UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 11-K

[X] ANNUAL REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended **December 31, 2004**

or

[ ] TRANSITION REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission File Number: 1-9894

A. Full title of the plan and address of the plan, if different from that of the issuer named below:

ALLIANT ENERGY CORPORATION 401(k) SAVINGS PLAN

B. Name of issuer of the securities held pursuant to the plan and the address of its principal executive office:

ALLIANT ENERGY CORPORATION
4902 North Biltmore Lane
Madison, Wisconsin 53718

REQUIRED INFORMATION

The following financial statements and schedules of the Alliant Energy Corporation 401(k) Savings Plan, prepared in accordance with the financial reporting requirements of the Employee Retirement Income Security Act of 1974, as amended, are filed herewith.

ALLIANT ENERGY CORPORATION

401(k) SAVINGS PLAN

FINANCIAL STATEMENTS AS OF DECEMBER 31, 2004 AND 2003

AND FOR THE YEAR ENDED DECEMBER 31, 2004,

SUPPLEMENTAL SCHEDULES FOR THE YEAR ENDED DECEMBER 31, 2004, AND

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

ALLIANT ENERGY CORPORATION

401(k) SAVINGS PLAN

TABLE OF CONTENTS

	Page No.
REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM	4
FINANCIAL STATEMENTS	
Statements of Net Assets Available for Plan Benefits as of December 31, 2004 and 2003	5
Statement of Changes in Net Assets Available for Plan Benefits for the Year Ended December 31, 2004	6
NOTES TO FINANCIAL STATEMENTS	7-12
SUPPLEMENTAL SCHEDULES	
Form 5500, Schedule H, Part IV, line 4i - Schedule of Assets (Held at End of Year) as of December 31, 2004	13-15
Form 5500, Schedule H, Part IV, line 4j - Schedule of Reportable Transactions for the Year Ended December 31, 2004	16
SIGNATURES	17
EXHIBIT INDEX	18
Consent of Independent Registered Public Accounting Firm	19

Report of Independent Registered Public Accounting Firm

To the Total Compensation Committee and Participants of the Alliant Energy Corporation 401(k) Savings Plan:

We have audited the accompanying statements of net assets available for plan benefits of the Alliant Energy Corporation 401(k) Savings Plan (the "Plan") as of December 31, 2004 and 2003, and the related statement of changes in net assets available for plan benefits for the year ended December 31, 2004. These financial statements are the responsibility of the Plan's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Plan is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Plan's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such financial statements present fairly, in all material respects, the net assets available for plan benefits of the Plan as of December 31, 2004 and 2003, and the changes in net assets available for plan benefits for the year ended December 31, 2004, in conformity with accounting principles generally accepted in the United States of America.

Our audits were conducted for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplemental schedules of (1) assets (held at end of year) as of December 31, 2004, and (2) reportable transactions for the year ended December 31, 2004, are presented for the purpose of additional analysis and are not a required part of the basic financial statements, but are supplementary information required by the Department of Labor's Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974. These schedules are the responsibility of the Plan's management. Such schedules have been subjected to the auditing procedures applied in our audit of the basic 2004 financial statements and, in our opinion, are fairly stated in all material respects when considered in relation to the basic financial statements taken as a whole.

/s/ Deloitte & Touche LLP

Milwaukee, Wisconsin
June 16, 2005

ALLIANT ENERGY CORPORATION

401(k) SAVINGS PLAN

STATEMENTS OF NET ASSETS AVAILABLE FOR PLAN BENEFITS

	December 31,	
	2004	2003
Investment income receivable	**$8,564,250**	$6,819,703
Contributions receivable	**374,368**	424,518
Total receivables	**8,938,618**	7,244,221
Investments, other than participant promissory notes (Refer to Note 7)	**445,595,364**	385,431,715
Participant promissory notes	**8,742,835**	8,213,703
Total investments	**454,338,199**	393,645,418
Net assets available for plan benefits	**$463,276,817**	$400,889,639

The accompanying Notes to Financial Statements are an integral part of these statements.

ALLIANT ENERGY CORPORATION

401(k) SAVINGS PLAN

STATEMENT OF CHANGES IN NET ASSETS AVAILABLE FOR PLAN BENEFITS

For the Year Ended December 31, 2004

Net assets available for plan benefits - beginning of year	**$400,889,639**
Contributions:	
Cash contributions from employees	26,470,660
Employer contributions:	
Cash for purchase of Alliant Energy Corporation common stock	7,750,725
Cash	692,957
Rollovers from other qualified plans	537,947
Investment activity:	
Net appreciation in fair value of investments (Refer to Note 7)	38,741,362
Investment income	9,343,320
Distributions to participants	(21,149,793)
Net assets available for plan benefits - end of year	**$463,276,817**

The accompanying Notes to Financial Statements are an integral part of this statement.

ALLIANT ENERGY CORPORATION
401(k) SAVINGS PLAN

NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2004

Note 1. Description of the Plan

The Alliant Energy Corporation 401(k) Savings Plan (the Plan) is a qualified defined contribution plan under Section 401(k) of the Internal Revenue Code (the Code), as amended, and meets the applicable requirements of the Employee Retirement Income Security Act of 1974, as amended. The following brief description of the Plan is provided for general information purposes only. More complete information regarding the Plan is provided in the summary plan description, which has been made available to all eligible Plan participants (participants). The Plan is administered by the Total Compensation Committee (the Committee) and the Plan sponsor is Alliant Energy Corporate Services, Inc. (a direct subsidiary of Alliant Energy Corporation), which reserves the right to terminate, amend or modify the Plan if future conditions warrant such action.

Any regular employee of Alliant Energy Corporation and its participating subsidiaries (the Company) age 18 and over may participate in the Plan. Regular full-time employees and regular part-time employees customarily scheduled to work at least half-time may participate immediately following 30 days of service. Part-time employees customarily scheduled to work less than half-time may participate after 12 months of service during which he or she has earned at least 1,000 paid hours.

An Employee Stock Ownership Plan (ESOP) is in place within the Plan. Under these provisions, participants have the option to elect to receive cash for any dividends paid on Company common stock within the Plan or to have the dividends reinvested in additional shares based on the current market price. Also, the Company is eligible for the dividend deduction provisions of Section 404(k) of the Code for Company common stock held in the ESOP.

The Company provides matching contributions for each $1 contributed by participants up to a maximum of the first 6% of each respective participant's eligible compensation. Other than the exceptions noted below, Company match information and employee contribution limits for 2004 were as follows:

Company match for each $1 contributed up to the maximum	**$0.50**
Eligible employee annual contribution limit as a percentage of compensation	**50%**
Maximum annual contribution limit	**$13,000**

Company contributions for Alliant Energy Resources, Inc. (Resources) and Cedar Rapids and Iowa City Railway Company (CRANDIC) employees are calculated based on a percentage of base pay, without overtime or incentive pay, and there is a "basic" Company contribution equal to 4% and 2%, respectively, of base pay.

Resources and CRANDIC employees may be eligible for a "discretionary" Company contribution of $0.50 for every $1 contributed up to a maximum of the first 6% of pay in addition to the "basic" Company contribution. The "discretionary" contribution for both Resources and CRANDIC employees is based on goals established by Resources and is typically determined and paid during the first quarter of the following year. The "discretionary" Company contributions for 2004 and 2003 were $374,368 and $424,518, respectively.

An "additional" Company contribution is allocated to the accounts of active participants, except for Resources and CRANDIC employees, as of the last day of the Plan year, who contributed at least 6% of compensation during the Plan year and did not receive a Company matching contribution equal to 3% of compensation. The amount of the "additional" Company contribution is the difference between 3% of compensation during the Plan year and the amount of Company matching contributions previously received during the Plan year.

Participants who were at least age 50 by Dec. 31, 2004 were eligible to make catch-up contributions of up to $3,000 in 2004. These catch-up contributions were not eligible for any Company match.

All Company contributions are invested in the Alliant Energy Corporation Common Stock Fund, except for Company "basic" contributions for Resources and CRANDIC employees which are invested at each participant's discretion.

Participants are immediately vested in their respective employee and employer contributions.

Contributions under the Plan are held and invested, until distribution, in a Trust Fund maintained by American Express Trust Company (the Trustee), a division of American Express Financial Advisors Inc.

Participants may subsequently redesignate the distribution of future contributions or transfer existing balances between investment funds on a daily basis, subject to the limits set forth in the Plan. As previously described, Company matching contributions invested in the Alliant Energy Corporation Company Stock Fund may not be transferred to any other investment fund, except for "basic" contributions made for CRANDIC and Resources employees. However, Company matching contributions may be transferred by certain participants during the 30-day period immediately prior to retirement and participants age 55 with 10 years of service are eligible to diversify up to 100% of their ESOP account to one or more of the investment options.

The Plan has provisions under which participants who are active employees may take loans up to the lesser of $50,000 or 50% of their total account balance (a $1,000 minimum loan amount and a maximum of three loans for each participant also apply). The Committee determines the loan interest rate pursuant to the Plan. Interest rates on participant loans ranged from 5.0% to 10.5% at both Dec. 31, 2004 and 2003. Principal and interest are repaid bi-weekly through employee payroll deductions.

Note 2. Summary of Significant Accounting Policies

(a) Basis of Accounting - The financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (GAAP).

(b) Valuation of Investments and Income Recognition - All Guaranteed Investment Contracts (GIC's) held by the Plan are fully benefit responsive and are valued at contract value, which represents contributions made under the contract, plus interest at the contract rate (less funds used to pay plan benefits). The carrying value of all GIC investments was $35,339,962 and $38,189,962 at Dec. 31, 2004 and 2003, respectively. The approximate fair value of these investments was $43,639,028 and $46,026,501 at Dec. 31, 2004 and 2003, respectively, based on the discounted cash flows valuation method. Under the terms of the GIC's, the weighted average crediting interest rate was 5.00% and 4.08% on Dec. 31, 2004 and 2003, respectively, and is reset quarterly for all contracts. The GIC's earned an average rate of 4.80% in 2004. Participant loans are carried at unpaid principal balances due. All other Plan investments are carried at fair value as determined by quoted market prices, except for the American Express Trust Income Fund I. The American Express Trust Income Fund I is a common collective trust fund, which includes investments in fully benefit responsive GIC's and is reported at contract value, which approximates fair value. Interest income is accrued when earned. Dividend income is recorded on the ex-dividend date. Investment transactions are recorded on the trade date.

(c) Net Appreciation in Fair Value of Investments - Net realized and unrealized appreciation is recorded in the accompanying statement of changes in net assets available for plan benefits as "Net appreciation in fair value of investments."

(d) Payment of Benefits - Benefit payments to participants are recorded when paid.

(e) Expenses - Investment management fees are paid from investment earnings prior to crediting earnings to the individual participant account balances. Most other Plan administrative expenses are absorbed by the Company. Expenses incurred in maintaining Self-Managed Brokerage Accounts are the responsibility of the respective Plan participants.

(f) Use of Estimates - The preparation of financial statements in conformity with GAAP requires the Plan administrator to make estimates and assumptions that affect the reported amounts of net assets available for plan benefits at the date of the financial statements and the reported amounts of changes in net assets available for plan benefits during the reporting period. Actual results could differ from those estimates.

(g) Risk and Uncertainties - The Plan invests in various investments, including common investment funds, mutual funds, common stock of the Company and investment contracts. The Plan also offers a Self-Managed Brokerage Account option which allows participants to invest in a wide range of mutual funds. Investments, in general, are exposed to various risks, such as interest rate, credit, and overall market volatility. Due to the level of risk associated with certain investments, it is reasonably possible that changes in the values of certain investments will occur in the near term and that such changes could materially affect the amounts reported in the financial statements.

Note 3. Tax Status

The Internal Revenue Service has determined and informed the Company by a letter dated Aug. 25, 2003, that the Plan and related trust are designed in accordance with the applicable sections of the Code. It is the intention of the Company to adopt any amendments necessary to maintain the qualified status of the Plan.

Note 4. Plan Termination Provisions

Upon termination of the Plan in its entirety, each participant is entitled to receive, in accordance with the terms of the Plan, the entire balance in their account. The Company has no intention to terminate the Plan.

Note 5. Withdrawals and Distributions

Withdrawals from participants' account balances are allowed when participants who are actively employed reach age 70-1/2 (or age 59-1/2 for certain participants). Withdrawals are also allowed due to special "hardship" circumstances. Distributions from the Plan will be made upon termination of employment (by retirement, death, disability or otherwise) if the participant's account balance is less than $5,000. If the participant's account balance exceeds $5,000, the participant may elect to defer payment until he or she is age 70-1/2. Distributions can be either in the form of a lump sum or substantially equal annual installments. The unpaid portion of all loans made to the participant, including accrued interest, will be deducted from the amount of the participant account to be distributed. Distributions payable to participants at Dec. 31, 2004 and 2003 were $25,656 and $0, respectively. Distributions payable are not recorded in the accompanying financial statements, however, they are recorded in the Plan's Form 5500 (refer to Note 10).

Note 6. Derivative Financial Instruments

The Plan did not invest in any material derivative financial instruments during 2004 and 2003.

Note 7. Other Investment Information

Investments held which were greater than 5% of the Plan's net assets available for plan benefits as of Dec. 31 were as follows:

	2004	2003
Alliant Energy Corporation Common Stock*	**$108,063,758**	$89,235,309
(non-participant directed: $63,508,962 (2,220,593 shares) and $48,442,726 (1,945,491 shares), respectively)		
(participant directed: $44,554,796 (1,557,860 shares) and $40,792,583 (1,638,256 shares), respectively)		
American Express Trust Equity Index Fund III*, 2,340,750 and 2,449,624 shares, respectively	**76,942,777**	72,695,049
American Funds Growth Fund of America, 2,572,065 and 2,509,599 shares, respectively	**70,423,142**	61,585,565
American Express Trust Long-Term Horizon (65:35) Fund*, 2,660,902 and 2,729,903 shares, respectively	**33,931,822**	31,904,378
Dodge & Cox Stock Fund, 196,080 and 127,389 shares, respectively	**25,533,595**	14,494,303
Brown Capital Management Small Company Fund, 822,599 and 895,853 shares, respectively	**24,513,456**	26,633,723
PIMCO Total Return Fund, 1,941,165 and 1,887,924 shares, respectively	**20,712,227**	20,219,670

* Represents party known to be a party-in-interest to the Plan.

During 2004, the Plan's investments, including gains and losses on investments acquired and disposed of, as well as held during the year, appreciated (depreciated) in value as follows:

Alliant Energy Corporation Common Stock	**$13,866,178**
American Express Trust Equity Index Fund III	**7,563,061**
American Funds Growth Fund of America	**7,216,827**
American Express Trust Long-Term Horizon (65:35) Fund	**2,835,135**
Dodge & Cox Stock Fund	**2,698,166**
American Funds EuroPacific Growth Fund	**2,599,976**
Dreyfus Premier Emerging Markets Fund	**653,655**
State Street Global Advisors S&P Midcap Index Fund	**528,085**
Evergreen Small Cap Value Fund	**365,571**
American Express Trust Income Fund I	**262,515**
Vanguard Mid-Cap Index Fund	**150,758**
American Express Trust Long-Term Horizon (80:20) Fund	**115,326**
American Express Trust Short-Term Horizon (25:75) Fund	**40,824**
American Express Trust Bond Index Fund II	**12,814**
Self-Managed Brokerage Accounts	**11,582**
Brown Capital Management Small Company Fund	**(89,258)**
PIMCO Total Return Fund	**(89,853)**
Net appreciation in fair value of investments	**$38,741,362**

Note 8. Non-Participant Directed Investments

Information about the net assets and the significant components of the changes in net assets relating to the non-participant directed investments was as follows:

	As of Dec. 31,	
Net assets:	**2004**	2003
Alliant Energy Corporation Common Stock*	**$63,508,962**	$48,442,726
American Express Trust Money Market Fund I*	**993,002**	605,615
Contributions receivable	**374,368**	424,518
Investment income receivable	**697**	441
	$64,877,029	$49,473,300

Changes in net assets:	**For the Year Ended Dec. 31, 2004**
Employer contributions	**$7,750,725**
Investment activity:	
Net appreciation in fair value of investments	**7,936,617**
Investment income	**2,133,932**
Transfers to participant directed investments	**(482,303)**
Distributions to participants	**(1,935,242)**
	$15,403,729

* Represents party known to be a party-in-interest to the Plan.

Note 9. Related Party Transactions

Certain Plan investments are shares of mutual funds and common trust funds managed by an affiliate of the Trustee and shares of common stock of the Company. As of Dec. 31, 2004 and 2003, the Plan held 3,778,453 and 3,583,747 shares of Alliant Energy Corporation common stock with a cost basis of $92,640,650 and $87,615,743, respectively. During the years ended Dec. 31, 2004 and 2003, the Plan recorded dividend income of $3,705,802 and $3,344,162, respectively, from investments in common stock of the Company. These transactions qualify as party-in-interest.

Note 10. Reconciliation to Form 5500

Distributions payable to participants are not included in the accompanying financial statements, however, they are recorded in the Plan's Form 5500. The following table reconciles net assets available for plan benefits per the financial statements to the Plan's Form 5500 as filed by the Company for the year ended Dec. 31:

	2004	2003
Net assets available for plan benefits per financial statements	**$463,276,817**	$400,889,639
Adjustments:		
Benefits requested not yet paid	**(25,656)**	--
Amounts reported per Form 5500	**$463,251,161**	$400,889,639

The following table reconciles certain changes in net assets available for plan benefits per the financial statements to the Form 5500 as filed by the Company for the year ended Dec. 31, 2004:

	Distributions to Participants
Amounts reported per financial statements	**($21,149,793)**
Adjustments:	
Changes in benefits requested not yet paid	**(25,656)**
Amounts reported per Form 5500	**($21,175,449)**

Note 11. Subsequent Event

On Aug. 1, 2005, it is expected that the Trustee will change its name to Ameriprise Trust Company, and American Express Financial Advisors Inc. will begin operating as Ameriprise Financial Services, Inc.

ALLIANT ENERGY CORPORATION

401(k) SAVINGS PLAN

FORM 5500, SCHEDULE H, PART IV, LINE 4i - SCHEDULE OF ASSETS (HELD AT END OF YEAR)

AS OF DECEMBER 31, 2004

Identity of issue, borrower, lessor, or similar party	Description of investment including maturity date, rate of interest, collateral, par or maturity value	Cost	Current Value
Registered Investment Companies	Evergreen Small Cap Value Fund, 216,771 shares	$4,520,031	$5,074,605
	American Funds Growth Fund of America, 2,572,065 shares	50,263,175	70,423,142
	PIMCO Total Return Fund, 1,941,165 shares	20,952,129	20,712,227
	Dodge & Cox Stock Fund, 196,080 shares	20,500,585	25,533,595
	Brown Capital Management Small Company Fund, 822,599 shares	19,402,020	24,513,456
	Dreyfus Premier Emerging Markets Fund, 354,871 shares	6,277,245	6,959,020
	American Funds EuroPacific Growth Fund, 526,727 shares	16,035,870	18,572,401
Common/Collective Trusts	American Express Trust Money Market Fund I*, 3,547,995 shares	3,547,995	3,547,995
	American Express Trust Short-Term Horizon (25:75) Fund*, 42,155 shares	810,431	852,918
	American Express Trust Long-Term Horizon (65:35) Fund*, 2,660,902 shares	26,570,252	33,931,822
	American Express Trust Long-Term Horizon (80:20) Fund*, 54,546 shares	1,302,834	1,419,236
	American Express Trust Equity Index Fund III*, 2,340,750 shares	68,063,447	76,942,777
	American Express Trust Income Fund I*, 137,429 shares	8,297,933	9,081,602
	American Express Trust Investment Grade Bond Fund*, 273,592 shares	4,070,987	4,447,234
	American Express Trust Bond Index Fund II*, 33,412 shares	465,077	475,489
	State Street Global Advisors S&P Midcap Index Fund, 176,674 shares	4,794,443	5,337,675
Corporate Stocks: Common	Alliant Energy Corporation common stock*, 3,778,453 shares	92,640,650	108,063,758
Corporate Bonds	AMCAR 2002-C AR, 3.55%, 2/12/08, par value $100,000	99,982	100,347
	AMCAR 2003-CF A3, 2.75%, 10/9/07, par value $175,000	177,728	174,558
	AMCAR 2004-AF A3, 2.18%, 7/7/08, par value $200,000	199,988	198,313
	AMCAR 2004-CA A3, 3.00%, 3/6/09, par value $150,000	149,985	148,687
	AMSI 2004-R7 A2, 2.55%, 8/25/34, par value $89,078	89,078	89,085
	BOAA 2003-1-A1, 5.00%, 2/25/33, par value $151,156	152,171	152,598
	BOAMS 2004-E 2A6, 4.13%, 6/25/34, par value $150,000	148,781	147,842
	CWL 2004-5 4A1, 2.53%, 8/25/23, par value $112,411	112,411	112,415
	COAFT 2002-B A4A, 3.32%, 4/15/09, par value $100,000	101,969	100,089
	COAFT 2003-A A3A, 1.83%, 10/15/07, par value $130,578	130,124	129,886
	COAFT 2004-A A3, 3.07%, 7/15/08, par value $100,000	99,999	99,446
	Centex Home Eq 2004-A AF3, 3.26%, 4/25/28, par value $150,000	149,996	147,695
	CFAB 2004-2 2A1, 2.55%, 1/25/25, par value $99,731	99,731	99,716
	CSFB 2004-C1 A2, 3.52%, 1/15/37, par value $100,000	100,500	98,467
	FSPC T-17 A4 ABS HEL, 6.93%, 1/25/26, par value $66,469	66,467	66,484
	GMACC 2002-C2 A1, 4.32%, 10/15/38, par value $151,862	154,567	153,470
	GSMS 2004-GG2 A2, 4.29%, 8/1/38, par value $150,000	150,747	151,636
	HART 2003-A A3, 2.33%, 11/15/07, par value $150,000	149,998	148,727
	LBUBS 2004-C4 A2, 4.57%, 5/15/34, par value $150,000	153,697	152,853
	LB-UBS 2002-A2, 4.90%, 6/15/26, par value $200,000	200,995	206,021
	LBUBS 2004-C6 A2, 4.19%, 8/15/29, par value $200,000	200,995	200,076
	LBUBS 2003-C7 A2, 4.06%, 9/15/27, par value $185,000	186,356	185,080
	LBUBS 2003-C8 A2, 4.21%, 11/15/27, par value $150,000	150,744	151,101
	LBUBS 2004-C2 A2, 3.25%, 3/15/29, par value $150,000	144,686	145,460
	LBMLT 2004-3 A2, 2.54%, 7/25/34, par value $107,419	107,419	107,421
	MARM 2004-3 3A2, 4.50%, 4/25/34, par value $129,431	132,019	129,165
	MSCI 2004-IQ8-A2, 3.96%, 6/15/40, par value $250,000	252,676	250,211
	MSM 2004-2AR 3A, 5.05%, 2/25/34, par value $161,695	165,585	163,129
	MSM 2004-10AR 1A, 4.82%, 11/25/34, par value $141,712	144,280	143,815
	RALI SER 2003-QS4 ABS, 5.50%, 9/25/33, par value $179,562	184,598	181,173
	RASC 2004-KS8 A13, 3.84%, 9/25/34, par value $125,000	124,980	124,395
	RASC SER 2002-KS1, 5.864%, 11/25/29, par value $192,758	205,468	193,762
	SASCO CMO 2004-12H, 5.56%, 4/25/34, par value $110,288	112,774	112,291
	VWALT 2004-A-A3, 2.84%, 7/20/07, par value $150,000	149,997	149,133
	WESTO 2002-1 A4A, 4.87%, 9/20/09, par value $150,000	156,633	152,032
	WESTO 2002-2 A4, 4.50%, 2/20/10, par value $150,000	155,865	151,927
	WESTO 2003-4 A3, 2.39%, 1/22/08, par value $150,000	149,994	149,320
	WBCMT 2003-C8 A2, 3.89%, 11/15/35, par value $150,000	150,745	149,525

ALLIANT ENERGY CORPORATION

401(k) SAVINGS PLAN

FORM 5500, SCHEDULE H, PART IV, LINE 4i - SCHEDULE OF ASSETS (HELD AT END OF YEAR)

AS OF DECEMBER 31, 2004 (Continued)

Identity of issue, borrower, lessor, or similar party	Description of investment including maturity date, rate of interest, collateral, par or maturity value	Cost	Current Value
Government and Agency Obligations	FHLMC Gold #E91326, 6.50%, 9/1/17, par value $91,927	97,385	97,345
	FHLMC Gold #E96180, 4.50%, 5/1/13, par value $138,779	143,984	139,699
	FHLMC Gold #E96579, 4.50%, 6/1/13, par value $161,377	167,353	162,437
	FHLMC Gold #E97247, 5.00%, 6/1/18, par value $121,903	124,494	123,978
	FHLMC MTN, 3.525%, 12/20/07, par value $370,000	370,000	370,226
	FHLMC, 2.85%, 2/23/07, par value $300,000	296,670	296,697
	FHLMC Gold #C66932, 6.00%, 5/1/32, par value $77,995	78,166	80,681
	FHLMC Gold #B10258, 5.00%, 10/1/18, par value $290,539	295,715	295,287
	FHLMC Gold #B10776, 5.00%, 11/1/13, par value $123,046	126,314	125,852
	FHLB, 3.00%, 5/15/06, par value $290,000	291,134	289,586
	FHLB, 2.50%, 3/13/06, par value $300,000	300,102	298,038
	Fed Home Loan Bank, 2.88%, 5/22/06, par value $475,000	474,069	473,482
	Fed Home Loan Bank, 3.25%, 12/17/07, par value $170,000	169,466	168,657
	Federal Farm Credit Bank, 2.38%, 10/2/06, par value $150,000	150,473	147,912
	Federal Farm Credit Bank, 2.13%, 7/17/06, par value $250,000	249,522	246,092
	FHLMC 2393-A CMO, 5.50%, 4/15/30, par value $22,549	22,973	22,657
	FHLMC, 5.50%, 7/15/06, par value $150,000	157,088	155,228
	FHLMC Reference Notes, 4.25%, 7/15/09, par value $475,000	487,774	483,391
	FHLMC ARM #781884, 5.20%, 8/1/34, par value $98,650	99,960	99,521
	FHLMC (Non Gold) Arm #782436, 5.01%, 10/1/34, par value $147,481	150,799	149,671
	FNMA, 3.88%, 11/17/08, par value $350,000	349,202	349,496
	FNMA Benchmark, 2.25%, 2/28/06, par value $145,000	143,912	143,676
	FNMA, 3.00%, 3/2/07, par value $220,000	219,593	218,627
	FNMA Benchmark, 3.13%, 12/15/07, par value $65,000	64,994	64,360
	FNMA 15yr #252260, 6.00%, 3/1/10, par value $512,781	510,297	538,474
	FNMA #254187, 5.00%, 12/1/08, par value $318,937	317,193	324,467
	FNMA #254291, 7.00%, 4/1/17, par value $120,175	128,174	127,409
	FNMA #254757, 5.00%, 3/31/13, par value $133,650	139,664	136,610
	FNMA #535170, 5.50%, 9/1/14, par value $140,518	144,997	145,622
	FNMA #545701, 7.00%, 7/1/12, par value $158,408	169,298	165,721
	FNMA #545864, 5.50%, 8/1/17, par value $220,934	224,196	229,222
	FNMA #555655, 4.45%, 7/1/33, par value $254,080	257,057	255,193
	FNMA #555740, 4.50%, 9/1/18, par value $258,383	253,135	258,303
	FNMA #640996, 7.50%, 5/1/32, par value $79,659	85,235	85,286
	FNMA #648349, 6.00%, 6/1/17, par value $93,746	98,053	98,705
	FNMA 2002-W3 A3, 6.00%, 7/25/24, par value $164,624	165,068	165,746
	FNMA 2002-W5 A6, 6.00%, 8/25/32, par value $166,553	167,724	167,023
	FNMA 2002-W4 A3, 5.30%, 4/25/42, par value $323,694	324,503	326,098
	FNMA 2002-W9 A3, 5.00%, 8/25/42, par value $153,438	154,313	154,150
	FNMA CMO 03-W2-2A6, 5.50%, 7/25/42, par value $68,709	71,071	68,723
	FHLMC 2492-B, 5.50%, 5/15/13, par value $332,019	346,597	338,746
	FNMA #200394, 5.50%, 7/25/23, par value $300,000	313,172	308,311
	FHLMC 2617 HD, 7.00%, 6/15/16, par value $118,399	128,611	127,380
	FNMA 2003-109 CX, 4.00%, 7/25/16, par value $150,000	150,791	149,245
	FNMA 2003-106 B, 4.50%, 10/25/19, par value $191,463	195,352	192,466
	FNMA 2003-W16 AF3, 2.91%, 1/25/29, par value $150,000	149,997	149,766
	FNMA 2003-133 GB, 8.00%, 12/25/26, par value $73,127	80,131	78,563
	FHLMC_2641, 6.50%, 1/15/18, par value $120,327	128,402	127,975
	FNMA 2004-21 AC, 4.00%, 5/25/16, par value $200,000	204,687	200,625
	FNMA 2004-W3 A2, 3.75%, 5/25/34, par value $125,000	127,344	123,640
	FNMA 2004-W3 A14, 3.50%, 5/25/34, par value $85,343	85,610	85,063
	FNMA 2004-W3 A15, 5.00%, 5/25/34, par value $100,000	104,641	101,751
	FNMA 2004-W4 A2, 5.00%, 6/25/34, par value $150,000	157,242	152,800
	FNMA 2004-W8, 7.50%, 6/25/44, par value $83,710	89,315	89,956
	FNMA 2004-60 PA, 5.50%, 4/25/34, par value $146,796	151,647	151,777
	FHLMC 2657 NT, 5.00%, 1/15/16, par value $150,000	156,117	153,865
	FHLMC 2663 BA, 4.00%, 8/15/16, par value $82,544	81,461	82,194
	FHLMC 2672 NT, 5.00%, 2/15/16, par value $200,000	208,289	205,039
	FHLMC 2662 DB, 5.00%, 2/15/16, par value $150,000	156,047	153,875
	FHLMC 2681 PJ, 5.00%, 10/15/15, par value $300,000	313,734	308,212

ALLIANT ENERGY CORPORATION

401(k) SAVINGS PLAN

FORM 5500, SCHEDULE H, PART IV, LINE 4i - SCHEDULE OF ASSETS (HELD AT END OF YEAR)

AS OF DECEMBER 31, 2004 (Continued)

Identity of issue, borrower, lessor, or similar party	Description of investment including maturity date, rate of interest, collateral, par or maturity value	Cost	Current Value
	FHLMC 2688 DE, 4.50%, 2/15/20, par value $150,000	151,359	151,216
	FHLMC 2716 UA, 4.50%, 7/15/20, par value $268,388	267,717	270,502
	FHLMC 2750 DB, 4.50%, 5/15/15, par value $150,000	153,586	152,593
	FHLMC 2822 ZN, 5.00%, 1/15/33, par value $41,574	41,288	40,878
	FHLMC 2843-BA, 5.00%, 1/15/18, par value $140,442	143,915	142,538
	FHLMC 2907-AG, 4.50%, 3/15/19, par value $125,000	124,961	126,256
	FHLMC, 3.50%, 9/15/07, par value $725,000	716,894	727,071
	FNMA #685433, 6.50%, 3/1/33, par value $187,532	198,037	197,185
	FNMA #705304, 4.90%, 6/1/33, par value $174,887	177,442	179,939
	FNMA ARM #722781, 4.27%, 9/1/33, par value $459,008	453,987	458,374
	FNMA #725090, 4.80%, 11/1/33, par value $139,469	138,729	139,638
	FNMA ARM #725737, 4.53%, 8/1/34, par value $98,575	97,389	99,045
	FNMA #732002, 4.25%, 8/1/33, par value $105,295	107,039	106,038
	FNMA #764082, 4.78%, 1/1/34, par value $127,987	130,087	129,593
	FNMA ARM #768193, 4.58%, 3/1/34, par value $161,085	164,703	162,216
	FNMA ARM #799769, 5.07%, 11/1/34, par value $149,983	152,983	152,424
	FNMA ARM #801344, 5.10%, 10/1/34, par value $145,752	148,394	148,102
	FNMA 2003-W18 1A5, 4.61%, 8/25/43, par value $100,000	101,172	100,556
	FNMA 2004-W10 A23, 5.00%, 8/25/34, par value $125,000	128,770	126,750
	VENDEE 2003-2 C, 5.00%, 7/15/20, par value $100,000	103,406	101,040
	U.S. Treasury Note, 3.25%, 8/15/07, par value $265,000	274,813	265,393
	U.S. Treasury Note, 1.88%, 1/31/06, par value $1,525,000	1,516,717	1,510,346
	U.S. Treasury Note, 2.25%, 2/15/07, par value $1,065,000	1,073,830	1,046,945
	U.S. Treasury Note, 2.75%, 8/15/07, par value $800,000	792,167	791,218
	U.S. Treasury Note, 4.25%, 8/15/04, par value $475,000	477,448	476,058
	U.S. Treasury Note, 2.88%, 11/30/06, par value $600,000	598,969	598,125
	U.S. Treasury Note, 3.63%, 12/15/09, par value $1,785,000	1,782,404	1,776,353
Investment Contracts	Monumental Life Insurance Company, 4.09%, 12/31/50		
	Synthetic Guaranteed Investment Contract Wrapper	-	(41,973)
	Bank of America NA, 5.45%, 12/31/50		
	Synthetic Guaranteed Investment Contract Wrapper	-	(87,448)
	Rabobank International, 4.80%, 12/31/50		
	Synthetic Guaranteed Investment Contract Wrapper	-	35,617
	IXIS Capital Markets, 3.31%, 12/31/50		
	Synthetic Guaranteed Investment Contract Wrapper	-	25,405
	JP Morgan Chase & Co., 3.94%, 12/31/50		
	Synthetic Guaranteed Investment Contract Wrapper	-	(14,458)
	UBS Warburg, 3.61%, 12/31/50		
	Synthetic Guaranteed Investment Contract Wrapper	-	(5,096)
	State Street Bank and Trust Company, 3.23%, 12/31/50		
	Synthetic Guaranteed Investment Contract Wrapper	-	27,852
	AIG Financial Products Corp., 3.32%, 12/31/50		
	Synthetic Guaranteed Investment Contract Wrapper	-	(81,860)
	United of Omaha, 2.48%, 5/20/05	2,004,213	2,004,213
	John Hancock Life Insurance Company, 7.69%, 3/31/05	2,115,241	2,115,241
	New York Life Insurance Company, 7.41%, 8/15/05	2,056,032	2,056,032
	Hartford, 5.21%, 11/15/06	2,012,842	2,012,842
	Protective Life Insurance Company, 6.12%, 6/15/06	2,066,167	2,066,167
Participant-Directed Brokerage Accounts	Self-Managed Brokerage Accounts	115,152	126,092
Participant Promissory Notes	Maximum allowable loan -- $50,000		
	Various interest rates -- 5.0% to 10.5%		
	Primarily maturing within 5 years	-	8,742,835
		$386,237,992	$462,094,753 (1)

(1) The difference between the total current value on this Schedule H, Part IV, Line 4i and the total investments on the Statement of Net Assets Available for Plan Benefits as of Dec. 31, 2004 is equal to accrued interest on the Guaranteed Investment Contracts.

* Represents party known to be a party-in-interest to the Alliant Energy Corporation 401(k) Savings Plan.

ALLIANT ENERGY CORPORATION

401(k) SAVINGS PLAN

FORM 5500, SCHEDULE H, PART IV

LINE 4j - SCHEDULE OF REPORTABLE TRANSACTIONS

FOR THE YEAR ENDED DECEMBER 31, 2004

Identity of Party Involved and Description of Assets	Total Number of Purchases	Total Value of Purchases (1)	Total Number of Sales	Net Selling Price (1)	Adjusted Cost of Assets Sold	Net Gain (Loss)
Single Transaction Exceeds 5% of Value:						
None.						
Series of Transactions With Same Broker Exceeds 5% of Value:						
None.						
Series of Transactions In Same Security Exceeds 5% of Value:						
American Express Trust Money Market Fund I	384	$47,425,374	455	$48,010,220	$48,010,220	$ -
Single Transaction With One Broker Exceeds 5% of Value:						
None.						

(1) The purchase/selling price was equal to the fair value on the date of purchase/sale.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Total Compensation Committee, which administers the Plan, has duly caused this Annual Report to be signed on its behalf by the undersigned, thereunto duly authorized, on this 29th day of June 2005.

ALLIANT ENERGY CORPORATION
401(k) SAVINGS PLAN

/s/ Jonathan C. Day
Jonathan C. Day

The foregoing person is the Director – Total Compensation of Alliant Energy Corporation and the Chairperson of the Alliant Energy Corporation Total Compensation Committee.

EXHIBIT INDEX TO ANNUAL REPORT ON FORM 11-K

ALLIANT ENERGY CORPORATION
401(k) SAVINGS PLAN

FOR THE YEAR ENDED DECEMBER 31, 2004

Exhibit No.	Exhibit	Page Number in Sequentially Numbered Form 11-K
23	Consent of Independent Registered Public Accounting Firm	19

Exhibit 23

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement No. 333-117654 of Alliant Energy Corporation on Form S-8 of our report dated June 16, 2005, appearing in this Annual Report on Form 11-K of the Alliant Energy Corporation 401(k) Savings Plan for the year ended December 31, 2004.

/s/ Deloitte & Touche LLP

Milwaukee, Wisconsin
June 28, 2005