

Great Plains Energy Incorporated

Dividend Reinvestment and Direct Stock Purchase Plan

1,196,633 Shares of Common Stock
(Without Par Value)

Great Plains Energy Incorporated (“Great Plains Energy”) offers you the opportunity to participate in its Dividend Reinvestment and Direct Stock Purchase Plan (“Plan”). The Plan is a convenient way for you to:

- Purchase shares of our common stock;
- Reinvest all or some of your cash dividends in additional shares; and
- Deposit your stock certificates for safekeeping.

This is a restatement of the Plan. If you are currently enrolled in the Plan, your enrollment will continue uninterrupted.

The administrator of the Plan may buy shares of common stock on the open market (New York Stock Exchange), in private transactions, or directly from Great Plains Energy. If it buys on the open market, the price of the shares will be the weighted average cost of all shares purchased for the relevant investment date plus a nominal brokerage commission fee (currently \$0.05 per share). If it buys from Great Plains Energy, the price will be the average of the high and low prices of the common stock for the relevant investment date as reported on the New York Stock Exchange “NYSE” — Consolidated Tape.

Great Plains Energy common stock is traded on the New York Stock Exchange under the symbol “GXP”. The closing price of the common stock on May 8, 2009 on the NYSE Consolidated Tape was \$15.15 per share.

Participating in the Plan and investing in our common stock involves risks. You should carefully consider the information under the heading “Risk Factors” beginning on page 3.

Our principal executive office is located at 1200 Main Street, Kansas City, Missouri 64106-2124, and the telephone number is (816) 556-2200.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

May 11, 2009

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement filed with the Securities and Exchange Commission, or SEC. Under this registration statement, we may offer up to a total of 1,196,633 shares of our common stock described in this prospectus pursuant to the Plan. This prospectus provides you with a general description of the Plan. We may also add, update or change the information contained in this prospectus by means of a supplement to this prospectus. If there is any inconsistency between the information in this prospectus and any prospectus supplement, you should rely on the information in the prospectus supplement. The registration statement we filed with the SEC includes exhibits that provide more detail on descriptions of the matters discussed in this prospectus. Before you invest in our securities, you should carefully read the registration statement (including the exhibits) of which this prospectus forms a part, this prospectus, any prospectus supplement and the documents incorporated by reference into this prospectus. The incorporated documents are described under “Where You Can Find More Information.”

You should rely only on the information contained or incorporated by reference in this prospectus and any prospectus supplement. We have not authorized anyone else to provide you with any different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not making an offer to sell securities in any jurisdiction where the offer or sale is not permitted. The information contained in this prospectus is current only as of the date of this prospectus. Our business, financial condition, results of operations and prospects may have changed materially since that dates.

Unless the context otherwise requires or as otherwise indicated, when we refer to “Great Plains Energy,” the “Company,” “we,” “us” or “our” in this prospectus or when we otherwise refer to ourselves in this prospectus, we mean Great Plains Energy Incorporated and its subsidiaries, unless the context clearly indicates otherwise.

CAUTIONARY STATEMENTS REGARDING CERTAIN FORWARD-LOOKING INFORMATION

This prospectus and the documents incorporated or deemed incorporated by reference as described under the heading “Where You Can Find More Information” contain forward-looking statements that are not based on historical facts. In some cases, you can identify forward-looking statements by use of the words “may,” “should,” “expect,” “plan,” “anticipate,” “estimate,” “predict,” “potential,” or “continue.” Forward-looking statements include, but are not limited to, statements regarding the outcome of regulatory proceedings, cost estimates for our Comprehensive Energy Plan and other matters affecting future operations. These forward-looking statements are based on assumptions, expectations, and assessments made by our management in light of their experience and their perception of historical trends, current conditions, expected future developments and other factors they believe to be appropriate. Any forward-looking statements are not guarantees of our future performance and are subject to risks and uncertainties, including those discussed under the heading “Risk Factors” in this prospectus and in our other SEC filings. These risks and uncertainties could cause actual results, developments and business decisions to differ materially from those contemplated or implied by forward-looking statements. Consequently, you should recognize these statements for what they are and we caution you not to rely upon them as facts. We claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995 for all forward-looking

statements. We disclaim any duty to update the forward-looking statements, which apply only as of the date of this prospectus. Some of the factors that may cause actual results, developments and business decisions to differ materially from those contemplated by these forward-looking statements include the following:

- future economic conditions in regional, national and international markets and their effects on sales, prices and costs, including, but not limited to, possible further deterioration in economic conditions and the timing and extent of any economic recovery;
- prices and availability of electricity in regional and national wholesale markets;
- market perception of the energy industry and the Company;
- changes in business strategy, operations or development plans;
- effects of current or proposed state and federal legislative and regulatory actions or developments, including, but not limited to, deregulation, re-regulation and restructuring of the electric utility industry;
- decisions of regulators regarding rates the Company can charge for electricity;
- adverse changes in applicable laws, regulations, rules, principles or practices governing tax, accounting and environmental matters including, but not limited to, air and water quality;
- financial market conditions and performance including, but not limited to, changes in interest rates and credit spreads and in availability and cost of capital and the effects on nuclear decommissioning trust and pension plan assets and costs;
- credit ratings;
- inflation rates;
- effectiveness of risk management policies and procedures and the ability of counterparties to satisfy their contractual commitments;
- impact of terrorist acts;
- increased competition including, but not limited to, retail choice in the electric utility industry and the entry of new competitors;
- ability to carry out marketing and sales plans;
- weather conditions including, but not limited to, weather-related damage and their effects on sales, prices and costs;
- cost, availability, quality and deliverability of fuel;
- ability to achieve generation planning goals and the occurrence and duration of planned and unplanned generation outages;
- delays in the anticipated in-service dates and cost increases of additional generating capacity and environmental projects;
- nuclear operations;

- workforce risks including, but not limited to, retirement compensation and benefits costs;
- the ability to successfully integrate the operations of Kansas City Power & Light Company and KCP&L Greater Missouri Operations Company and the timing and amount of resulting synergy savings; and
- other risks and uncertainties.

This list of factors is not all-inclusive because it is not possible to predict all factors. You should also carefully consider the information contained under the heading “Risk Factors” in this prospectus and in our other SEC filings.

GREAT PLAINS ENERGY INCORPORATED

Great Plains Energy Incorporated, a Missouri corporation incorporated in 2001 and headquartered in Kansas City, Missouri, is a public utility holding company and does not own or operate any significant assets other than the stock of its subsidiaries. Our wholly owned direct subsidiaries with operations or active subsidiaries are as follows:

- Kansas City Power & Light Company (“KCP&L”) is an integrated, regulated electric utility that provides electricity to customers primarily in the states of Missouri and Kansas. KCP&L has one wholly owned subsidiary, Kansas City Power & Light Receivables Company (“Receivables Company”).
- KCP&L Greater Missouri Operations Company (“GMO”) is an integrated, regulated electric utility that primarily provides electricity to customers in the state of Missouri. GMO also provides regulated steam service to certain customers in the St. Joseph, Missouri area. GMO wholly owns MPS Merchant Services, Inc., which has certain long-term natural gas contracts remaining from its former non-regulated trading operations. Great Plains Energy acquired GMO on July 14, 2008.
- Great Plains Energy Services Incorporated (“Services”) obtains certain goods and third-party services for us and our subsidiaries. On December 16, 2008, Services employees were transferred to KCP&L.
- KLT Inc. is an intermediate holding company that primarily holds investments in affordable housing limited partnerships.

RISK FACTORS

Investing in our securities involves risks. Our business is influenced by many factors that are difficult to predict, involve uncertainties that may materially affect actual results and are often beyond our control. You should carefully consider the information under the heading “Risk Factors” in:

- our annual report on Form 10-K for the fiscal year ended December 31, 2008, which is incorporated by reference into this prospectus; and
- documents we file with the SEC after the date of this prospectus and which are deemed incorporated by reference into this prospectus.

In addition, there are risks related to participating in the Plan:

There are market risks associated with investing in the Plan

Participants in the Plan generally have no control over or authority to direct the timing or price at which shares of common stock are purchased or sold for their Plan accounts. Orders to purchase or sell shares (except for market order sales) may be processed up to five business days after the order is received. Therefore, participants in the Plan bear market risk associated with fluctuations in the price of our common stock. In addition, no interest is paid on funds held by the administrator pending investment.

There are tax consequences to reinvesting cash dividends under the Plan

In general, the full amount of cash dividends paid on a participant's shares of our common stock under the Plan is considered to be received by the participant for federal income tax purposes whether actually received in cash or reinvested in additional shares under the Plan. Therefore, by electing to reinvest cash dividends in additional shares of our common stock, a participant in the Plan may incur tax liability without having received the cash dividends to satisfy that liability.

We may be unable to, or may choose not to, continue to pay dividends on our common stock at current rates or at all.

Any future payments of cash dividends will depend on our financial condition, our capital requirements and earnings, and the ability of our operating subsidiaries to distribute cash to us, as well as other factors that our Board of Directors may consider.

The price of our common stock recently has been volatile. This volatility may affect the price at which you could sell your common stock, and the sale of substantial amounts of our common stock could adversely affect the price of our common stock.

The market price for our common stock has varied between a high of \$29.29 (in January 2008) and a low of \$10.20 (in March 2009) during the period from January 1, 2008 through May 8, 2009. This volatility may affect the price at which you could sell our common stock, and the sale of substantial amounts of our common stock could adversely affect the price of our common stock. Our stock price may continue to be volatile and subject to significant price and volume fluctuations in response to market and other factors, including: the other risk factors discussed in our Annual Report on Form 10-K for the year ended December 31, 2008; variations in our quarterly operating results from our or securities analysts' or investors' expectations; downward revisions in securities analysts' estimates; and announcement by us or our competitors of significant acquisitions, joint ventures, capital commitments or other material developments.

As of March 31, 2009, we had outstanding approximately 123,154,726 shares of our common stock and options to purchase approximately 414,280 shares of our common stock (of which all were exercisable as of that date). We also had outstanding approximately 207,999 performance shares as of March 31, 2009, under which up to 415,998 shares of common stock could be issued, depending upon achievement of specified goals and approximately 20,705 director deferred share units.

We expect that we will need to raise additional capital, and raising additional funds by issuing securities or with additional debt financing may cause dilution to existing stockholders or restrict our operations.

We expect that we will need to raise additional capital in the future. We may raise additional funds through public or private equity offerings or debt financings. Additional issuance of equity securities could dilute the value of shares of our common stock and cause the market price of our common stock to decline. Any new debt financing we enter into may involve covenants that restrict our operations more than our current outstanding debt and credit facilities. These restrictive covenants could include limitations on additional borrowings, specific restrictions on the use of our assets as well as prohibitions or limitations on our ability to create liens, pay dividends, receive distributions from our subsidiaries, redeem our stock or make investments. These factors could hinder our access to capital markets and limit or delay our ability to carry out our capital expenditure program.

IMPORTANT CONSIDERATIONS

The purpose of the Plan is to provide a convenient and useful service for our current or potential shareholders. Nothing in this prospectus or other Plan information represents a recommendation by us or anyone else that any person buy or sell our common stock. We urge you to read this prospectus and the documents incorporated or deemed incorporated by reference in this prospectus thoroughly before you make your independent investment decision regarding participation in the Plan.

The value of our shares may increase or decrease from time to time. There is no assurance whether, or at what rate, we will continue to pay dividends. The Securities Investor Protection Corporation, the Federal Deposit Insurance Corporation, or any other entity does not insure Plan accounts.

USE OF PROCEEDS

If we issue new shares of common stock under the Plan, the net proceeds will be added to our general funds and used for general corporate purposes.

SUMMARY OF PLAN HIGHLIGHTS

Because this section is a summary, it does not contain all the information that may be important to you. You should read the entire prospectus carefully.

How to Enroll. You need not be a shareholder to participate in the Plan. You may purchase your first shares through the Plan by either completing an enrollment form and sending it to the Plan administrator, or by enrolling on-line through the Plan administrator's website, and making an initial minimum cash investment of at least \$500.

If you are already a shareholder but not a participant in the Plan, you can enroll either by completing an enrollment form and sending it to the Plan administrator, or by enrolling on-line through the Plan administrator's website.

We pay all administrative fees associated with purchases through the Plan; the only charge to you is a one-time enrollment fee of \$5 (which is charged only if you aren't a shareholder at the time of your enrollment in the Plan), plus a nominal commission fee (currently \$0.05) per purchased share if the Plan administrator purchases shares on the open market.

Optional Investments. After you enroll, you can make optional investments in our common stock in any amount from a minimum of \$100 to a maximum of \$60,000 annually. Investments can be automatically deducted directly from your bank account provided the amount meets the minimum/maximum requirements. You can change the amount at any time provided you give the Plan administrator proper instructions about any changes at least ten business days prior to the next investment date.

How to Pay for Shares. You can make purchases in various ways — by check, automatic deduction or dividend reinvestment. Your investment dollars (minus applicable fees) are fully used to purchase our shares.

Reinvest Dividends Automatically. You can automatically reinvest all or part of your dividends in additional shares. If you reinvest part of your dividends, you will receive your remaining dividends in cash.

Sell Plan Shares. You can sell some or all of your shares through the Plan administrator for a nominal service charge of \$15 (or \$25 for market orders) plus a nominal commission fee (currently \$0.12) per share.

Direct Deposit of Dividends. If you do not reinvest your dividends, you can have your dividends deposited directly into your checking or savings account by electronic transfer on the dividend payable date.

Certificate Safekeeping. You have the option to protect your stock certificates from loss, theft or damage by depositing your certificates with the Plan administrator for safekeeping. When you want certificates sent to you, you only need to notify the Plan administrator.

TERMS OF THE PLAN

Eligibility. Any U.S. person or entity can participate in the Plan if they follow the steps described below under "Enrollment." A citizen or resident of a country outside the United States is also eligible if participation does not violate any governmental regulations or laws.

If you are a beneficial owner of our stock (that is, your shares are registered in names other than your own, such as a broker or bank nominee), your beneficially owned shares are not eligible for dividend reinvestment through the Plan. You can, however, enroll these shares for dividend reinvestment by first transferring them into a book-entry account registered in your own name or requesting the issuance of a certificate representing the shares. Please contact your broker or nominee for more information. Once the shares are represented by a certificate registered in your name, or moved into a book-entry account registered in your name with the Plan administrator, the shares will be eligible for dividend reinvestment through the Plan.

Administration. Computershare Trust Company, N.A. (the "Plan administrator") administers the Plan. The Plan administrator also serves as transfer agent, registrar and dividend paying agent for us. In addition, the administrator receives and invests all cash investments by participants, maintains participants' Plan account

records, issues periodic account statements and performs other duties relating to the Plan. If you have questions about the Plan, you may contact the Plan administrator:

Computershare Trust Company, N.A.
c/o Computershare Investor Services
P.O. Box 43078
Providence, RI 02940-3078
Phone: (800) 884-4225 (toll-free)
(781) 575-4706
Website: www.computershare.com/investor

Enrollment. Read the prospectus carefully. If you are eligible and want to enroll in the Plan, complete and sign an enrollment form and return it to the Plan administrator. The enrollment form is available from the Plan administrator. You can also enroll on-line through the Plan administrator's website, www.computershare.com/investor and following the instructions provided. To participate in the Plan, you must do either one or both of the following:

- Elect to reinvest cash dividends paid on at least one whole share.
- Make an initial cash investment of at least \$500 (and not more than \$60,000 annually). If you are not a shareholder at the time of your enrollment, an enrollment fee of \$5 will be deducted from your initial cash investment prior to investment. A commission fee (currently \$0.05 per purchased share) will also be deducted if the Plan administrator purchases shares in the open market.

You do not need to make an initial cash investment through the Plan to be eligible for dividend reinvestment. As well, there is no obligation to reinvest dividends you receive on shares you purchase through the Plan. After the Plan administrator approves your enrollment and receives your funds (if you're investing), your participation in the Plan begins.

Initial and Optional Investments. Whether or not you are a shareholder, you may enroll in the Plan by making an initial investment in our common stock of at least \$500 (and no more than \$60,000 annually), plus a one-time only enrollment fee of \$5 if you are not a shareholder at the time of enrollment. After you enroll, you can make investments in our common stock in any amount from a minimum of \$100 to a maximum of \$60,000 annually. You may not invest more than \$60,000 during any calendar year, not counting qualified Plan distributions, if any. **You have no obligation to make optional investments.**

You can make your investments by personal check payable to "Computershare-GPE." Return your payment to the Plan administrator with a completed enrollment form or the tear-off remittance portion included with your statement of account. The Plan administrator will not accept cash, money orders or third party checks. Checks must be payable in U.S. dollars and drawn on a U.S. bank.

You may also make initial and optional investments through online bank debits by going to the Plan administrator's website and authorizing a one-time online bank debt from an account at a U.S. bank or financial institution. These funds will be held by the Plan administrator until the next investment date. You should refer to the online confirmation for the account debit date and investment date.

Automatic Investment. You can automatically invest a specified amount (not less than \$100 and not more than \$60,000 annually) deducted directly from your U.S. bank account by completing the applicable section on the enrollment form and returning it to the Plan administrator, or on-line through the Plan administrator's website. Funds will be transferred from your account on the 15th of each month; if that day is not a business day, the funds will be transferred on the first business day thereafter. You can change or stop automatic investments by completing and returning the applicable section on a new enrollment form, or by sending written notification to the Plan administrator, or through the Plan administrator's website. The Plan administrator must receive your instructions and authorization ten business days prior to the investment date.

Investment Dates. Initial and optional investments will be invested as soon as practicable, but in any event such investments will be invested not later than five business days after the funds are received by the Plan Administrator. Each date the Plan administrator invests your initial or optional investment funds is referred to as an "investment date". If you elect to reinvest some or all of the cash dividends on your shares in the Plan, those dividends will be invested in additional shares of our common stock on the dividend payment date (the "dividend investment date"). If the dividend payment date is not a trading day, then the dividend investment date will be the next trading day.

Dividend Reinvestment Options

You can reinvest cash dividends paid on all or some of your shares in the Plan by making the appropriate selection on the enrollment form, or on-line through the Plan administrator's website. You can also change your reinvestment selection by either sending written notice to the Plan administrator or on-line through the Plan administrator's website. To be effective for a particular dividend period, the Plan administrator must receive your instructions prior to the record date for the dividend. Your dividend reinvestment options are:

- **Full Dividend Reinvestment** — If you choose this option, all of your dividends that become payable on shares in the account that you specify, including any certificated and/or book-entry shares, will be reinvested on the dividend investment date to purchase additional shares of our common stock.
- **Partial Dividend Reinvestment** — You may reinvest dividends on a specific percentage of shares in the account you specify, including any certificated and/or book-entry shares. Dividends on remaining shares will be paid to you by cash or direct deposit.
- **No Dividend Reinvestment** — If you choose this option, all dividends on shares in the account that you specify, including any certificated and/or book-entry shares will be paid to you in cash unless and until you direct otherwise.

OTHER INVESTMENT INFORMATION

No interest is paid on funds held by the administrator pending investment. All investments must be in U.S. dollars and are subject to collection by the Plan administrator of full face value.

There is a \$25 charge for each check, electronic funds transfer, or other investment that is rejected due to insufficient funds. The Plan administrator will consider the request for investment of such funds to be null and void, and will immediately remove from your account those shares, if any, purchased upon the prior credit of such funds. The Plan administrator will be entitled to sell shares in your

account to satisfy any uncollected amount, plus the \$25 charge. If the net proceeds of the sale of those shares are insufficient to satisfy the balance of any uncollected amount, the Plan administrator is entitled to sell such additional shares from your account as may be necessary to satisfy any uncollected balance. When you enroll in the Plan, you authorize the Plan administrator to deduct this charge and sell shares from your Plan account, if necessary.

Direct Deposit. You may have any cash dividend that is not being reinvested deposited directly into your bank account. Please contact the Plan administrator for details. You may also elect direct deposit through the Plan administrator's website. You may change direct deposit account information or terminate direct deposit by providing notice prior to the record date to the administrator. To be effective for a particular dividend period, the Plan administrator must receive your instructions fifteen calendar days prior to the record date for the dividend.

Share Safekeeping. You may deposit your common stock certificates with the Plan administrator for safekeeping. To take advantage of this feature, send your share certificates to the Plan administrator by registered, insured mail along with a completed form, or written instructions. Do not endorse your certificates.

The administrator will transfer your certificated shares into its name or the name of its nominee and deposit the shares in your Plan account in book-entry form. Safekeeping of your certificates will not affect your dividend reinvestment election for these shares. You may request the Plan administrator at any time to issue certificates to you for these shares, and new, differently numbered certificates will be issued.

Share Certificates. The Plan administrator holds reinvested dividends and shares purchased through the Plan in book-entry form. You may request a certificate for all or some of your Plan shares by calling or sending a written request to the Plan administrator, or through its website. Certificates for fractional shares will not be issued. Instead, you will receive cash payment for any fractional share. The issuance of a certificate does not affect the dividend reinvestment option you previously selected for the shares. You may not pledge shares of stock held in book-entry form by the Plan administrator in your Plan account as collateral for a loan or otherwise assign those shares.

Selling Shares through the Plan. You can sell some or all of the shares held in your Plan account at any time by contacting the Plan administrator. You may sell only whole shares. You have two choices when making a sale through the Plan:

- **Market Order:** A market order is a request to sell shares promptly at the current market price. Market order sales are only available through the Plan administrator's website, or by calling the Plan administrator. Market order sale requests received by telephone or through the Plan administrator's website will be placed promptly upon receipt during market hours (normally 9:30 a.m. to 4:00 p.m. Eastern time). Any orders received after 4:00 p.m. Eastern time will be placed promptly on the next day the market is open. The price will be the market price of the sale obtained by the Plan administrator's broker, less a service fee of \$25 and a processing fee of \$0.12 per share sold.
- **Batch Order:** A batch order is an accumulation of all sale requests for a security submitted together as a collective request. Batch orders are submitted on each market day, assuming there are sale requests to be processed. Sale instructions for batch orders received by the Plan administrator will be processed no later than five business days after the date on which the order is received (except where deferral is

required under applicable federal or state laws or regulations), assuming the applicable market is open for trading and sufficient market liquidity exists. Batch order sales are available through the Plan administrator's website or by calling the Plan administrator. All sales requests received in writing will be submitted as batch order sales. The Plan administrator will cause your shares to be sold on the open market within five business days of the receipt of your request. To maximize cost savings for batch order sales requests, the Plan administrator may combine each selling participant's shares with those of other selling participants. In every case of a batch order sale, the price to each selling participant will be the weighted average sale price obtained by the Plan administrator's broker for each aggregate order placed by the Plan administrator and executed by the broker, less a service fee of \$15 and a processing fee of \$0.12 per share sold. Proceeds are normally paid by check, which are distributed within 24 hours after the transaction has settled.

All per-share processing fees include any brokerage commissions the Plan administrator is required to pay. All sale instructions are final when the Plan administrator receives them; your sale instructions cannot be stopped or cancelled. The Plan administrator may, for various reasons, require your transaction request to be submitted in writing. You should contact the Plan administrator to determine if there are any limitations applicable to your particular sale request.

A request to sell all of your shares in your Plan account will be treated as a withdrawal from the Plan, as described in the next section.

Closing a Plan Account. You can close your Plan account at any time by completing and sending back the Transaction Request form attached to your monthly Plan statement, or by calling or sending written notification to the Plan administrator, or through its website. Electing to sell or withdraw all shares from your Plan account automatically terminates your Plan participation. If you close your Plan account by withdrawing all shares, the Plan administrator will transfer all whole shares in your Plan account into another book-entry account in your name (or, at your election, will issue you a certificate for such shares) and the cash value of any fractional share will be paid to you by check, less a service fee of \$15 and a processing fee of \$0.12 per share sold.

If instructions to close a Plan account for which dividends are to be reinvested are received less than five business days prior to, or less than two business days after, a dividend payment record date, the Plan administrator, in its sole discretion, may either distribute such dividends in cash or reinvest them in shares on behalf of such Plan account. In the event reinvestment is made, the Plan administrator will process the account closing as soon as practicable, but in no event later than five business days after any dividend disbursement is allocated to your Plan account. After you close a Plan account, you cannot make future investments through the Plan without re-enrolling.

We, or the Plan administrator, on our behalf, have the right to deny, suspend or terminate your participation in the Plan on grounds of excessive enrollment and termination. This is intended to minimize administrative expense and encourage long-term investment.

Sources and Price of Shares. We may direct whether the Plan administrator purchases shares (i) in the open market on the New York Stock Exchange, (ii) in privately negotiated transactions on terms and conditions acceptable to the Plan administrator, or (iii) from us. Any purchase of shares from us by the Plan administrator will be made pursuant to a registration statement filed with the SEC of which this prospectus is

a part. The price of any shares purchased from us will be the average of the high and low sale prices as reported on the NYSE Consolidated Tape on the transaction date. Otherwise, shares purchased with respect to a particular investment date are credited to your Plan account at the weighted average price per share of all shares purchased with respect to that investment date, less the applicable enrollment, sale, brokerage and processing fees described in this prospectus.

If shares are purchased for the Plan on the open market, the Plan administrator may, at its sole discretion, begin purchasing shares no earlier than three business days prior to any investment date and complete purchasing shares no later than 30 days after such date except where beginning at an earlier date is permissible or where completion at a later date is necessary or advisable under applicable federal regulatory and securities laws. The Plan administrator will use its best efforts to cause all funds received by it to be applied to the purchase of shares within the above discussed time period. If shares are purchased directly from us, such purchase shall take place on the investment date.

The Plan administrator may combine all participants' funds for the purpose of making purchases of shares for the same investment period under the Plan.

You do not have control or authority to direct the price or time (except for market orders) at which common stock is purchased or sold for Plan accounts. Therefore, you bear market risk associated with fluctuations in the price of common stock.

Account Statements. You will receive quarterly statements from the Plan administrator of your account reflecting the amount invested, the purchase price, the number of shares purchased, deposited, sold, transferred, or withdrawn, the total number of shares accumulated and other information quarterly or whenever your account has a transaction activity. The quarterly statements consolidate all shares, certificated as well as book-entry shares. **You should keep your statements for income tax and other purposes.** If you need a replacement statement you should contact the Plan administrator. Account information may also be obtained through the Investor Centre feature of the Plan administrator's website, www.computershare.com/investor.

Reports. All notices, statements and reports will be mailed to the latest address on record with the Plan administrator. Address changes may be made in writing or by telephone to the Plan administrator.

MISCELLANEOUS

Rights Offering, Stock Dividends and Stock Splits. Stock dividends or split shares on your Plan book-entry shares will be credited to your book-entry Plan account. In the event of a rights offering, rights will be based on the number of shares credited to your account.

Voting Rights. You can vote all whole and fractional shares of common stock held in your Plan account in person or by proxy. If you do not vote in person or by proxy, your shares will not be voted.

Limitation of Liability. We, our directors, officers, employees, and the Plan administrator and its representatives are not liable for anything done in good faith or good faith omissions in administering the Plan. This includes any claim of liability based on the prices or times at which shares are purchased or sold or any

change in market price of shares or for the payment or amount of any future dividends on common stock. This is not a waiver of rights you may have under applicable securities laws.

Termination of the Plan. We can change, suspend or terminate the Plan at any time, in whole or in part, or may terminate the participation of any participant. **We reserve the right to close your Plan account if you do not own at least one whole book-entry or certificate share of record. In that case, notices will be mailed to your last known address, along with a check for the cash value of any fractional share.**

Certain U.S. Federal Income Tax Consequences. The following is a summary of certain U.S. federal income tax consequences of participation in the Plan as of the date of this prospectus. This summary is limited to Plan participants who hold our common stock as a capital asset (generally, property held for investment). This summary is based on current law, is for general information only and is not tax advice. This summary may not reflect every possible situation resulting from participation in the Plan and does not address participants subject to special treatment under the U.S. federal income tax laws (including insurance companies, partnerships and other pass-through entities, tax-exempt organizations, financial institutions, broker-dealers, participants who hold our stock as part of a “straddle,” “hedge,” “conversion transaction” or other integrated investment, and participants whose functional currency is not the U.S. dollar). The summary does not apply to foreign participants. All participants should consult with their own tax advisors regarding the specific tax consequences to them under applicable federal, state, local and foreign tax laws and the impact of any changes in applicable tax laws, which may have retroactive effect.

Reinvestment of Dividends. Shares of common stock purchased on the open market with reinvested dividends will have a cost basis equal to the purchase price of the shares, plus any applicable brokerage commissions. Common stock purchased from us with reinvested dividends will have a cost basis equal to the purchase price paid for the shares. Your holding period for such shares generally will begin on the day following the date on which such shares are credited to your Plan account.

In general, the full amount of cash dividends paid to you by us (including any amount used to pay applicable brokerage commissions for open market purchases) is considered received by you for U.S. federal income tax purposes whether actually received or reinvested under the Plan. Generally, any such dividends will be taxable to you as ordinary dividend income to the extent of your pro rata share of our current or accumulated earnings and profits for U.S. federal income tax purposes. Dividend income recognized by a corporation may be eligible for the dividends-received deduction if certain holding period and other requirements are met. Under current law, dividend income recognized by an individual may be taxable at the preferential rates applicable to long-term capital gain if certain holding period and other requirements are met. The amount of any dividends in excess of your pro rata share of earnings and profits will reduce your tax basis in the common stock with respect to which the dividend was received, and, to the extent it exceeds such tax basis, will result in capital gain that will be taxable as long-term capital gain if the distribution is with respect to shares that have been held by the participant for more than one year.

A statement of account showing the total amount of dividends will be sent to you and reported to the Internal Revenue Service shortly after the end of the year in which they are payable.

Deposit, Withdrawal or Sale of Shares. You generally will not realize gain or loss for U.S. federal income tax purposes upon the deposit of shares to the Plan or the withdrawal of whole shares in certificate form from the Plan, but generally will recognize capital gain or loss on the sale or other taxable disposition of

any of your shares held in the Plan (including the receipt of cash for fractional shares). The amount of gain or loss generally will be the difference between the amount realized from the sale or other taxable disposition of shares and the tax basis of those shares. Capital gain will be taxable as long-term capital gain if such shares have been held by the participant for more than one year. Under current law, net long term capital gains recognized by individuals are generally eligible for taxation at a preferential rate. The deductibility of capital losses is subject to limitations.

Backup Withholding. Participants that fail to provide certain U.S. federal income tax certifications in the manner required by law may be subject to U.S. federal backup withholding tax. If your dividends are subject to U.S. federal backup withholding tax, the administrator will deduct the appropriate amount of tax required to be withheld, and only the remaining amount will be reinvested in common stock, or paid to you. Certain participants (including most U.S. corporations) are exempt from backup withholding. Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules can be refunded or credited against your U.S. federal income tax liability, provided that the required information is timely furnished to the Internal Revenue Service. We cannot refund U.S. federal backup withholding tax amounts. If you are subject to such withholding, you should contact your tax advisors or the Internal Revenue Service for information.

DESCRIPTION OF COMMON STOCK

General. The following descriptions of our common stock and the relevant provisions of our restated Articles of Incorporation and by-laws are summaries and are qualified by references to our Articles of Incorporation and by-laws which have been previously filed with the SEC and are exhibits to this registration statement, of which this prospectus is a part, as well as the applicable Missouri General and Business Corporation Law.

Under our Articles of Incorporation, we are authorized to issue 262,962,000 million shares of stock, divided into classes as follows:

- 390,000 shares of Cumulative Preferred Stock with a par value of \$100;
- 1,572,000 shares of Cumulative No Par Preferred Stock with no par value;
- 11,000,000 shares of Preference Stock with no par value; and
- 250,000,000 shares of Common Stock with no par value.

At May 1, 2009, 390,000 shares of Cumulative Preferred Stock and 123,201,106 shares of common stock were outstanding. No shares of Cumulative No Par Preferred Stock or Preference Stock are currently outstanding but such shares may be issued from time to time in accordance with the Articles of Incorporation. The voting powers, designations, preferences, rights and qualifications, limitations, or restrictions of any series of Preference Stock are set by our board of directors when it is issued.

Dividend Rights and Limitations. The holders of our common stock are entitled to receive such dividends as our board of directors may from time to time declare, subject to any rights of the holders of our preferred and preference stock. Our ability to pay dividends depends primarily upon the ability of our subsidiaries to pay dividends or otherwise transfer funds to us.

Except as otherwise authorized by consent of the holders of at least two-thirds of the total number of shares of the total outstanding shares of Cumulative Preferred Stock and Cumulative No Par Preferred Stock, we may not pay or declare any dividends on common stock, other than the dividends payable in common stock, or make any distributions on, or purchase or otherwise acquire for value, any shares of common stock if, after giving effect thereto, the aggregate amount expended during the 12 months then ended (a) exceeds 50% of the net income of the Company available for dividends on Preference Stock and common stock for the preceding 12 months, in case the total of Preference Stock and common stock equity would be reduced to less than 20% of total capitalization, or (b) exceeds 75% of such net income in case such equity would be reduced to between 20% and 25% of total capitalization, or (c) except to the extent permitted in subparagraphs (a) and (b), would reduce such equity below 25% of total capitalization.

Subject to certain limited exceptions, no dividends may be declared or paid on common stock and no common stock may be purchased or redeemed or otherwise retired for consideration (a) unless all past and current dividends on Cumulative Preferred Stock and Cumulative No Par Preferred Stock have been paid or set apart for payment and (b) except to the extent of retained earnings (earned surplus).

Voting Rights. Except as otherwise provided by law and subject to the voting rights of the outstanding Cumulative Preferred Stock, Cumulative No Par Preferred Stock, and Preference Stock, the holders of our common stock have the exclusive right to vote for all general purposes and for the election of directors through cumulative voting. This means each shareholder has a total vote equal to the number of shares they own multiplied by the number of directors to be elected. These votes may be divided among all nominees equally or may be voted for one or more of the nominees either in equal or unequal amounts. The nominees with the highest number of votes are elected.

The consent of specified percentages of holders of outstanding shares of Cumulative Preferred Stock and Cumulative No Par Preferred Stock is required to authorize certain actions which may affect their interests; and if, at any time, dividends on any of the outstanding shares of Cumulative Preferred Stock and Cumulative No Par Preferred Stock shall be in default in an amount equivalent to four or more full quarterly dividends, the holders of outstanding shares of all preferred stock, voting as a single class, shall be entitled (voting cumulatively) to elect the smallest number of directors necessary to constitute a majority of the full Board of Directors, which right shall continue in effect until all dividend arrearages shall have been paid.

Liquidation Rights. In the event of any dissolution or liquidation of the Company, after there shall have been paid to or set aside for the holders of shares of outstanding Cumulative Preferred Stock, Cumulative No Par Preferred Stock, and Preference Stock the full preferential amounts to which they are respectively entitled, the holders of outstanding shares of common stock shall be entitled to receive pro rata, according to the number of shares held by each, the remaining assets available for distribution.

Miscellaneous. The outstanding shares of common stock are, and the shares of common stock sold hereunder will be, upon payment for them, fully paid and nonassessable. The holders of our common stock are not entitled to any preemptive or preferential rights to subscribe for or purchase any part of any new or additional issue of stock or securities convertible into stock. Our common stock does not contain any redemption provisions or conversion rights.

Transfer Agent and Registrar. Computershare Trust Company, N.A. acts as transfer agent and registrar for our common stock.

Business Combinations. The affirmative vote of the holders of at least 80% of the outstanding shares of common stock is required for the approval or authorization of certain business combinations; provided, however, that such 80% voting requirement shall not be applicable if:

- the business combination shall have been approved by a majority of the continuing directors; or
- the cash or the fair market value of the property, securities, or other consideration to be received per share by holders of the common stock in such business combination is not less than the highest per-share price paid by or on behalf of the acquiror for any shares of common stock during the five-year period preceding the announcement of the business combination.

Listing. The common stock of Great Plains Energy Incorporated is listed on the New York Stock Exchange under the symbol “GXP”.

LEGAL MATTERS

Legal matters with respect to the common stock offered under this prospectus will be passed upon by Mark English, Assistant General Counsel and Assistant Secretary. At May 1, 2009, Mr. English owned beneficially a number of shares of the Company’s common stock, including restricted stock and performance shares, which may be paid in shares of common stock at a later date based on the Company’s performance, which represented less than 0.1% of the total outstanding common stock.

EXPERTS

The consolidated financial statements, and the related financial statement schedules, incorporated by reference in this prospectus from the Great Plains Energy Incorporated and subsidiaries Annual Report on Form 10-K for the year ended December 31, 2008, and the effectiveness of Great Plains Energy Incorporated and subsidiaries internal control over financial reporting have been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their reports, which are incorporated herein by reference (which reports (1) express an unqualified opinion on the consolidated financial statements and financial statement schedules and include an explanatory paragraph regarding the adoption of new accounting standards, and (2) express an unqualified opinion on the effectiveness of internal control over financial reporting). Such consolidated financial statements and financial schedules have been so incorporated in reliance upon the reports of such firm given upon their authority as experts in accounting and auditing.

The consolidated financial statements of Aquila, Inc. as of December 31, 2007 and 2006, and for each of the years in the three-year period ended December 31, 2007, have been incorporated by reference herein and in the registration statement, in reliance upon the report of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing. The audit report refers to the adoption of Financial Accounting Standards Board (FASB) Interpretation No. 48, Accounting for Uncertainty in Income Taxes — an

interpretation of FASB Statement No. 109, Accounting for Income Taxes, and FASB Staff Position (FSP) AUG AIR-1, Accounting for Planned Major Maintenance Activities.

Great Plains Energy Incorporated has agreed to indemnify and hold KPMG LLP harmless against and from any and all legal costs and expenses incurred by KPMG LLP in successful defense of any legal action or proceeding that arises as a result of KPMG LLP's consent to the incorporation by reference of its audit report on Aquila, Inc.'s past financial statements incorporated by reference in this registration statement.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, and proxy statements and other information with the SEC through the SEC's Electronic Data Gathering, Analysis and Retrieval system and these filings are publicly available through the SEC's website (<http://www.sec.gov>). You may read and copy such material at the SEC's Public Reference Room at 100 F Street, N.W., Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330.

The SEC allows us to "incorporate by reference" into this prospectus the information we file with them. This means that we can disclose important information to you by referring you to the documents containing the information. The information we incorporate by reference is considered to be included in and an important part of this prospectus and should be read with the same care. Information that we file later with the SEC that is incorporated by reference into this prospectus will automatically update and supersede this information. We are incorporating by reference into this prospectus the following documents that we have filed with the SEC and any subsequent filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934 (excluding information deemed to be furnished and not filed with the SEC) until the offering of the securities described in this prospectus is completed:

- Our Annual Report on Form 10-K for the year ended December 31, 2008, filed with the SEC on February 27, 2009;
- Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2009, filed with the SEC on May 11, 2009;
- Our Current Report on Form 8-K/A dated August 13, 2008 and filed with the SEC on August 14, 2008 (only with respect to the historical financial statements of Aquila, Inc. (now known as KCP&L Greater Missouri Operations Company, or "GMO") listed in Item 9.01(a) and set forth in Exhibit 99.1 thereto); and
- Our Current Reports on Form 8-K dated January 27, 2009 and filed with the SEC on January 28, 2009; February 10, 2009 (Item 8.01 only) and filed with the SEC on February 10, 2009; February 9, 2009 and filed with the SEC on February 13, 2009; March 6, 2009 and filed with the SEC on March 12, 2009; March 18, 2009 (Item 8.01 only) and filed with the SEC on March 19, 2009; March 19, 2009 and filed with the SEC on March 24, 2009; April 16, 2009 and filed with the SEC on April 22, 2009; April 21, 2009 and filed with the SEC on April 21, 2009; April 24, 2009 and filed with the SEC on April 30, 2009; and May 11, 2009 (reporting Items 8.01 and 9.01) and filed with the SEC on May 11, 2009.

Our website is www.greatplainsenergy.com. Information contained on our website is not incorporated herein. We make available, free of charge, on or through our website, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. In addition, we make available on or through our website all other reports, notifications and certifications filed electronically with the SEC. You may obtain a free copy of our filings with the SEC by writing or telephoning us at the following address: Great Plains Energy Incorporated, 1200 Main Street, Kansas City, Missouri 64106-2124 Telephone No.: 816-556-2200) Attention: Corporate Secretary, or by contacting us on our website.

Great Plains Energy Incorporated

**Dividend Reinvestment
and Direct Stock
Purchase Plan**

**1,196,633 Shares of
Common Stock
(Without Par Value)**

001CS60227

May 11, 2009