



**EDISON ELECTRIC  
INSTITUTE**

# EEI Survey of Transmission Investment

Historical and Planned  
Capital Expenditures  
(1999-2008)

Published by:  
Edison Electric Institute  
May 2005

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#### Published by:

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# ACKNOWLEDGEMENTS

The Edison Electric Institute (EEI) would like to thank the CEO Transmission Working Group, the Property Accounting and Valuation Committee, and the Budget and Financial Forecasting Committee for their leadership and technical expertise which were instrumental to this project.

For additional information, contact Chris Eisenbrey, EEI Statistics Department, at 202-508-5574, or by e-mail at [ceisenbrey@eei.org](mailto:ceisenbrey@eei.org).

# EXECUTIVE SUMMARY

Greater competition in electricity markets is expanding the use of the nation's electric transmission grid. Built originally to serve existing and future loads, interconnect neighboring utilities, and support reliability, the grid also is now being used to support a larger number of wholesale transactions across regions. EEI's members continue to actively invest in the transmission system in order to meet these needs.

The Federal Energy Regulatory Commission has raised concerns about whether integrated electric utilities are building transmission facilities. Historical and projected data demonstrates that both integrated companies and stand-alone transmission companies are making increasing investments in transmission. Reversing a trend of declining transmission investment, from 1999 to 2003, annual transmission investment by investor-owned utilities increased 12 percent annually and totaled nearly \$18 billion over the period. From 2004-2008, investor-owned utilities are planning to invest \$28 billion in transmission infrastructure, a 60 percent increase over the earlier five year period.

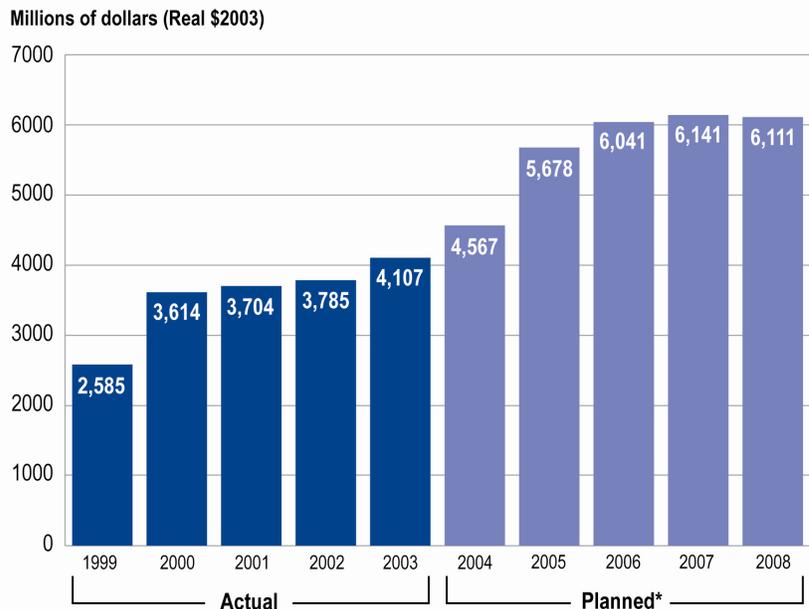
This report provides details on two EEI survey projects that identified historical and planned transmission investment by investor-owned utilities. Together, the survey results present a 10 year window to examine the trend in transmission investment. Over this period, actual and planned investment in electric transmission infrastructure increases at a 10 percent annual rate.

## Historical Transmission Investment Survey (1999-2003)

The primary objective of EEI's *Annual Property & Plant Capital Investment Survey* is to determine historical capital expenditures on electric transmission and distribution infrastructure by investor-owned

Figure 1

### Actual and Planned Transmission Investment by Integrated and Stand Alone Transmission Companies (1999-2008)



The Handy-Whitman Index of Public Utility Construction Costs used to adjust for inflation from year to year. Data represents shareholder-owned electric utilities. \*Planned total industry expenditures estimated from 95% response rate to EEI's Electric Transmission Capital Budget & Forecast Survey as of 5/05. Actual expenditures from EEI's Annual Property & Plant Capital Investment Survey and FERC Form 1s.

utilities. For purposes of the EEI Survey on Transmission Investment, we utilized the transmission data contained in the *EEI Annual Property and Plant Capital Investment Survey*.

The survey was developed in the fall of 2003—soon after the August 14<sup>th</sup> Blackout—to collect company specific annual information. It sought to improve upon past EEI transmission investment data collection efforts<sup>1</sup> by enhancing the quality of the data collected and providing an important statistic not available from public data sources, such as the FERC Form 1 and the EIA Form 412.

### Segment of Industry Surveyed

Consistent with past EEI transmission investment data collections, the survey focused on investor-owned utilities, both vertically integrated and stand-alone transmission companies, in the U.S.<sup>2</sup> Sixty “shareholder-owned” companies whose stocks are publicly traded on major U.S. stock exchanges were asked to participate. These companies were either holding companies consisting of one or more operating subsidiaries or consolidated electric companies. In addition, the survey also sought to capture data from ten additional companies that are either privately held or owned by non-U.S. corporations. Appendix A to this report provides a list of the companies contacted to participate in the survey.

### Company-by-Company Survey Contacts

With direction and oversight from the EEI Property Accounting and Valuation Committee<sup>3</sup>, it was determined that property accounting staff at the companies were in the best position to respond accurately and in a timely fashion. This function is generally involved with capital expenditures, work orders, and participates in the development of company financial and regulatory reports (10ks and FERC Form 1s).

### Definition of Transmission Capital Expenditures

EEI asked survey respondents to provide data on capital expenditures, including direct costs, construction work in progress (CWIP), overhead costs, interest, and removal costs, for construction, including additions to and betterments, renewals, and replacements of transmission utility plant made during the calendar year. These expenditures do not include expenditures for maintenance or the acquisition of existing utility systems or segments. Survey respondents were asked to classify these calendar-year expenditures in a manner consistent with the FERC Form 1 accounts 352 thru 359.<sup>4</sup> Assigning dollar values in this manner was expected to provide a comparison of the proportion of transmission capital expenditures dedicated to line related equipment (conductors, towers, poles, etc.) and station related equipment (main power transformers, substations etc.). The complete survey questionnaire is included in Appendix B of this report.

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<sup>1</sup> Past transmission investment surveys developed and conducted by EEI include the Uniform Statistical Report (USR) and the Annual Construction Expenditure Survey.

<sup>2</sup> Vertically integrated utilities are those electric companies owning distribution and transmission assets or distribution, transmission, and generation assets both within and outside of RTOs/ISOs. For the purpose of the transmission investment surveys, the following companies are considered stand alone transmission companies: American Transmission Co., International Transmission Co., Michigan Electric Transmission Co., and National Grid USA.

<sup>3</sup> The goal of the committee is to broaden the knowledge and expertise of members in the area of accounting and valuation of utility plant. It is responsible for keeping members informed as to current events occurring in the industry and studies, discusses, and reports on property accounting, capital recovery, depreciation rate developments, and related tax and regulatory issues.

<sup>4</sup> Account 352 - Structures and Improvements, Account 353 - Station Equipment, Account 354 - Towers and Fixtures, Account 355 - Poles and Fixtures, Account 356 - Overhead Conductors and Devices, Account 357 - Underground Conduit, Account 358 - Underground Conductors and Devices, Account 359.1 - Asset Retirement Costs for Transmission. Note that expenditures for land, roads, or trails were not included.

**Survey Response Rate and Extrapolation to 100 Percent of Industry**

In October 2003, the survey was distributed to members of the EEI Property Accounting and Valuation Committee to collect 1999-2002 transmission capital expenditure data. A follow-up survey was distributed in March 2004 to collect 2003 data.

The response rate to the survey was favorable, measuring 83 percent for the 1999-2003 period and 79 percent for 2003. Importantly, the companies that responded comprised 93 percent and 92 percent of total transmission capital expenditures during the '99-'02 and '03 periods, respectively.<sup>5</sup>

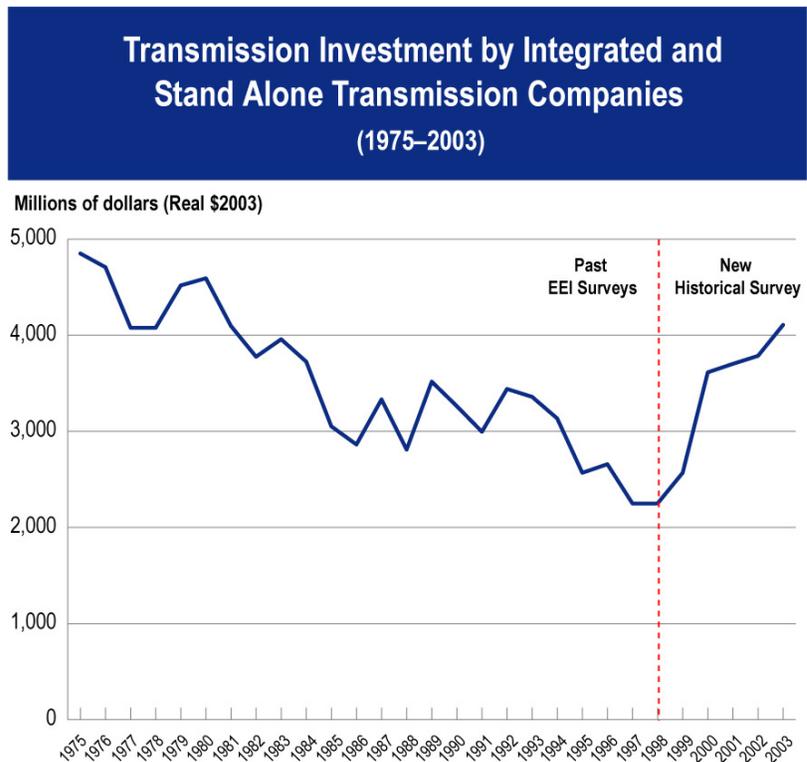
In order to account for total investor-owned utility company investment in transmission, an alternative source of data was accessed for those companies that did not respond to the survey. Data from the FERC Form 1, “additions to plant in-service” was used to increase industry coverage to 100 percent.

**Survey Results-Historical Transmission Investment**

Survey results suggest that the industry has reversed a long-standing downward trend in transmission investment. Figure 2 shows that transmission investment, in constant dollars, declined from 1975 through 1998. However, survey results show that annual transmission investment has been increasing since 1999. Transmission investment by investor-owned utilities increased by \$2.6 billion in 1999, \$3.6 billion in 2000, \$3.7 billion in 2001, \$3.8 billion in 2002, and \$4.1 billion in 2003. Over the 1999-2003 period, transmission investment increased at a 12 percent annual rate.

This finding of robust growth in transmission investment over the 1999-2003 period corroborates findings from another EEI survey, *Miles of Electric Line and Other Physical Data*. This survey found that total circuit

**Figure 2**



**Notes:** These results are shown in real 2003 dollars, using the *Handy-Whitman Index of Public Utility Construction Costs* to adjust for inflation from year to year.

**Source:** Data sources for annual transmission investments vary. Prior to 1998, data are from EEI's Uniform Statistical Report. For 1998 data are from EEI's Annual Construction Expenditures Survey, FERC Form 1s, and company 10-Ks. For years 1999-2003 data are from EEI's Annual Property & Plant Capital Investment Survey and FERC Form 1s.

<sup>5</sup> \$3,627,524,622 of average annual transmission capital expenditures of \$3,389,898,819 or 93.4 percent versus \$237,625,802 from non-respondents or 6.6 percent for the 1999-2002 survey (based on annual averages over the 4-year period). For 2003, \$3,782,192,257 of total transmission capital expenditures of \$4,106,720,257 or 92.1 percent versus \$324,528,000 from non-respondents or 7.9 percent.

miles of high-voltage and extra-high voltage transmission lines (189kV and above) owned and operated by investor-owned utilities increased by 2.8 percent annually over the same 1999-2003 period. In contrast, kWh sales of electricity from the nation's investor-owned electric utilities and affiliates to end-use customers increased only 0.7 percent annually over this period.

Based on additional information collected for the year 2003, approximately 50 percent of total transmission capital expenditures or \$2 billion was invested in transmission station construction, e.g., transformers, and an additional 50 percent or \$2 billion was spent on transmission line equipment (conductors, towers, poles, etc.).

## **Planned Transmission Investment Survey (2004-2008)**

The planned transmission investment survey was developed at the direction of the EEI CEO Transmission Working Group.<sup>6</sup> The primary objective of the *Electric Transmission Capital Budget and Forecast Survey*, is to collect planned budgeted investments in electric transmission infrastructure over a five-year horizon (2004-2008) for planned transmission projects in a manner that complements information collected by the historical transmission survey discussed above.

### Segment of Industry Surveyed

Consistent with the historical transmission survey, the planned transmission investment survey focused on the transmission investment plans of investor-owned utilities comprised of both vertically integrated and stand-alone transmission companies in the U.S. The survey was distributed to same list of companies who were asked to provide historical data on their transmission investments (sixty "shareholder-owned companies" and ten additional entities that are privately or foreign-owned companies (see Appendix A)).

### Company-by-Company Survey Contacts

With direction from EEI's Budgeting and Financial Forecasting Committee<sup>7</sup>, a survey questionnaire was developed that targeted responses from member and non-member company budgeting, financial forecasting, strategic and transmission planning specialists. These staff work closely with transmission planners and were in the best position to respond to the survey in an accurate and in a timely manner.

### Survey Questionnaire

To allow for an "apples to apples" comparison with the results of the historic survey on transmission capital expenditures, the survey on planned transmission investment utilized the same definition of transmission capital expenditures and FERC accounts as the historical survey. The survey questionnaire asked for three specific data items from each company: (1) the net book value of each company's transmission assets for the year ending 12/31/03;<sup>8</sup> (2) each company's total transmission capital expenditures budget/forecast for each year over the 2004-2008 period; and (3) the portion of each company's transmission capital expenditures budget/forecast dedicated to direct generator interconnection (2004-2008).<sup>9</sup>

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<sup>6</sup> Endorsed and created by the EEI Policy Committee on Energy Delivery in September 2004 to review and highlight current investor-owned utility transmission planning and investment efforts and to foster public policies to stimulate additional transmission investment.

<sup>7</sup> The goal of the committee is to promote better decision-making among EEI members through the study and application of utility budgeting and financial planning techniques.

<sup>8</sup> Net book value is the value of a security or asset as shown by the accounting records of the holders. It may frequently differ from the market value. It is the recorded transmission plant cost less the accumulated depreciation.

<sup>9</sup> Capital budget for direct interconnection facilities (e.g. generator step-up units, system protection, connection of existing transmission line, etc.), excluding network upgrades, which connect a non-utility generator (including a distributed generation facility) to an existing control area or system.

### Survey Response Rate and Extrapolation to 100 Percent of Industry

The planning survey was distributed to EEI member and non-member companies in early January 2005. Fifty-five of the seventy companies surveyed provided responses, a company response rate of about 78.5 percent. Based on the historical survey results, responses from these companies comprised approximately 95 percent of the investor-owned utility industry's total budgeted transmission dollars. In order to determine the industry's total planned investment over the 2004-2008 period, the planned investment of the seventeen non-respondent companies, representing about 5 percent of total budgeted transmission dollars, were extrapolated. Planned investment for non-responding companies was assumed to increase at the average rate of increase identified from all responding companies. The resulting estimates for non-responding companies were combined with the data provided from responding companies to allow for 100 percent industry coverage.

### Survey Results – Planned Transmission Investment

The overall results indicate that the industry is planning to invest at levels not seen in nearly 30 years. From 2004-2008, survey data shows that industry is planning to invest \$28 billion (see Table 1). If realized, this would represent a 60 percent increase over actual investment in the previous 5 year (1999-2003) period.

Net book value of shareholder-owned transmission assets totaled approximately \$43 billion in 2003. Planned investment over the 2004–2008 period is 62 percent of year 2003 net book value. Both stand-alone transmission companies and vertically integrated utilities are planning significant growth in investment. Vertically integrated companies account for about 90 percent of planned transmission investment over the 2004-2008 period.

Importantly, survey respondents indicated that, on average, only a small portion of this total planned transmission investment, 6.5 percent, is attributed to direct generator interconnections.<sup>10</sup> This indicates that the bulk of projected investments in the nation's transmission infrastructure will support the integration of new generator additions through network upgrades, improve transfer capability between regions, improve grid reliability, and enhance local, regional, and inter-regional markets.

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<sup>10</sup> Direct generator interconnection, on average, accounts for approximately 6.5 percent of annual transmission budgets for about one-third of respondents. About two-thirds of the respondents indicated zero dollars were budgeted for generator interconnections.

**Table 1**

Survey Questions	2003	2004	2005	2006	2007	2008	Totals
	(in billions \$2003 )						
<b>Net Book Value</b> (survey responses only)	\$43.3						
<b>Transmission Capital Budget</b> (survey responses only)		\$4.3	\$5.4	\$5.7	\$5.8	\$5.8	\$27.1
<b>Transmission Capital Budget</b> (survey responses plus extrapolation to represent 100 percent of the IOU sector.)		\$4.6	\$5.7	\$6.0	\$6.1	\$6.1	\$28.5
	(in millions \$2003)						
<b>Direct Interconnection</b> (dollars represent ~22 companies that responded positively to this question.)		\$170	\$141	\$221	\$196	\$174	\$902

## Appendix A: COMPANIES SURVEYED\*

Company Name	Historical Survey	Planned Survey	Vertically Integrated Company	Stand Alone Transmission Company
Allegheny Energy, Inc.	•	•	•	
ALLETE	•	•	•	
Alliant Energy Corp.	•	•	•	
Ameren Corp.	•	•	•	
American Electric Power Co.	•	•	•	
Aquila, Inc.	•	•	•	
American Transmission Co.	•	•		•
Avista Corp.	•	•	•	
Black Hills Corp.	•	•	•	
Centerpoint	•	•	•	
CH Energy Group, Inc.	•	•	•	
Cinergy Corp.	•	•	•	
Cleco Corp.	•	•	•	
Consolidated Edison, Inc.	•	•	•	
CMS Energy	•		•	
Constellation Energy Group	•	•	•	
CVPS	•	•	•	
Dominion Resources, Inc.	•	•	•	
DPL Inc.	•	•	•	
DOE	•	•	•	
DTE Energy	•		•	
Duke Energy Corp.	•	•	•	
Edison International	•	•	•	
El Paso Electric Co.	•	•	•	
Empire District Electric Co.	•	•	•	
Energy East Corp.	•	•	•	
Energy Corp.	•	•	•	
Exelon Corp.	•	•	•	
FirstEnergy Corp.	•	•	•	
FPL Group, Inc.	•	•	•	
Great Plains Energy, Inc.	•	•	•	
Green Mountain Power Corp.	•	•	•	
Hawaiian Electric Industries	•	•	•	
IDACORP, Inc.	•	•	•	
IPALCO	•	•	•	
International Transmission Co.	•	•		•
LGE Energy	•	•	•	

EEI Survey of Transmission Investment: Historical and Planned Capital Expenditures (1999-2008)

Company Name	Historical Survey	Planned Survey	Vertically Integrated Company	Stand Alone Transmission Company
Maine & Maritimes Corp.	•	•	•	
MDU Resources Group, Inc.	•	•	•	
METC/Trans-Elect	•	•		•
MidAmerican Energy	•	•	•	
MGE Energy	•		•	
National Grid	•	•		•
NiSource, Inc.	•	•	•	
Northeast Utilities	•	•	•	
NorthWestern Corp.	•	•	•	
NSTAR	•	•	•	
OGE Energy Corp.	•	•	•	
Otter Tail Corp.	•	•	•	
PacifiCorp	•	•	•	
Pepco Holdings	•	•	•	
PG&E Corp.	•	•	•	
Pinnacle West Capital Corp.	•	•	•	
PNM Resources, Inc.	•	•	•	
Portland General Electric Co.	•	•	•	
PPL Corp.	•	•	•	
Progress Energy, Inc.	•	•	•	
PSEG	•	•	•	
Puget Energy	•	•	•	
SCANA Corp.	•	•	•	
Sempra Energy	•	•	•	
Sierra Pacific Resources	•	•	•	
Southern Co., The	•	•	•	
TECO Energy, Inc.	•	•	•	
TNP Enterprises, Inc.	•	•	•	
TXU Corp.	•	•	•	
UIL Holdings Corp.	•	•	•	
UniSource Energy Corp.	•	•	•	
UNITIL Corp.	•	•	•	
Vectren Corp.	•	•	•	
Westar Energy, Inc.	•	•	•	
WE Energies	•		•	
WPS Resources	•		•	
Xcel Energy Inc.	•	•	•	

\***Historical Survey:** Stand alone transmission companies surveyed only for those years when owning former assets of integrated utilities.

**Planned Survey:** Former integrated utility transmission owners not surveyed due to divestiture of transmission assets to stand alone transmission companies prior to 2004.

## Appendix B:

# *ANNUAL PROPERTY & PLANT CAPITAL INVESTMENT SURVEY*

## Historical Transmission Investment Survey Questionnaire



## Appendix C:

# *ELECTRIC TRANSMISSION CAPITAL BUDGET AND FORECAST SURVEY*

## Planned Transmission Investment Survey Questionnaire

## Electric Transmission Capital Budget and Forecast Survey

### Planned Transmission Investment Survey Questionnaire

EEl is gathering budgeted/forecasted transmission capital expenditures<sup>1</sup> for projects that if built, would be accounted for in FERC Form 1 account numbers 352, 353, 354, 355, 356, 357, 358, and 359.

**Instructions:** On the tables below, please provide EEl with the following data and information:

- **In the column labeled A.**, please provide the *Net Book Value* of your company's *Transmission Assets* for year ending 12/31/03 (2003).
- **In columns labeled B.**, please provide your company's *Total Transmission Capital Budget/Forecast* (in millions) for the years 2004-2008.
- **In columns labeled C.**, please provide your company's *Transmission Capital Budget/Forecast Dedicated to Interconnection* (in millions) for the years 2004-2008.

Company Name(s)	A. <i>Net Book Value of Transmission Assets</i> <sup>2</sup>	B. <i>Total Transmission Capital Budget</i>	C. <i>Transmission Capital Budget Dedicated to Interconnection</i> <sup>3</sup>	B. <i>Total Transmission Capital Budget/Forecast</i>	C. <i>Transmission Capital Budget Dedicated to Interconnection</i> <sup>3</sup>
	(2003)	(2004)	(2004)	(2005)	(2005)
<i>Please provide subsidiary-by-subsidiary data or holding company data.</i>	year ending 12/31/03 (in millions)	(in millions)	(in millions)	(in millions)	(in millions)
1.		\$	\$	\$	\$
2.		\$	\$	\$	\$
3.		\$	\$	\$	\$
4.		\$	\$	\$	\$
5.		\$	\$	\$	\$
6.		\$	\$	\$	\$
7.		\$	\$	\$	\$
8.		\$	\$	\$	\$
9.		\$	\$	\$	\$
10.		\$	\$	\$	\$
11.		\$	\$	\$	\$
12.		\$	\$	\$	\$

## EEI Transmission Capital Budget & Forecast Survey (2006-2008)

Company Name(s) <i>Please provide subsidiary-by-subsi- diary data or holding company data.</i>	B. Total Transmission Capital Budget/Forecast  <b>(2006)</b>	C. Transmission Capital Budget Dedicated to Interconnection <sup>3</sup>  <b>(2006)</b>	B. Total Transmission Capital Budget/Forecast  <b>(2007)</b>	C. Transmission Capital Budget Dedicated to Interconnection <sup>3</sup>  <b>(2007)</b>	B. Total Transmission Capital Budget/Forecast  <b>(2008)</b>	C. Transmission Capital Budget Dedicated to Interconnection <sup>3</sup>  <b>(2008)</b>
<i>Please provide subsidiary-by-subsi- diary data or holding company data.</i>	(in millions)	(in millions)	(in millions)	(in millions)	(in millions)	(in millions)
1.	\$	\$	\$	\$	\$	\$
2.	\$	\$	\$	\$	\$	\$
3.	\$	\$	\$	\$	\$	\$
4.	\$	\$	\$	\$	\$	\$
5.	\$	\$	\$	\$	\$	\$
6.	\$	\$	\$	\$	\$	\$
7.	\$	\$	\$	\$	\$	\$
8.	\$	\$	\$	\$	\$	\$
9.	\$	\$	\$	\$	\$	\$
10.	\$	\$	\$	\$	\$	\$
11.	\$	\$	\$	\$	\$	\$
12.	\$	\$	\$	\$	\$	\$

### Survey Definitions:

<sup>1</sup>Transmission Capital Expenditures: Expenditures (including direct costs, construction work in progress (CWIP), overhead costs, interest, and removal costs) for construction including additions to and betterments, renewals, and replacements of utility plant during a specific period. Expenditures should not include money spent for maintenance or the acquisition of existing utility systems or segments.

<sup>2</sup>Net Book Value: The value of a security or asset as shown by the accounting records of the holders. Frequently may be the acquisition cost or other figures that are different from market value. The recorded plant (transmission plant) cost less the accumulated depreciation.

<sup>3</sup>Capital Budget Dedicated to Interconnection: Capital budget for direct interconnection facilities (e.g. GSU's, system protection, connection of existing transmission line, etc.), excluding network upgrades, which connect a non-utility generator (including a distributed generation facility) to an existing Control Area or system.

The completed survey should be returned via fax to the attention of **Chris Eisenbrey** at 202-508-5599, by **Monday, January 31, 2005**. Should you have any questions, please do not hesitate to contact him directly at 202-508-5574 or [ceisenbrey@eei.org](mailto:ceisenbrey@eei.org).

### Survey Respondent Contact Information:

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Company:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Email:** \_\_\_\_\_

