

PLAINS GP HOLDINGS LP
Form 424B5
December 28, 2016

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[TABLE OF CONTENTS](#)

[TABLE OF CONTENTS](#)

[Table of Contents](#)

Filed Pursuant to Rule 424(b)(5)
Registration No. 333-214964

PROSPECTUS SUPPLEMENT
(TO PROSPECTUS DATED December 20, 2016)

Plains GP Holdings, L.P.

Class A Shares Representing Limited Partner Interests Having an Aggregate Offering Price of Up to \$500,000,000

This prospectus supplement and the accompanying base prospectus relate to the issuance and sale from time to time of Class A shares representing limited partner interests in Plains GP Holdings, L.P. having an aggregate offering price of up to \$500,000,000 through one or more of our sales agents. These sales, if any, will be made pursuant to the terms of the equity distribution agreement dated December 27, 2016 between us and the sales agents, which will be filed as an exhibit to a Current Report on Form 8-K that we will file with the Securities and Exchange Commission (the "SEC").

Under the terms of the equity distribution agreement, we also may sell Class A shares to any sales agent as principal for its own account at a price agreed upon at the time of the sale. If we sell Class A shares to any such sales agent as principal, we will enter into a separate terms agreement with such sales agent and we will describe that agreement in a separate prospectus supplement or pricing supplement.

Our Class A shares trade on the New York Stock Exchange (the "NYSE") under the symbol "PAGP." On December 23, 2016, the last reported sale price of our Class A shares on the NYSE was \$35.32 per Class A share. Sales of Class A shares under this prospectus supplement, if any, will be made by means of ordinary brokers' transactions through the facilities of the NYSE at market prices, in block transactions or as otherwise agreed between us and one or more of the sales agents.

Investing in our Class A shares involves risks. Limited partnerships are inherently different from corporations. You should carefully consider the risks relating to investing in our Class A shares and each of the risk factors described under "Risk Factors" on page S-4 of this prospectus supplement before you make an investment in our securities.

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The compensation of the sales agents for sales of Class A shares shall be at a fixed commission rate of up to 2.0% of the gross sales price per Class A share, depending upon the number of Class A shares sold. The net proceeds from any sales under this prospectus supplement will be used as described under "Use of Proceeds" in this prospectus supplement.

Neither the SEC nor any state securities commission has approved or disapproved these securities or determined if this prospectus supplement or the accompanying base prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

Wells Fargo Securities
BNP PARIBAS
Fifth Third Securities
MUFG
Scotia Howard Weil

Barclays
Citigroup
J.P. Morgan
Mizuho Securities
SMBC Nikko

BB&T Capital Markets
Deutsche Bank Securities
Jefferies
Morgan Stanley
SunTrust Robinson
Humphrey

BMO Capital Markets
DNB Markets
BofA Merrill Lynch
Raymond James
UBS Investment Bank

December 27, 2016

Table of Contents

TABLE OF CONTENTS

Prospectus Supplement	Page
<u>Important Notice About Information in This Prospectus Supplement and the Accompanying Base Prospectus</u>	<u>S-ii</u>
<u>Forward-Looking Statements</u>	<u>S-ii</u>
<u>Prospectus Supplement Summary</u>	<u>S-1</u>
<u>Risk Factors</u>	<u>S-4</u>
<u>Use of Proceeds</u>	<u>S-5</u>
<u>Plan of Distribution</u>	<u>S-6</u>
<u>Legal Matters</u>	<u>S-8</u>
<u>Experts</u>	<u>S-8</u>
<u>Where You Can Find More Information</u>	<u>S-8</u>
 Prospectus	
<u>About This Prospectus</u>	<u>iii</u>
<u>Where You Can Find More Information</u>	<u>iv</u>
<u>Forward-Looking Statements</u>	<u>v</u>
<u>About Plains GP Holdings, L.P.</u>	<u>1</u>
<u>Risk Factors</u>	<u>2</u>
<u>Use of Proceeds</u>	<u>3</u>
<u>Our Cash Distribution Policy</u>	<u>4</u>
<u>The Partnership Agreement</u>	<u>6</u>
<u>Description of Our Shares</u>	<u>19</u>
<u>Material U.S. Federal Income Tax Consequences</u>	<u>21</u>
<u>Investment in Plains GP Holdings, L.P. by Employee Benefit Plans</u>	<u>27</u>
<u>Plan of Distribution</u>	<u>29</u>
<u>Legal Matters</u>	<u>31</u>
<u>Experts</u>	<u>31</u>

S-i

Table of Contents

**IMPORTANT NOTICE ABOUT INFORMATION IN THIS PROSPECTUS SUPPLEMENT AND THE
ACCOMPANYING BASE PROSPECTUS**

We are providing information to you about this offering of our Class A shares in two separate documents that are bound together: (1) this prospectus supplement, which describes the specific terms of this offering, and (2) the accompanying base prospectus, which provides general information, some of which may not apply to this offering. This prospectus supplement may also add to, update or change information contained in the accompanying base prospectus. If information in this prospectus supplement is inconsistent with the accompanying base prospectus, you should rely on this prospectus supplement. Generally, when we refer to this "prospectus," we are referring to both documents combined.

This prospectus supplement and the accompanying base prospectus contain and incorporate by reference information that you should consider when making your investment decision. Neither we nor any of the sales agents or their affiliates and agents have authorized anyone to provide you with additional or different information. If anyone provides you with different or inconsistent information, you should not rely on it. You should not assume that the information contained in this prospectus supplement or the accompanying base prospectus is accurate as of any date other than the date on the front of those documents or that any information we have incorporated by reference is accurate as of any date other than the date of the document incorporated by reference. Our business, financial condition, results of operations and prospects may have changed since those dates.

We are not making an offer to sell our Class A shares in any jurisdiction where the offer is not permitted.

The information in this prospectus supplement is not complete. You should carefully read this prospectus supplement and the accompanying base prospectus, including the information incorporated by reference herein and therein, before you invest, as these documents contain information you should consider when making your investment decision.

None of Plains GP Holdings, L.P., the sales agents or any of their respective representatives is making any representation to you regarding the legality of an investment in our Class A shares by you under applicable laws. You should consult with your own advisors as to legal, tax, business, financial and related aspects of an investment in the Class A shares.

FORWARD-LOOKING STATEMENTS

All statements included in or incorporated by reference into this prospectus supplement or the accompanying base prospectus, other than statements of historical fact, are forward-looking statements, including but not limited to statements incorporating the words "anticipate," "believe," "estimate," "expect," "plan," "intend" and "forecast," as well as similar expressions and statements regarding our business strategy, plans and objectives for future operations. The absence of such words, expressions or statements, however, does not mean that the statements are not forward-looking. Any such forward-looking statements reflect our current views with respect to future events, based on what we believe to be reasonable assumptions. Certain factors could cause actual results or outcomes to differ materially from the results or outcomes anticipated in the forward-looking statements. The most important of these factors include, but are not limited to:

our ability to pay distributions to our Class A shareholders;

our expected receipt of, and amounts of, distributions from AAP (as defined below);

declines in the volume of crude oil, refined product and natural gas liquids ("NGL") shipped, processed, purchased, stored, fractionated and/or gathered at or through the use of our assets, whether due to declines in production from existing oil and gas reserves, failure to develop or

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Table of Contents

slowdown in the development of additional oil and gas reserves, whether from reduced cash flow to fund drilling or the inability to access capital, or other factors;

the effects of competition;

failure to implement or capitalize, or delays in implementing or capitalizing, on expansion projects;

unanticipated changes in crude oil market structure, grade differentials and volatility (or lack thereof);

environmental liabilities or events that are not covered by an indemnity, insurance or existing reserves;

fluctuations in refinery capacity in areas supplied by our mainlines and other factors affecting demand for various grades of crude oil, refined products and natural gas and resulting changes in pricing conditions or transportation throughput requirements;

the occurrence of a natural disaster, catastrophe, terrorist attack or other event, including attacks on our electronic and computer systems;

maintenance of PAA's (as defined below) credit rating and ability to receive open credit from suppliers and trade counterparties;

tightened capital markets or other factors that increase our cost of capital or limit our ability to obtain debt or equity financing on satisfactory terms to fund additional acquisitions, expansion projects, working capital requirements and the repayment or refinancing of indebtedness;

the currency exchange rate of the Canadian dollar;

continued creditworthiness of, and performance by, our counterparties, including financial institutions and trading companies with which we do business;

inability to recognize current revenue attributable to deficiency payments received from customers who fail to ship or move more than minimum contracted volumes until the related credits expire or are used;

non-utilization of our assets and facilities;

increased costs, or lack of availability, of insurance;

weather interference with business operations or project construction, including the impact of extreme weather events or conditions;

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the availability of, and our ability to consummate, acquisition or combination opportunities;

the successful integration and future performance of acquired assets or businesses and the risks associated with operating in lines of business that are distinct and separate from historical operations;

the effectiveness of our risk management activities;

shortages or cost increases of supplies, materials or labor;

the impact of current and future laws, rulings, governmental regulations, accounting standards and statements, and related interpretations;

fluctuations in the debt and equity markets, including the price of PAA's units at the time of vesting under its long-term incentive plans;

S-iii

Table of Contents

risks related to the development and operation of our assets, including our ability to satisfy our contractual obligations to our customers;

factors affecting demand for natural gas and natural gas storage services and rates;

general economic, market or business conditions and the amplification of other risks caused by volatile financial markets, capital constraints and pervasive liquidity concerns; and

other factors and uncertainties inherent in the transportation, storage, terminalling and marketing of crude oil and refined products, as well as in the storage of natural gas and the processing, transportation, fractionation, storage and marketing of NGLs.

Other factors described or incorporated by reference herein, as well as factors that are unknown or unpredictable, could also have a material adverse effect on future results. Please read "Risk Factors" on page S-4 of this prospectus supplement and as discussed in Item 1A. "Risk Factors" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2015 (File No. 001-36132), which is incorporated in this prospectus supplement by reference, for information regarding risks you should consider before making an investment decision. Except as required by applicable securities laws, we do not intend to update these forward-looking statements and information.

Table of Contents

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights information included or incorporated by reference in this prospectus supplement. It does not contain all of the information that you should consider before making an investment decision. You should read carefully the entire prospectus supplement, the accompanying base prospectus, the documents incorporated by reference herein and therein and the other documents to which we refer herein and therein for a more complete understanding of this offering of Class A shares. Please read "Risk Factors" on page S-4 of this prospectus supplement and in our Annual Report on Form 10-K for the fiscal year ended December 31, 2015, which is incorporated by reference herein, for information regarding risks you should consider before investing in our Class A shares.

For purposes of this prospectus supplement and the accompanying base prospectus, unless the context clearly indicates otherwise:

"our," "we," "us," "the Partnership" or "Plains GP Holdings, L.P." refers to Plains GP Holdings, L.P., the registrant itself, or to Plains GP Holdings, L.P. and its operating subsidiaries collectively, as the context requires (we currently have no operating activities apart from those of PAA; accordingly, any references in this prospectus to "we," "our" and similar terms describing assets, business characteristics or other related matters refer to PAA's assets, business characteristics or other matters involving PAA's assets and operating activities);

"PAA" refers to Plains All American Pipeline, L.P. (NYSE: PAA), individually, or to Plains All American Pipeline, L.P. and its operating subsidiaries collectively, as the context requires;

"PAA GP" refers to PAA GP LLC, the general partner of PAA;

"AAP" refers to Plains AAP, L.P., which owns a 100% membership interest in PAA GP;

"GP LLC" refers to Plains All American GP LLC, the general partner of AAP;

our "general partner" refers to PAA GP Holdings LLC;

our "Simplification Agreement" refers to the Simplification Agreement entered into on July 11, 2016 with our general partner, GP LLC, AAP, PAA GP and PAA, pursuant to which the parties agreed to, among other things, eliminate PAA's incentive distribution rights and the economic rights associated with PAA's general partner interest; and

our "Omnibus Agreement" refers to the Omnibus Agreement entered into on November 15, 2016 with our general partner, GP LLC, AAP, PAA GP and PAA in connection with the transactions contemplated by the Simplification Agreement, pursuant to which the parties agreed to, among other things, the maintenance of a one-to-one relationship between the number of our outstanding Class A shares and the number of PAA common units we indirectly own through AAP and the payment by PAA or reimbursement of our general partner, us and our subsidiaries (other than PAA and its subsidiaries) for all direct and indirect expenses incurred (other than income taxes incurred by us or our subsidiaries (other than PAA and its subsidiaries)).

Plains GP Holdings, L.P.

We are a Delaware limited partnership formed in July 2013 that has elected to be treated as a corporation for U.S. federal income tax purposes. As of December 23, 2016, our only cash-generating assets consisted of our direct and indirect ownership of 100,771,924 Class A units of AAP, which we refer to as AAP Class A units, which represent a 41.8% limited partner interest in AAP (41.0% economic interest including the dilutive effect of the Class B units of AAP). AAP owns a non-economic general partner interest in PAA and, as of December 23, 2016,

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244,707,926 common units of PAA.

PAA is a Delaware limited partnership formed in 1998. PAA's operations are conducted directly and indirectly through its primary operating subsidiaries. PAA owns and operates midstream energy

S-1

Table of Contents

infrastructure and provides logistics services for crude oil, NGLs, natural gas and refined products. PAA owns an extensive network of pipeline transportation, terminalling, storage and gathering assets in key crude oil and NGL producing basins and transportation corridors and at major market hubs in the United States and Canada. PAA's business activities are conducted through three operating segments: Transportation, Facilities and Supply and Logistics.

Ongoing Acquisition Activities

Consistent with our business strategy, we are continuously engaged in discussions with potential sellers regarding the possible purchase of assets and operations that are strategic and complementary to our existing operations. In addition, we have in the past evaluated and pursued, and intend in the future to evaluate and pursue, other energy-related assets that have characteristics and opportunities similar to our existing business lines and enable us to leverage our assets, knowledge and skill sets. Such acquisition efforts may involve participation by us in processes that have been made public and involve a number of potential buyers, commonly referred to as "auction" processes, as well as situations in which we believe we are the only party or one of a limited number of potential buyers in negotiations with the potential seller. These acquisition efforts often involve assets which, if acquired, could have a material effect on our financial condition and results of operations.

We typically do not announce a transaction until after we have executed a definitive acquisition agreement. However, in certain cases in order to protect our business interests or for other reasons, we may defer public announcement of an acquisition until closing or a later date. Past experience has demonstrated that discussions and negotiations regarding a potential acquisition can advance or terminate in a short period of time. Moreover, the closing of any transaction for which we have entered into a definitive acquisition agreement will be subject to customary and other closing conditions, which may not ultimately be satisfied or waived. Accordingly, we can give no assurance that our current or future acquisition efforts will be successful. Although we expect the acquisitions we make to be accretive in the long term, we can provide no assurance that our expectations will ultimately be realized.

Management of Plains GP Holdings, L.P.

As a result of the completion of the transactions contemplated by the Simplification Agreement on November 15, 2016, our general partner has responsibility for managing the business and affairs of PAA, in addition to us and AAP.

Principal Executive Offices and Internet Address

Our principal executive offices are located at 333 Clay Street, Suite 1600, Houston, TX 77002 and our telephone number is (713) 646-4100. Our website is located at www.plainsallamerican.com. We make our periodic and current reports and other information filed with or furnished to the SEC available, free of charge, through our website, as soon as reasonably practicable after those reports and other information are electronically filed with or furnished to the SEC. Information on our website or any other website is not incorporated by reference into this prospectus and does not constitute a part of this prospectus.

Additional Information

For additional information about us, including our partnership structure and management, please refer to the documents set forth under "Where You Can Find More Information" in this prospectus supplement, including our Annual Report on Form 10-K for the fiscal year ended December 31, 2015 and our Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2016, June 30, 2016 and September 30, 2016, each of which is incorporated by reference herein.

Table of Contents

The Offering

Class A Shares Offered
Use of Proceeds

Class A shares having an aggregate offering price of up to \$500,000,000.
Pursuant to the Omnibus Agreement, we have agreed to use the net proceeds from any public or private offering and sale of Class A shares, including this offering, to purchase from AAP a number of AAP Class A units equal to the number of Class A shares sold in such offering at a price equal to the net proceeds from such offering. The Omnibus Agreement also provides that immediately following such purchase and sale, AAP will use the net proceeds it receives from such sale of AAP Class A units to PAGP to purchase from PAA an equivalent number of common units of PAA.
PAA is expected to use the net proceeds it receives from any sale of such common units to AAP for general partnership purposes, which may include, among other things, repayment of indebtedness, acquisitions, capital expenditures and additions to working capital. Amounts repaid under PAA's credit facilities or commercial paper program may be reborrowed to fund its ongoing expansion capital program, future acquisitions and investments or for general partnership purposes. Please read "Use of Proceeds" in this prospectus supplement for further information.

Exchange Listing
Conflicts of Interest

Our Class A shares are traded on the NYSE under the symbol "PAGP."
Affiliates of certain of the sales agents are lenders under PAA's credit facilities or dealers under PAA's commercial paper program and may hold commercial paper notes thereunder. To the extent PAA uses proceeds from the sale of common units to AAP as a result of concurrent sales of Class A shares pursuant to this offering (as provided for in the Omnibus Agreement) to repay indebtedness under its credit facilities or commercial paper program, such affiliates may receive proceeds from this offering. Please read "Plan of Distribution" in this prospectus supplement for further information.

Risk Factors

There are risks associated with this offering and our business. You should consider carefully the risk factors on page S-4 of this prospectus supplement and the other risks identified in the documents incorporated by reference herein before making an investment in the Class A shares offered hereby.

Table of Contents

RISK FACTORS

Before making an investment in the Class A shares offered hereby, you should carefully consider the risk factors included in Item 1A. "Risk Factors" of our Annual Report on Form 10-K for the fiscal year ended December 31, 2015 (File No. 001-36132), which is incorporated by reference herein, together with all of the other information included in, or incorporated by reference into, this prospectus supplement and the accompanying base prospectus. If any of these risks were to occur, our business, financial condition or results of operations could be materially adversely affected. In such case, the trading price of our Class A shares could decline, and you could lose all or part of your investment.

S-4

Table of Contents

USE OF PROCEEDS

Pursuant to the Omnibus Agreement, we have agreed to use the net proceeds from any public or private offering and sale of Class A shares to purchase from AAP a number of AAP Class A units equal to the number of Class A shares sold in such offering at a price equal to the net proceeds from such offering. The Omnibus Agreement also provides that immediately following such purchase and sale, AAP will use the net proceeds it receives from such sale of AAP Class A units to PAGP to purchase from PAA an equivalent number of common units of PAA.

PAA is expected to use the net proceeds it receives from the sale of such common units to AAP for general partnership purposes, which may include, among other things, repayment of indebtedness, acquisitions, capital expenditures and additions to working capital. Amounts repaid under PAA's credit facilities or commercial paper program may be reborrowed to fund its ongoing expansion capital program, future acquisitions and investments or for general partnership purposes.

Affiliates of certain of the sales agents are lenders under PAA's credit facilities or dealers under PAA's commercial paper program and may hold commercial paper notes thereunder. To the extent PAA uses proceeds from the sale of common units to AAP as a result of concurrent sales of Class A shares pursuant to this offering (as provided in the Omnibus Agreement) to repay indebtedness under its credit facilities or commercial paper program, such affiliates may receive a portion of the net proceeds from this offering. Please read "Plan of Distribution" in this prospectus supplement for further information.

As of December 23, 2016, there were no borrowings outstanding under PAA's senior unsecured revolving credit facility, which bears interest at a variable rate and matures in August 2021. As of December 23, 2016, PAA had approximately \$850 million of borrowings outstanding under its senior secured hedged inventory facility with a weighted average interest rate of 1.82%. PAA's senior secured hedged inventory facility matures in August 2019. Borrowings from such facility are primarily used to finance purchased or stored hedged inventory, including New York Mercantile Exchange ("NYMEX") and Intercontinental Exchange ("ICE") margin deposits. As of December 23, 2016 there were no borrowings outstanding under PAA's senior unsecured 364-day revolving credit facility, which bears interest at a variable rate and matures in August 2017. As of December 23, 2016, PAA had approximately \$759 million of borrowings outstanding under its commercial paper program with a weighted average interest rate of approximately 1.57%. The outstanding borrowings under PAA's commercial paper program have maturity dates of two months or less. PAA's commercial paper program is backstopped by its senior secured hedged inventory facility and its senior unsecured revolving credit facility. Borrowings from PAA's commercial paper program are primarily used to fund hedged NGL and crude oil inventory and NYMEX and ICE margin deposits, capital investments and for other general partnership purposes.

Table of Contents

PLAN OF DISTRIBUTION

We have entered into an equity distribution agreement with Wells Fargo Securities, LLC, Barclays Capital Inc., BB&T Capital Markets, a division of BB&T Securities, LLC, BMO Capital Markets Corp., BNP Paribas Securities Corp., Citigroup Global Markets Inc., Deutsche Bank Securities Inc., DNB Markets, Inc., Fifth Third Securities, Inc., J.P. Morgan Securities LLC, Jefferies LLC, Merrill Lynch, Pierce, Fenner & Smith Incorporated, MUFG Securities Americas Inc., Mizuho Securities USA Inc., Morgan Stanley & Co. LLC, Raymond James & Associates, Inc., Scotia Capital (USA) Inc., SMBC Nikko Securities America, Inc., SunTrust Robinson Humphrey, Inc. and UBS Securities LLC, as sales agents, under which we are permitted to offer and sell Class A shares having an aggregate offering price of up to \$500,000,000 from time to time. We have filed the equity distribution agreement as an exhibit to a Current Report on Form 8-K, which is incorporated by reference in this prospectus supplement. The sales, if any, of Class A shares made under the equity distribution agreement will be made by means of ordinary brokers' transactions on the NYSE at market prices, in block transactions, or as otherwise as agreed upon by one or more of the sales agents and us. The sales agents will not engage in any transactions that stabilize the price of our Class A shares.

Under the terms of the equity distribution agreement, we also may sell Class A shares to one or more of our sales agents as principal for its own account at a price agreed upon at the time of sale. If we sell Class A shares to one or more of our sales agents as principal, we will enter into a separate agreement with the sales agent and we will describe this agreement in a separate prospectus supplement or pricing supplement.

We will designate the maximum amount of Class A shares to be sold through the sales agents on a daily basis or otherwise as we and the sales agents agree and the minimum price per Class A share at which such Class A shares may be sold. Subject to the terms and conditions of the equity distribution agreement, the sales agents will use their reasonable efforts to sell on our behalf all of the designated Class A shares. We may instruct the sales agents not to sell any Class A shares if the sales cannot be effected at or above the price designated by us in any such instruction. We or the sales agents may suspend the offering of Class A shares at any time and from time to time by notifying the other party.

The sales agents will provide to us written confirmation following the close of trading on the NYSE each day in which Class A shares are sold under the equity distribution agreement. Each confirmation will include the number of Class A shares sold on that day, the gross sales proceeds and the net proceeds to us (after regulatory transaction fees, if any, but before other expenses). We will report at least quarterly the number of Class A shares sold through the sales agents under the equity distribution agreement, the net proceeds to us (before expenses) and the commissions of the sales agents in connection with the sales of the Class A shares.

We will pay each sales agent a commission of up to 2.0% of the gross sales price per Class A share sold through it as our agent under the equity distribution agreement. We have agreed to reimburse the sales agents for certain of their expenses.

Settlement for sales of Class A shares will occur on the third business day following the date on which any sales were made in return for payment of the net proceeds to us. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

If we or any of the sales agents have reason to believe that our Class A shares are no longer an "actively-traded security" as defined under Rule 101(c)(1) of Regulation M under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), that party will promptly notify the others and sales of Class A shares pursuant to the equity distribution agreement or any terms agreement will be suspended until in our collective judgment Rule 101(c)(1) or another exemptive provision has been satisfied.

Table of Contents

The offering of Class A shares pursuant to the equity distribution agreement will terminate upon the earlier of (1) the sale of all Class A shares subject to the equity distribution agreement or (2) the termination of the equity distribution agreement by us or by the sales agents.

In connection with the sale of the Class A shares on our behalf, each of the sales agents will be deemed to be an "underwriter" within the meaning of the Securities Act of 1933, as amended (the "Securities Act"), and the compensation paid to the sales agents may be deemed to be underwriting commissions or discounts. We have agreed to provide indemnification and contribution to the sales agents against certain liabilities, including civil liabilities under the Securities Act.

Conflicts of Interest

The sales agents and/or affiliates of each of the sales agents have, from time to time, performed, and may in the future perform, various financial advisory and commercial and investment banking services for us and our affiliates, for which they have received and in the future will receive customary compensation and expense reimbursement.

Affiliates of certain of the sales agents are lenders under PAA's credit facilities or dealers under PAA's commercial paper program and may hold commercial paper notes thereunder. To the extent PAA uses proceeds from the sale of common units to AAP as a result of concurrent sales of Class A shares pursuant to this offering (as provided for in the Omnibus Agreement) to repay indebtedness under its credit facilities or commercial paper program, such affiliates may receive proceeds from this offering.

In addition, in the ordinary course of their business activities, the sales agents and their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers. Such investments and securities activities may involve securities and/or instruments of ours or our affiliates. If the sales agents or their affiliates have a lending relationship with us, they may hedge their credit exposure to us consistent with their customary risk management policies. The sales agents and their affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

FINRA

In compliance with the guidelines of the Financial Industry Regulatory Authority, Inc., or FINRA, the maximum discount or commission to be received by any FINRA member or independent broker-dealer may not exceed 8% of the aggregate offering price of the Class A shares offered pursuant to this prospectus supplement. Because FINRA views the Class A shares offered hereby as interests in a direct participation program, this offering is being made in compliance with Rule 2310 of the FINRA Rules.

Table of Contents

LEGAL MATTERS

The validity of the Class A shares offered in this prospectus supplement will be passed upon for us by Vinson & Elkins L.L.P., Houston, Texas. Certain legal matters will be passed upon for the sales agents by Baker Botts L.L.P., Houston, Texas.

EXPERTS

The financial statements and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this Prospectus Supplement by reference to the Annual Report on Form 10-K for the fiscal year ended December 31, 2015 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We are "incorporating by reference" into this prospectus supplement information we file with the SEC. This procedure means that we can disclose important information to you by referring you to documents filed with the SEC. The information we incorporate by reference is deemed to be part of this prospectus supplement and later information that we file with the SEC will automatically update and supersede this information.

We incorporate by reference the documents listed below and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (excluding any information furnished and not filed pursuant to any Current Report on Form 8-K) until the offering and sale of the Class A shares contemplated by this prospectus supplement are complete:

Annual Report on Form 10-K for the fiscal year ended December 31, 2015;

Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2016, June 30, 2016 and September 30, 2016;

our Current Reports on Form 8-K filed on February 2, 2016, May 18, 2016, July 14, 2016, August 17, 2016, August 31, 2016, November 21, 2016 and November 29, 2016; and

the description of our Class A shares contained in our Registration Statement on Form 8-A/A, filed on November 16, 2016, and any subsequent amendment or report filed for the purpose of updating such description.

You may request a copy of these filings (other than any exhibits unless specifically incorporated by reference into this prospectus supplement and the accompanying base prospectus) at no cost by making written or telephone requests for copies to:

Plains GP Holdings, L.P.
Investor Relations
333 Clay Street, Suite 1600
Houston, Texas 77002
(713) 646-4100

Additionally, you may read and copy any materials that we have filed with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Room 1580, 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 maintains a website that contains reports, proxy and information statements, and other information regarding us. The SEC's website address is www.sec.gov.

Table of Contents

You should rely only on the information incorporated by reference or provided in this prospectus supplement or the accompanying base prospectus. We have not, and the sales agents and their affiliates and agents have not, authorized anyone else to provide you with any other information. You should not assume that the information incorporated by reference or provided in this prospectus supplement or the accompanying base prospectus is accurate as of any date other than its date.

S-9

Table of Contents

PROSPECTUS

Class A Shares

Representing Limited Partner Interests

We may offer and sell Class A shares representing limited partner interests in Plains GP Holdings, L.P. from time to time in one or more offerings and in amounts, at prices and on terms to be determined by market conditions and other factors at the time of our offerings. The aggregate offering price of the Class A shares sold by us under this prospectus will not exceed \$1,000,000,000.

We may offer and sell the Class A shares to or through one or more underwriters, dealers or agents, or directly to purchasers, on a continuous or delayed basis. This prospectus describes only the general terms of the Class A shares and the general manner in which we will offer the Class A shares. The specific terms of any Class A shares we offer will be included in a supplement to this prospectus. The prospectus supplement will also describe the specific manner in which we will offer the Class A shares.

You should read this prospectus and any applicable prospectus supplement and the documents incorporated by reference herein or therein carefully before you invest in any of our Class A shares. You should also read the documents we have referred you to in the "Where You Can Find More Information" section of this prospectus for information about us, including our financial statements.

Our Class A shares are listed on the New York Stock Exchange ("NYSE") under the symbol "PAGP."

Limited partnerships are inherently different than corporations, and investing in our Class A shares involves a high degree of risk. You should carefully consider the risks relating to investing in our Class A shares and each of the other risk factors described under "Risk Factors" on page 2 of this prospectus before you make an investment in our Class A shares.

Neither the Securities and Exchange Commission (the "SEC") nor any state securities commission has approved or disapproved of the Class A shares or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is December 20, 2016

Table of Contents

TABLE OF CONTENTS

	Page
<u>About This Prospectus</u>	<u>iii</u>
<u>Where You Can Find More Information</u>	<u>iv</u>
<u>Forward-Looking Statements</u>	<u>v</u>
<u>About Plains GP Holdings, L.P.</u>	<u>1</u>
<u>Risk Factors</u>	<u>2</u>
<u>Use of Proceeds</u>	<u>3</u>
<u>Our Cash Distribution Policy</u>	<u>4</u>
<u>The Partnership Agreement</u>	<u>6</u>
<u>Description of Our Shares</u>	<u>19</u>
<u>Material U.S. Federal Income Tax Consequences</u>	<u>21</u>
<u>Investment in Plains GP Holdings, L.P. by Employee Benefit Plans</u>	<u>27</u>
<u>Plan of Distribution</u>	<u>29</u>
<u>Legal Matters</u>	<u>31</u>
<u>Experts</u>	<u>31</u>

You should rely only on the information contained in or incorporated by reference into this prospectus. We have not authorized anyone to provide you with additional or different information. If any other person provides you with additional, different or inconsistent information, you should not rely on it. This prospectus and any prospectus supplement is not an offer to sell or the solicitation of an offer to buy any securities other than the securities to which it relates and is not an offer to sell or the solicitation of an offer to buy securities in any jurisdiction where an offer or sale of such securities is not permitted. You should not assume that the information appearing in this prospectus is accurate as of any date other than the date on the front cover of this prospectus, or that the information contained in any document incorporated by reference is accurate as of any date other than the date of such document, regardless of the time of delivery of this prospectus or any sale of a security. Our business, financial condition, results of operations and prospects may have changed since those dates.

The information in this prospectus is not complete. You should review carefully all of the detailed information appearing in this prospectus, any prospectus supplement, any free writing prospectus relating to this offering and the documents we have incorporated by reference before making any investment decision.

Table of Contents

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the SEC utilizing a "shelf" registration process. Under this shelf registration process, we may, over time, offer and sell up to \$1,000,000,000 in total aggregate offering price of our Class A shares in one or more offerings. This prospectus generally describes Plains GP Holdings, L.P. and the Class A shares. Each time we sell securities with this prospectus, we will provide you with a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may add to, update or change information in this prospectus. If there is any inconsistency between the information in this prospectus and any prospectus supplement, you should rely on the information in such prospectus supplement. Before you invest in our securities, you should carefully read both this prospectus and any prospectus supplement, together with additional information described under the heading "Where You Can Find More Information," and any additional information you may need to make your investment decision.

The following information should help you understand some of the conventions used in this prospectus. All references in this prospectus to:

"our," "we," "us," "the Partnership" or "Plains GP Holdings, L.P." refer to Plains GP Holdings, L.P., the registrant itself, or to Plains GP Holdings, L.P. and its consolidated subsidiaries collectively, as the context requires (we currently have no operating activities apart from those of PAA; accordingly, any references in this prospectus to "we," "our" and similar terms describing assets, business characteristics or other related matters refer to PAA's assets, business characteristics or other matters involving PAA's assets and operating activities);

"PAA" refer to Plains All American Pipeline, L.P. (NYSE: PAA), individually, or to Plains All American Pipeline, L.P. and its operating subsidiaries collectively, as the context requires;

"PAA GP" refer to PAA GP LLC, the general partner of PAA;

"AAP" refer to Plains AAP, L.P., which owns a 100% membership interest in PAA GP;

"GP LLC" refer to Plains All American GP LLC, the general partner of AAP;

our "general partner" refer to PAA GP Holdings LLC;

our "partnership agreement" refer to the Second Amended and Restated Agreement of Limited Partnership of Plains GP Holdings, L.P., dated as of November 15, 2016, as it may be amended or restated from time to time;

"Legacy Owners" refer to owners of AAP immediately prior to our initial public offering (our "IPO") including, but not limited to: PAA Management, L.P.; and certain entities and individuals affiliated with The Energy & Minerals Group ("EMG"), Kayne Anderson Investment Management Inc. ("Kayne Anderson"), and Occidental Petroleum Corporation ("Occidental"). Unless the context requires otherwise, references to Kayne Anderson include KAFU Holdings, L.P., KAFU Holdings (QP), L.P., KAFU Holdings II, L.P., Kayne Anderson MLP Investment Company, Kayne Anderson Energy Development Company and Kayne Anderson Midstream/Energy Fund, Inc.;

our "Simplification Agreement" refers to the Simplification Agreement entered into on July 11, 2016 with our general partner, GP LLC, AAP, PAA GP and PAA, pursuant to which the parties agreed to, among other things, eliminate PAA's incentive distribution rights and the economic rights associated with PAA's general partner interest;

our "Omnibus Agreement" refers to the Omnibus Agreement entered into on November 15, 2016 with our general partner, GP LLC, AAP, PAA GP and PAA in connection with the transactions contemplated by the Simplification

Agreement, pursuant to which the parties agreed

iii

Table of Contents

to, among other things, the maintenance of a one-to-one relationship between the number of our outstanding Class A shares and the number of PAA common units we indirectly own through AAP and the payment by PAA or reimbursement of our general partner, us and our subsidiaries (other than PAA and its subsidiaries) for all direct and indirect expenses incurred (other than income taxes incurred by us or our subsidiaries (other than PAA and its subsidiaries)); and

"affiliates" of our general partner do not include the Legacy Owners, other than PAA Management, L.P.

WHERE YOU CAN FIND MORE INFORMATION

We "incorporate by reference" information into this prospectus, which means that we disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus, except for any information superseded by information contained expressly in this prospectus or any prospectus supplement, and the information we file later with the SEC will automatically supersede this information. You should not assume that the information in this prospectus is current as of any date other than the date on the front page of this prospectus, or that the information contained in any document incorporated by reference is accurate as of any date other than the date of such document.

We incorporate by reference the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") (excluding any information furnished rather than filed), including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement, until all offerings under this registration statement are completed:

our Annual Report on Form 10-K for the fiscal year ended December 31, 2015;

our Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2016, June 30, 2016 and September 30, 2016;

our Current Reports on Form 8-K filed on February 2, 2016, May 18, 2016, July 14, 2016, August 17, 2016, August 31, 2016, November 21, 2016 and November 29, 2016; and

the description of our Class A shares contained in our Registration Statement on Form 8-A/A, filed on November 16, 2016, and any subsequent amendment or report filed for the purpose of updating such description.

You may request a copy of any document incorporated by reference in this prospectus and any exhibit specifically incorporated by reference in those documents, at no cost, by writing or telephoning us at the following address or phone number:

Plains GP Holdings, L.P.
Investor Relations
333 Clay Street, Suite 1600
Houston, Texas 77002
(713) 646-4100

Additionally, you may read and copy any documents filed by us at the SEC's public reference room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-732-0330 for further information on its Public Reference Room. Our SEC filings are also available to the public from commercial document retrieval services and at the SEC's website www.sec.gov.

Table of Contents

We also make available free of charge on our website at ir.pagp.com our Annual Reports on Form 10-K, our Quarterly Reports on Form 10-Q and our Current Reports on Form 8-K, and any amendments to those reports, as soon as reasonably practicable after we electronically file such material with the SEC. Information contained on our website is not incorporated by reference into this prospectus and you should not consider information contained on our website as part of this prospectus.

FORWARD-LOOKING STATEMENTS

All statements included or incorporated by reference in this prospectus, other than statements of historical fact, are forward-looking statements, including but not limited to statements incorporating the words "anticipate," "believe," "estimate," "expect," "plan," "intend" and "forecast," as well as similar expressions and statements regarding our business strategy, plans and objectives for future operations. The absence of such words, expressions or statements, however, does not mean that the statements are not forward-looking. Any such forward-looking statements reflect our current views with respect to future events, based on what we believe to be reasonable assumptions. Certain factors could cause actual results or outcomes to differ materially from the results or outcomes anticipated in the forward-looking statements. The most important of these factors include, but are not limited to:

our ability to pay distributions to our Class A shareholders;

our expected receipt of, and amounts of, distributions from AAP;

declines in the volume of crude oil, refined product and NGL shipped, processed, purchased, stored, fractionated and/or gathered at or through the use of our assets, whether due to declines in production from existing oil and gas reserves, failure to develop or slowdown in the development of additional oil and gas reserves, whether from reduced cash flow to fund drilling or the inability to access capital, or other factors;

the effects of competition;

failure to implement or capitalize, or delays in implementing or capitalizing, on expansion projects;

unanticipated changes in crude oil market structure, grade differentials and volatility (or lack thereof);

environmental liabilities or events that are not covered by an indemnity, insurance or existing reserves;

fluctuations in refinery capacity in areas supplied by our mainlines and other factors affecting demand for various grades of crude oil, refined products and natural gas and resulting changes in pricing conditions or transportation throughput requirements;

the occurrence of a natural disaster, catastrophe, terrorist attack or other event, including attacks on our electronic and computer systems;

maintenance of PAA's credit rating and ability to receive open credit from suppliers and trade counterparties;

tightened capital markets or other factors that increase our cost of capital or limit our ability to obtain debt or equity financing on satisfactory terms to fund additional acquisitions, expansion projects, working capital requirements and the repayment or refinancing of indebtedness;

the currency exchange rate of the Canadian dollar;

continued creditworthiness of, and performance by, our counterparties, including financial institutions and trading companies with which we do business;

v

Table of Contents

inability to recognize current revenue attributable to deficiency payments received from customers who fail to ship or move more than minimum contracted volumes until the related credits expire or are used;

non-utilization of our assets and facilities;

increased costs, or lack of availability, of insurance;

weather interference with business operations or project construction, including the impact of extreme weather events or conditions;

the availability of, and our ability to consummate, acquisition or combination opportunities;

the successful integration and future performance of acquired assets or businesses and the risks associated with operating in lines of business that are distinct and separate from historical operations;

the effectiveness of our risk management activities;

shortages or cost increases of supplies, materials or labor;

the impact of current and future laws, rulings, governmental regulations, accounting standards and statements, and related interpretations;

fluctuations in the debt and equity markets, including the price of PAA's units at the time of vesting under its long-term incentive plans;

risks related to the development and operation of our assets, including our ability to satisfy our contractual obligations to our customers;

factors affecting demand for natural gas and natural gas storage services and rates;

general economic, market or business conditions and the amplification of other risks caused by volatile financial markets, capital constraints and pervasive liquidity concerns; and

other factors and uncertainties inherent in the transportation, storage, terminalling and marketing of crude oil and refined products, as well as in the storage of natural gas and the processing, transportation, fractionation, storage and marketing of natural gas liquids.

Other factors described or incorporated by reference herein, as well as factors that are unknown or unpredictable, could also have a material adverse effect on future results. Please read "Risk Factors" beginning on page 2 of this prospectus and as discussed in Item 1A of our Annual Report on Form 10-K for the fiscal year ended December 31, 2015 (File No. 001-36132), which is incorporated in this prospectus by reference, for information regarding risks you should consider before making an investment decision. Except as required by applicable securities laws, we do not intend to update these forward-looking statements and information.

