerto Rico Electric Power Authority	Won a bid to privatize an Argentine hydrothermal company	Entered distribution business in Brazil, Argentina & El Salvador. Bought interests in India. Grew through acquisitions in NA(Energy East & Dynegy)	Filed pre packaged bankruptcy

Data source: AES 2003 annual report and Web page.

Exhibit 2

AES CORPORATION (A): GLOBAL-SOURCING INITIATIVE

Revenue by Geographic Region and Business Segment



Data source: AES 2003annual report.

Exhibit 3

AES CORPORATION (A): GLOBAL-SOURCING INITIATIVE

Global-Sourcing Organization (Roles and Responsibility)

Committee/Subteams	Members	Roles and Responsibilities
Executive steering committee	• CEO • Executive vice presidents • Heads of other regional operations • Al Naqvi	• Ensure proper resources are appropriately allocated • Establish accountability for the global sourcing and the sourcing board • Provide direction and support • Assist in internal AES communication and proactively monitor the progress
The sourcing board	• Group managers • Vice presidents • Al Naqvi	• Assist in identifying and allocating resource • Remove barriers and road blocks • Resolve issues and conflicts • Provide mentoring
Project management office	• Global sourcing director • Consulting firm project manager • Business group project coordinator	• Project implementation • Monitor category (commodity) specific implementation • Manage sourcing teams • Report weekly progress to the sourcing board
Sourcing teams	• Global sourcing leads • Consulting leads • Domain experts • Regional reps • Technical experts • Outside parties	• Responsible for delivering savings • Identify opportunity • Perform rigorous analysis • Develop sourcing strategy • Perform market and supplier evaluation • Negotiate with suppliers

Source: AES Web site.

Exhibit 4

AES CORPORATION (A): GLOBAL SOURCING INITIATIVE

Phase I Spend Categories

- Boilers
- Chemicals
- Coal combustion products (CCP)
- FDG—Fuel gas desulfurization
- Healthcare
- Instrumentation and controls
- IT & telecom
- Legal
- MRO—Maintenance, repair, and overhaul
- Office supplies
- Print
- Transformers
- Travel
- Turbines (gas, hydro, steam)
- Vegetation management
- Wire and cable

Source: "Global Sourcing at AES" *AES Highlights*, July 2003, 12.

Exhibit 5

AES CORPORATION (A): GLOBAL SOURCING INITIATIVE

Examples of Electricity Meters

Single-Phase Electrical Meter

Single-Phase Mechanical Meter

Three-Phase Electrical Meter

Three-Phase Mechanical Meter

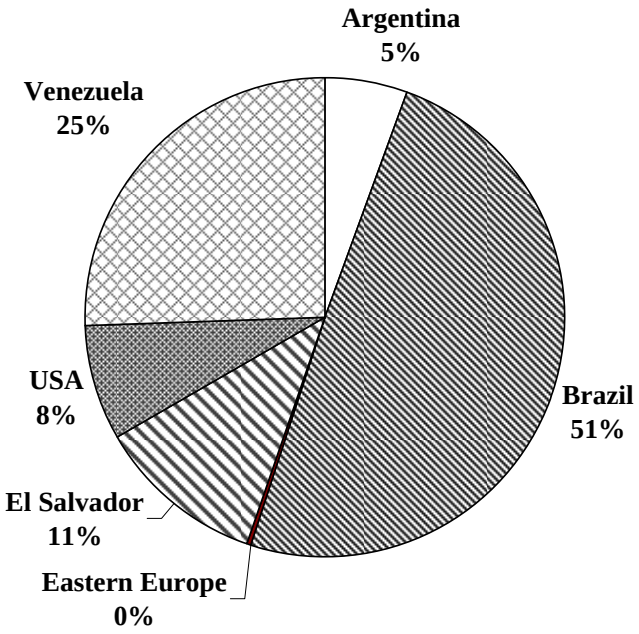
Source: Hexing Electrical Group, http://www.hxgroup.cn/ (accessed July 28, 2009).

Exhibit 6

AES CORPORATION (A): GLOBAL SOURCING INITIATIVE

Regional Purchase Volumes and Requirements

Meter Purchases by Region
(total: $15.6 million)



Meter Requirements by Region

Country/Region	Distribution Facilities	Annual Purchases	Number of Types	Potential Full Line Suppliers
Argentina	Edelap, Eden, Edes	$ 847,317	1	5
Brazil	Eletropaulo, Sul	$7,746,526	16	2
Eastern Europe	East Kazakhstan, Ukraine	$ 45,033	4	4
El Salvador	El Salvador	$1,754,151	2	7
USA	IPL	$1,237,730	13	3
Venezuela	EDC	$3,980,187	12	2
Source: "Global Sourcing at AES" *AES Highlights*, July 2003, 12.				

Exhibit 7

AES CORPORATION (A): GLOBAL SOURCING INITIATIVE

Spend Analysis

Supplier	Locations	Spend	Percentage
Abstar	France, Brazil	$ 1,279,920	8%
Boltsen	USA	$ 4,564,470	29%
Cleo	Brazil	$ 1,336,579	9%
Dambger	USA	$ 1,273,777	8%
Edsel	Switzerland, USA	$ 903,299	6%
Fremens	Brazil	$ 469,869	3%
Gunter	Brazil, Mexico	$ 4,112,139	26%
Hithykz	Slovakia	$ 45,033	0%
		$15,610,944	100%

Supplier	Manual	AMR	Manual	AMR
Abstar	$ 1,279,920	$ -	9%	0%
Boltsen	$ 3,734,138	$ 830,332	26%	70%
Cleo	$ 1,336,579	$ -	9%	0%
Dambger	$ 1,148,965	$ 124,812	8%	11%
Edsel	$ 718,103	$ 185,196	5%	16%
Fremens	$ 469,869	$ -	3%	0%
Gunter	$ 4,112,139	$ -	29%	0%
Hithykz	$ -	$ 45,033	0%	4%
	$14,425,572	$1,185,372	100%	100%

Supplier	Three Phase	Single Phase	Three Phase	Single Phase
Abstar	$ 418,196	$ 861,724	5%	12%
Boltsen	$3,734,138	$ 830,332	45%	11%
Cleo	$1,264,486	$ 72,093	15%	1%
Dambger	$ 483,863	$ 789,914	6%	11%
Edsel	$ 472,437	$ 430,862	6%	6%
Fremens	$ 110,817	$ 359,052	1%	5%
Gunter	$1,670,587	$2,441,552	20%	34%
Hithykz	$ 45,033	$ -	1%	0%
	$8,389,209	$7,221,735	100%	100%

Supplier	Electronic	Electro-Mechanical	Electronic	Electro-Mechanical
Abstar	$ 268,331	$1,011,589	3%	18%
Boltsen	$3,396,941	$1,167,529	34%	21%
Cleo	$1,264,486	$ 72,093	13%	1%
Dambger	$ 599,384	$ 674,393	6%	12%
Edsel	$ 185,196	$ 718,103	2%	13%
Fremens	$ -	$ 469,869	0%	8%
Gunter	$2,597,661	$1,514,478	26%	27%
Hithykz	$ 45,033	$ -	0%	0%
	$9,982,891	$5,628,053	100%	100%

Exhibit 8

AES CORPORATION (A): GLOBAL SOURCING INITIATIVE

Supplier Sales by Meter Type and Region
($$ in millions)

Suppliers	Abstair (France, Brazil)	Boltsen (USA)	Cleo (Brazil)	Dambger (USA)	Edsel (Switzerand, USA)	Femens (Brazil)	Gunter (Brazil, Mexico)	Hithykz (Slovakia)	Indira (India)	Josamari (Argentina)	Kingston (USA)	LPH (India)	Metier (France)
Electronic -Single Phase	**$ 50.2**	**$ 1.5**	**$1.7**	**$ 109.9**	**$ 101.3**	**DNO**	**$ 0.7**	**DNO**	**$ 1.0**	**$ 3.2**	**$110.8**	**$ 23.9**	**$ 0.5**
Asia / Pacific / India	$ 4.4	$ -	$ -	$ 5.8	$ 6.8		$ -		$ 1.0	$ -	$ 7.3	$ 23.9	$ 0.1
Europe	$ 45.8	$ -	$ -	$ 33.7	$ 65.9		$ -		$ -	$ -	$ 42.2	$ -	$ 0.4
North America	$ -	$ 1.5	$ -	$ 61.9	$ 27.3		$ -		$ -	$ -	$ 54.2	$ -	$ -
Latin America	$ 0.1	$ -	$ 1.7	$ 8.5	$ 1.3		$ 0.7		$ -	$ 3.2	$ 7.1	$ -	$ -
Electronic – Three Phase	**$ 80.3**	**$ 5.5**	**$ 1.6**	**$ 108.8**	**$ 122.5**	**DNO**	**$ 2.2**	**$ 0.2**	**$ 5.2**	**DNO**	**$ 132.3**	**$ 10.6**	**$ 0.4**
Asia / Pacific / India	$ 12.0	$ -	$ -	$ 6.4	$ 9.9		$ -		$ 5.2		$ 7.7	$ 10.6	$ 0.1
Europe	$ 63.9	$ -	$ -	$ 28.3	$ 78.3		$ -	$ 0.2	$ -		$ 54.3	$ -	$ 0.3
North America	$ -	$ 5.5	$ -	$ 66.8	$ 33.0		$ -		$ -		$ 65.9	$ -	$ -
Latin America	$ 4.4	$ -	$ 1.6	$ 7.3	$ 1.3		$ 2.2		$ -		$ 4.4	$ -	$ -
Electromechanical –Single Phase	**$101.5**	**$ 0.5**	**$1.3**	**$ 105.1**	**$ 116.9**	**$ 16.2**	**$ 30.2**	**DNO**	**DNO**	**DNO**	**$144.0**	**DNO**	**$ 4.7**
Asia / Pacific / India	$ 18.2	$ -	$ -	$ 11.4	$ 10.2	$ -	$ -				$ 13.1		$ 0.3
Europe	$ 65.6	$ -	$ -	$ 29.4	$ 65.1	$ -	$ -				$ 44.8		$ 4.4
North America	$ -	$ 0.5	$ -	$ 58.1	$ 28.4	$ -	$ -				$ 77.2		$ -
Latin America	$ 17.7	$ -	$ 1.3	$ 6.2	$ 13.2	$ 16.2	$ 30.2				$ 8.9		$ -
Electromechanical – Three Phase	**$ 97.7**	**$ 1.9**	**$1.4**	**$ 95.7**	**$ 123.1**	**$ 17.6**	**$ 6.8**	**DNO**	**DNO**	**DNO**	**DNO**	**DNO**	**$ 3.5**
Asia / Pacific / India	$ 8.2	$ -	$ -	$ 8.8	$ 10.5	$ -	$ -						$ 0.2
Europe	$ 71.3	$ -	$ -	$ 26.0	$ 68.2	$ -	$ -						$ 3.3
North America	$ -	$ 1.9	$ -	$ 55.8	$ 33.8	$ -	$ -						$ -
Latin America	$ 18.2	$ -	$ 1.4	$ 5.1	$ 10.6	$ 17.6	$ 6.8						$ -
Totals	**$329.6**	**$ 9.4**	**$6.0**	**$ 419.5**	**$ 463.8**	**$ 33.8**	**$ 39.9**	**$ 0.2**	**$ 6.2**	**$ 3.2**	**$387.1**	**$ 34.5**	**$ 9.0**
Asia / Pacific / India	$ 42.7	$ -	$ -	$ 32.4	$ 37.4	$ -	$ -	$ -	$ 6.2	$ -	$ 28.1	$ 34.5	$ 0.6
Europe	$ 246.6	$ -	$ -	$ 117.4	$ 277.5	$ -	$ -	$ 0.2	$ -	$ -	$ 141.3	$ -	$ 8.4
North America	$ -	$ 9.4	$ -	$ 242.6	$ 122.5	$ -	$ -	$ -	$ -	$ -	$ 197.3	$ -	$ -
Latin America	$ 40.3	$ -	$ 6.0	$ 27.1	$ 26.4	$ 33.8	$ 39.9	$ -	$ -	$ 3.2	$ 20.4	$ -	$ -

Note: “DNO” means “Does Not Offer” the product type.

Exhibit 9

AES CORPORATION (A): GLOBAL SOURCING INITIATIVE

Product Features Plus Quality and Lead-Time Metrics

Suppliers	Abstair (France, Brazil)	Boltsen (USA)	Cleo (Brazil)	Dambger (USA)	Edsel (Switzerand, USA)	Femens (Brazil)	Gunter (Brazil, Mexico)	Hithykz (Slovakia)	Indira (India)	Josamari (Argentina)	Kingston (USA)	LPH (India)	Metier (France)
Meter Features													
Multi-Utility	√	√		√	√		√	√	√		√		√
Pre-Payment	√		√	√	√				√			√	√
Power Quality Analysis	√	√	√	√	√		√	√	√		√	√	√
Consumption Patterns	√	√	√	√			√	√	√		√	√	√
Display Demand for Consumer	√	√	√	√	√			√	√	√	√	√	√
Open and Terminate Accounts	√	√	√	√	√				√				
Remote Access of Energy Information	√	√	√	√		√	√	√	√		√	√	√
Communication Port	√	√	√	√	√	√	√	√	√		√	√	√
Anti-theft and tamper proof provisions	√	√	√	√	√	√	√	√	√	√	√	√	√
Provision to log tamper attempt	√	√		√	√	√		√	√	√	√	√	√
Multi-tariff capability	√	√	√	√	√	√	√	√	√	√	√	√	√
Quality Metrics													
Meter Accuracy	0.2%	0.2%	0.2%	0.2%	0.2%	0.5%	0.2%	0.5%	0.5%	0.5%	0.2%	0.2%	0.5%
Meter Life Expectancy	15-25	15-30	20-30	20-30	20-30	15	20	10+	5-20	10	15-50	5-10	15-20
Quality Certifications	ISO9000	ISO9001	ISO9000	ISO9001	ISO9000	ISO9001	None	ISO9000	ISO9001	ISO9001	ISO9000	ISO9001	ISO9000
Lead Time (Weeks)													
Argentina	4	N/A	7	5	6	8	5	5	9	24	8	6	5
Brazil	2	11	5	5	6	4	4	6	9	25	8	6	5
El Salvador	4	11	7	5	4	8	5	4	9	26	8	6	5
Venezuela	4	N/A	7	5	4	8	5	5	9	27	8	6	5
USA	4	8	7	5	4	8	7	3	9	29	8	6	5
Eastern Europe	6	N/A	9	5	6	8	9	6	9	N/A	N/A	6	5

Note: “N/A” means the supplier does not serve that country/region.

Exhibit 10

AES CORPORATION (A): GLOBAL SOURCING INITIATIVE

Selected Price Quotes

Location	Meter Description	Annual Usage	2003 Average Price	Boltsen (Incumbent, USA)	Edsel (Incumbent, Switzerland /USA)	LPH (New Supplier, India)
USA	Form 1S	401	$ 31	$ 31	$ 56	$ 31
USA	Form 2S	12,345	$ 38	$ 41	$ 40	$ 38
USA	Form 2S with Recorder	234	$ 116	$ 145	$ 128	$ 101
USA	Form 4S	224	$ 43	$ 45	$ 62	$ 40
USA	Form 12S	650	$ 75	$ 132	$ 75	$ 60
USA	Form 12S+	235	$ 76	$ 95	$ 76	$ 65
USA	Form 15S/16S 120-480V	1,001	$ 140	$ 145	$ 143	$ 135
USA	Form 8S/9S 120-480V	560	$ 136	$ 136	$ 148	$ 132
USA	Form 8S/9S Multifunction 120-480V	2,001	$ 281	$ 345	$ 379	$ 190
USA	Form 8S/9S Multifunction with KYZ Output 120-480V	145	$ 424	$ 425	$ 434	$ 204
USA	A1RLCQ+ (Transformer Loss Comp)	210	$ 650	$ 805	$ 1,193	$ 400
USA	Form 2S Class 320	101	$ 60	$ 123	$ 60	$ 45
USA	Form 13S 120-480V	89	$ 50	$ 128	$ 50	$ 35
Totals		18,196	$ 1,571,998	$ 1,836,851	$ 1,935,078	$ 1,278,895

Location	Meter Description	Annual Usage	2003 Average Price	Boltsen (Incumbent, USA)	Cleo (Incumbent, Brazil)	Josamari (New Supplier, Argentina)	LPH (New Supplier, India)
Argentina	X37 Single Phase, Active/reactive	12,000	$ 21	$ 24	$ 25	$ 24	$ 20
Argentina	X38 Single Phase, Active/reactive	10,000	$ 22	$ 24	$ 25	$ 24	$ 20
Argentina	X39 Single Phase, Active/reactive	8,000	$ 22	$ 24	$ 26	$ 24	$ 20
Totals		30,000	$ 648,000	$ 720,000	$ 758,000	$ 720,000	$ 600,000

Exhibit 11

AES CORPORATION (A): GLOBAL SOURCING INITIATIVE

Hourly Compensation Costs in U.S. Dollars for the Manufacturing Sector (2002)

Country	Labor Cost per Hour (in $$)
France	23.07
Brazil	3.07
USA	27.01
India	0.25
Slovakia	3.27
Switzerland	28.05
Argentina	2.98
Mexico	3.44

Sources:

1. U.S. Department of Labor, Bureau of Labor Statistics, Information pertaining to All Employees, March 2009.
2. Labor Bureau Government of India, Occupational wage survey.