Sunstone Hotel Investors, Inc. Form 424B5 June 24, 2014

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CALCULATION OF REGISTRATION FEE

Title of each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee(1)

⁽¹⁾ The registration fee is calculated in accordance with Rule 457(o) under the Securities Act of 1933, as amended, or the Securities Act, based on the proposed maximum aggregate offering price, and Rule 457(r) under the Securities Act. In accordance with Rules 456(b) and 457(r) under the Securities Act, the registrant initially deferred payment of all of the registration fee for Registration Statement No. 333-193311

Filed pursuant to Rule 424(b)(5) Reg. Statement No. 333-193311

Prospectus supplement (To prospectus dated January 10, 2014)

18,000,000 shares

Sunstone Hotel Investors, Inc.

Common stock

We are offering 18,000,000 shares of our common stock.

Our common stock currently trades on the New York Stock Exchange, or the NYSE, under the symbol "SHO." On June 19, 2014, the last reported sale price of our common stock on the NYSE was \$14.87 per share. Shares of our common stock are subject to ownership and transfer limitations that must be applied to maintain our status as a real estate investment trust, or REIT.

See "Risk Factors" on page S-6 of this prospectus supplement to obtain information about where to read certain factors you should consider before buying shares of our common stock.

The underwriter has agreed to purchase shares of common stock from us at a price of \$14.60 per share which will result in approximately \$262.8 million of proceeds to us, before expenses. The underwriter may offer shares of common stock in transactions on the NYSE, in the over-the-counter market or through negotiated transactions at market prices or at negotiated prices. See "Underwriting."

Neither the Securities and Exchange Commission, or the SEC, nor any other state or federal regulatory body has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

We have granted the underwriter a 30-day option to purchase up to 2,700,000 shares of common stock at a price of \$14.60.

The underwriter expects to deliver the shares in New York, New York on or about June 25, 2014.

Sole Book-Running Manager

J.P. Morgan

The date of this Prospectus Supplement is June 20, 2014.

Prospectus supplement

About this prospectus supplement

You should read this prospectus supplement along with the accompanying prospectus, as well as the information incorporated by reference herein and therein, carefully before you invest in our common stock. These documents contain important information that you should consider before making your investment decision. This prospectus supplement and the accompanying prospectus contain the terms of this offering of common stock. The accompanying prospectus contains information about our securities generally, some of which does not apply to the common stock covered by this prospectus supplement. This prospectus supplement may add, update or change information contained in or incorporated by reference in the accompanying prospectus. If the information in this prospectus supplement with any information contained in or incorporated by reference in the accompanying prospectus, the information in this prospectus supplement will apply and will supersede the inconsistent information contained in or incorporated by reference in the accompanying prospectus.

It is important for you to read and consider all of the information contained in this prospectus supplement and the accompanying prospectus before making your investment decision. You should also read and consider the additional information incorporated by reference in this prospectus supplement and the accompanying prospectus before making your investment decision. See "Incorporation of Certain Information by Reference" in this prospectus supplement.

You should rely only on the information contained in or incorporated by reference in this prospectus supplement, the accompanying prospectus and any related free writing prospectus required to be filed with the Securities and Exchange Commission, or the SEC. Neither we nor the underwriter has authorized any other person to provide you with additional or different information. If anyone provides you with additional or different information, you should not rely on it. Neither we nor the underwriter is making an offer to sell the common stock in any jurisdiction where the offer or sale is not permitted.

You should assume that the information appearing in this prospectus supplement, the accompanying prospectus, any such free writing prospectus and the documents incorporated by reference herein and therein is accurate only as of their respective dates. Our business, financial condition, results of operations and prospects may have changed since those dates.

Unless this prospectus supplement otherwise indicates or the context otherwise requires, the terms "our," "us," "we" and the "Company" as used in this prospectus supplement refer to Sunstone Hotel Investors, Inc. and its consolidated subsidiaries. We also use the term "Operating Partnership" to specifically refer to Sunstone Hotel Partnership, LLC and its consolidated subsidiaries in cases where it is important to distinguish between us and the Operating Partnership. Unless otherwise expressly stated or the context otherwise requires, all information in this prospectus supplement assumes that the option granted to the underwriter is not exercised in whole or in part.

This prospectus supplement and the accompanying prospectus contain registered trademarks that are the exclusive property of their respective owners, which are companies other than us. None of the owners of these trademarks, their affiliates or any of their respective officers, directors, agents or employees, has or will have any responsibility or liability for any information contained in this prospectus or the accompanying prospectus supplement.

Incorporation of certain information by reference

The SEC's rules allow us to incorporate by reference information into this prospectus supplement and the accompanying prospectus. This means that we can disclose important information to you by referring you to another document. Any information referred to in this way is considered part of this prospectus supplement and the attached prospectus from the date we file that document. Any reports filed by us with the SEC after the date of this prospectus supplement and before the date that the offering of the securities by means of this prospectus supplement is terminated will automatically update and, where applicable, supersede any information contained, or incorporated by reference, in this prospectus supplement or in the accompanying prospectus.

We incorporate by reference into this prospectus supplement and the accompanying prospectus:

our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed with the SEC on February 25, 2014 (including information specifically incorporated by reference therein from our Proxy Statement for our 2014 Annual Meeting filed with the SEC on March 25, 2014);

our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2014, filed with the SEC on May 7, 2014;

our Current Reports on Form 8-K filed with the SEC on February 20, 2014 (but only with respect to Items 5.02, 8.01 and "filed" portions of 9.01) and May 5, 2014 (but only with respect to Items 5.02, 5.07 and "filed" portions of 9.01), and our Current Report on Form 8-K/A filed with the SEC on January 13, 2014;

the description of the common stock included in our registration statement on Form 8-A, filed with the SEC on October 7, 2004, together with any amendment or report filed with the SEC for the purpose of updating such description; and

all documents we file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, on or after the date of this prospectus supplement and before the termination of this offering.

We are not, however, incorporating by reference any documents or portions thereof, whether specifically listed above or filed in the future, that are not deemed "filed" with the SEC. The documents incorporated by reference in this prospectus supplement and the accompanying prospectus and, in particular, our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed with the SEC on February 25, 2014, contain important information about us.

You should read "Incorporation of Certain Information by Reference" in the accompanying prospectus for information about how to obtain the documents incorporated by reference.

Summary

The information below is a summary of the more detailed information included elsewhere in, or incorporated by reference in, this prospectus supplement. You should read carefully the following summary in conjunction with the more detailed information contained in this prospectus supplement, the accompanying prospectus and the information incorporated by reference herein and therein. This summary is not complete and does not contain all of the information you should consider before purchasing shares of our common stock. You should carefully read the "Risk Factors" section on page S-6 of this prospectus supplement to determine whether an investment in our common stock is appropriate for you.

Sunstone Hotel Investors, Inc.

Our Company

We were incorporated in Maryland on June 28, 2004. We are a real estate investment trust, or REIT, under the Internal Revenue Code of 1986, as amended, or the Code. As of March 31, 2014, we had interests in 29 hotels held for investment, or the 29 hotels. The 29 hotels are comprised of 13,760 rooms, located in 12 states and in Washington, D.C.

Our primary business is to acquire, own, asset manage and renovate full-service hotel properties in the United States. As part of our ongoing portfolio management strategy, we may also sell certain hotel properties from time to time. All but one (the Boston Park Plaza) of the 29 hotels are operated under nationally recognized brands, such as Marriott, Hilton, Hyatt, Fairmont and Sheraton. Our portfolio primarily consists of upper upscale hotels in the United States. As of March 31, 2014, our 29 hotels included two luxury hotels and 27 upscale or upper upscale hotels. The classifications luxury, upper upscale and upscale are defined by Smith Travel Research, an independent provider of lodging industry statistical data. Smith Travel Research classifies hotel chains into the following segments: luxury; upper upscale; upper midscale; midscale; economy; and independent.

Our hotels are operated by third-party managers pursuant to long-term management agreements (or, in the case of the Hyatt Regency San Francisco, pursuant to an operating lease with economic arrangements that follow a typical management fee structure) with our subsidiary, Sunstone Hotel TRS Lessee, Inc., or its subsidiaries. As of March 31, 2014, our third-party managers included: subsidiaries of Marriott International, Inc. or Marriott Hotel Services, Inc., managers of 10 of the Company's 29 hotels; Interstate Hotels & Resorts, Inc., manager of six of the Company's 29 hotels; Highgate Hotels L.P. and an affiliate, manager of four of the Company's 29 hotels; Davidson Hotels & Resorts, Hilton Worldwide and Hyatt Corporation, each a manager of two of the Company's 29 hotels; and Crestline Hotels & Resorts, Dimension Development Company and Fairmont Hotels & Resorts (U.S.), each a manager of one of the Company's 29 hotels. In addition, we own BuyEfficient, LLC, an electronic purchasing platform that allows members to procure food, operating supplies, furniture, fixtures and equipment.

Our headquarters are located at 120 Vantis, Suite 350, Aliso Viejo, California 92656, and our telephone number is (949) 330-4000.

Recent developments

Acquisition of Wailea Beach Marriott Resort and Spa

On June 19, 2014, we announced that we entered into a definitive agreement to acquire the 544-room Wailea Beach Marriott Resort and Spa located in Honuaula, Hawaii for a net purchase price of approximately \$325.7 million, or approximately \$598,600 per key, inclusive of the hotel's furniture. fixtures

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and equipment reserve, which was included in the purchase price. The acquisition is expected to be funded with approximately \$270.0 million of cash and \$60.0 million of shares of our common stock, or "the stock consideration." The stock consideration will consist of 4,034,970 shares of our common stock, which was determined by dividing \$60.0 million by \$14.87, the last reported sale price of our common stock on the NYSE on June 19, 2014. We have agreed to register for resale the shares comprising the stock consideration under the Securities Act of 1933, as amended, or the Securities Act, and expect to file the prospectus supplement for such resale upon the closing of the acquisition. The acquisition is expected to close in the third quarter of 2014, subject to customary closing requirements and conditions. There can be no assurance that the acquisition will close, or if it does, when the closing will occur. We expect to use a portion of the net proceeds from this offering for this acquisition, however, the contemplated purchase is not dependent on this offering and we expect to consummate the offering whether or not we proceed with this acquisition. We will not incur or assume any debt in connection with the proposed acquisition.

The offering

Common stock offered by us 18,000,000 shares

Total shares of common stock outstanding immediately after this offering(1)

201,396,659 shares

Use of ProceedsThe estimated net proceeds of approximately \$262.3 million from this offering (or approximately

\$301.7 million if the underwriter's option is exercised in full), after deducting underwriting discounts and commissions and estimated offering expenses, will be used (i) to finance a portion of the potential acquisition of the Wailea Beach Marriott Resort and Spa described under the caption "Recent Developments," (ii) for other potential future acquisitions and (iii) for general corporate purposes, including working capital and

capital investment in our portfolio. See "Use of Proceeds."

Distribution PolicyTo maintain our qualification as a REIT, we intend to make distributions to our stockholders of at least 90% of

our REIT taxable income (which excludes net capital gains and does not necessarily equal net income as calculated in accordance with generally accepted accounting principles). Our distributions may be comprised

of cash, or a combination of cash and stock as permitted by the Code.

New York Stock Exchange symbol

SHO

(1) This number is based on 183,396,659 shares of our common stock outstanding at June 18, 2014, and does not include:

6,537,128 additional shares of our common stock available for future issuance under our 2004 long-term incentive plan, and 200,000 shares issuable in respect of stock options outstanding as of such date;

any shares that may be issued as part of the stock consideration described under the caption " Recent Developments"; or

any exercise of the underwriter's option.

Risk factors

See the information under the heading "Risk Factors" beginning on page 11 of our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed with the SEC on February 25, 2014, which information is incorporated by reference into this prospectus supplement, and other information included in this prospectus supplement, the accompanying prospectus and reports we file from time to time with the SEC that we incorporate by reference herein for a discussion of factors you should carefully consider before deciding to invest in shares of our common stock.

There can be no assurance that the acquisition of the Wailea Beach Marriott Resort and Spa that we expect to finance in part using the net proceeds from this offering will close and, if the acquisition does not close, you will be unable to evaluate the economic merits of any other investments that we may make using the net proceeds from this offering.

We have entered into a definitive agreement to purchase the Wailea Beach Marriott Resort and Spa that we expect to finance in part using the net proceeds from this offering. The definitive agreement is subject to customary closing requirements and conditions and there can be no assurance that such acquisition will close. If the acquisition is not consummated, we will have broad discretion with respect to the use of the net proceeds of this offering and cannot assure you that they will be used in a manner that is accretive to stockholders or the timing thereof.

Use of proceeds

We estimate that the net proceeds to us from this offering will be approximately \$262.3 million, after deducting underwriting discounts and commissions and estimated offering expenses (or approximately \$301.7 million if the underwriter's option is exercised in full, after deducting underwriting discounts and commissions and estimated offering expenses). The net proceeds from this offering will be contributed to the Operating Partnership in exchange for additional membership units of the Operating Partnership. The Operating Partnership will subsequently use the net proceeds from this offering (i) to finance a portion of the potential acquisition of the Wailea Beach Marriott Resort and Spa described under the caption "Summary Recent Developments," (ii) for other potential future acquisitions, and (iii) for general corporate purposes, including working capital and capital investment in our portfolio. Pending such uses, we will invest the net proceeds in money market funds or other investment securities.

Special note about forward-looking statements

This prospectus supplement contains certain forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. The Company intends such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995 and includes this statement for purposes of complying with these safe harbor provisions. Forward-looking statements, which are based on certain assumptions and describe the Company's future plans, strategies and expectations, are generally identifiable by use of the words "believe," "expect," "intend," "anticipate," "estimate," "project" or similar expressions. You should not rely on forward-looking statements because they involve known and unknown risks, uncertainties and other factors that are, in some cases, beyond the Company's control and which could materially affect actual results, performances or achievements. Factors that may cause actual results to differ materially from current expectations include, but are not limited to the risks outlined in detail under the heading "Risk Factors" in our Annual Report on Form 10-K, filed with the SEC on February 25, 2014, and under the caption "Risk Factors" on page S-6 of this prospectus supplement, and in the reports we file from time to time with the SEC and incorporated by reference herein, including, but not limited to, the following factors:

general economic and business conditions affecting the lodging and travel industry, internationally, nationally and locally, including a U.S. recession or global economic slowdown;
our need to operate as a REIT and comply with other applicable laws and regulations;
rising hotel operating expenses, including the impact of the Patient Protection and Affordable Care Act;
relationships with and requirements of franchisors and hotel brands;
relationships with and the performance of the managers of our hotels;
the ground, air or building leases for 10 of the 29 hotels held for investment as of March 31, 2014;
our ability to complete acquisitions and dispositions, including the acquisition of the Wailea Beach Marriott Resort and Spa;
deploying the net proceeds of this offering if we do not acquire the Wailea Beach Marriott Resort and Spa as contemplated;
competition for the acquisition of hotels;
performance of hotels after they are acquired;
competition from hotels not owned by us;
the need for renovations and other capital expenditures for our hotels;
the impact of renovations on hotel operations and delays in renovations or other developments;

changes in our business strategy or acquisition or disposition plans;

our level of debt, including secured, unsecured, fixed and variable rate debt;

financial and other covenants in our debt and preferred stock;

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our hotels and related goodwill may become impaired, or our hotels and related goodwill which have previously become impaired may become further impaired, in the future, which may adversely affect our financial condition and results of operations;

volatility in the capital markets and the effect on lodging demand or our ability to obtain capital on favorable terms or at all;

potential adverse tax consequences in the event that our operating leases with our taxable REIT subsidiaries are not held to have been made on an arm's-length basis;

system security risks, data protection breaches, cyber-attacks and systems integration issues; and

other events beyond our control.

Except as otherwise required by the federal securities laws, the Company disclaims any obligations or undertaking to publicly release any updates or revisions to any forward-looking statement contained herein (or elsewhere) to reflect any change in the Company's expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based.

Underwriting

We and the underwriter named below have entered into an underwriting agreement with respect to the shares being offered. Subject to certain conditions, the underwriter has agreed to purchase all of the shares being offered. J.P. Morgan Securities LLC will be the underwriter.

The underwriter is committed to take and pay for all of the shares being offered, if any are taken, other than the shares covered by the option described below unless and until this option is exercised.

We have granted the underwriter a 30-day option to purchase up to 2,700,000 shares of common stock at a price of \$14.60.

The underwriter proposes to offer the shares of common stock offered hereby from time to time for sale in one or more transactions on the NYSE, in the over-the-counter market, through negotiated transactions or otherwise at market prices prevailing at the time of sale, at prices related to prevailing market prices or at negotiated prices, subject to receipt and acceptance by it and subject to its right to reject any order in whole or in part. The underwriter may effect such transactions by selling the shares of common stock to or through dealers and such dealers may receive compensation in the form of discounts, concessions or commissions from the underwriter and/or purchasers of shares of common stock for whom they may act as agents or to whom they may sell as principal. The difference between the price at which the underwriter purchases shares and the price at which the underwriter resells such shares may be deemed underwriting compensation.

We estimate that our portion of the total expenses of this offering, excluding underwriting discounts and commissions, will be approximately \$500,000.

We have agreed to indemnify the underwriter against certain liabilities, including liabilities under the Securities Act or to contribute to payments the underwriter may be required to make because of any of those liabilities.

For a period of 30 days after the date of this prospectus supplement, we have agreed that we will not, without the prior written consent of the underwriter, directly or indirectly, issue, offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase or otherwise transfer or dispose of any shares of our common stock or any securities convertible into or exercisable or exchangeable for our common stock or file any registration statement under the Securities Act (other than a registration statement on Form S-8) with respect to any of the foregoing, or enter into any swap or any other agreement or any transaction that transfers, in whole or in part, directly or indirectly, the economic consequence of ownership of our common stock.

The restrictions described in the preceding paragraph do not apply to:

the shares of our common stock to be sold in the offering described in this prospectus supplement;

any shares that may be issued as part of the stock consideration described under the caption "Summary Recent Developments" (including the filing of a prospectus supplement for the resale of such shares);

issuances of shares of our common stock or common units by the Operating Partnership in connection with the acquisition of hotels and related assets, provided that the recipient of such shares of our common stock or securities convertible into or exercisable or exchangeable for shares of our common

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stock shall be subject to the restrictions described above for a period expiring no earlier than 30 days after the date of this prospectus supplement; and

at any time 15 days after the date of this prospectus supplement, dispositions of shares of our common stock pursuant to the vesting of restricted stock awarded prior to the date of this prospectus supplement and, if applicable, previously reported on Form 4, solely to cover payment of the tax withholding payments due upon vesting with proceeds up to the amount of such tax withholding payments made in connection with such vesting.

For a period of 30 days after the date of this prospectus supplement, our officers and directors have agreed that they will not, without the prior written consent of the underwriter, directly or indirectly, offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant for the sale of or otherwise transfer or dispose of any shares of our common stock or any securities convertible into or exercisable or exchangeable for our common stock or file any registration statement under the Securities Act with respect to any of the foregoing, or enter into any swap or any other agreement or any transaction that transfers, in whole or in part, directly or indirectly, the economic consequence of ownership of our common stock.

The restrictions described in the preceding paragraph do not apply to:

transactions relating to shares of our common stock or other securities acquired in open market transactions after the completion of the offering described in this prospectus supplement, provided that no filing by any party under the Exchange Act shall be required or shall be voluntarily made in connection with subsequent sales of our common stock or other securities acquired in such open market transactions;

transfers of shares of our common stock or any security convertible into our common stock as a bona fide gift or gifts or distributions of shares of our common stock or any security convertible into our common stock to limited partners or stockholders of our officers and directors, provided that (i) each done or distribute shall be subject to the restrictions described above and (ii) the transferor shall not be required to, and shall not voluntarily, file a report under Section 16(a) of the Exchange Act reporting a reduction in beneficial ownership of shares of our common stock during the restricted period referred to above; and

at any time 15 days after the date of this prospectus supplement, dispositions of shares of our common stock pursuant to the vesting of restricted stock awarded prior to the date of this prospectus supplement and, if applicable, previously reported on Form 4, solely to cover payment of the tax withholding payments due upon vesting with proceeds up to the amount of such tax withholding payments made in connection with such vesting.

In connection with this offering, the underwriter may purchase and sell shares of our common stock in the open market. These transactions may include short sales and stabilizing transactions. Short sales involve syndicate sales of common stock in excess of the number of shares to be purchased by the underwriter in this offering, which creates a syndicate short position. Stabilizing transactions consist of bids for or purchases of shares in the open market while this offering is in progress.

Any of these activities may have the effect of preventing or retarding a decline in the market price of the common stock. They may also cause the price of the common stock to be higher than the price that would otherwise exist in the open market in the absence of these transactions. The underwriter may conduct

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these transactions on the NYSE or in the over-the-counter market, or otherwise. If the underwriter commences any of these transactions, they may discontinue them at any time.

The underwriter and its affiliates are full service financial institutions engaged in various activities, which may include sales and trading, commercial and investment banking, advisory, investment management, investment research, principal investment, hedging, market making, brokerage and other financial and non-financial activities and services. The underwriter and its affiliates have provided, and may in the future provide, a variety of these services to the issuer and to persons and entities with relationships with the issuer, for which they received or will receive customary fees and expenses. An affiliate of the underwriter is the syndication agent under our credit facility and has provided an approximately \$38.3 million commitment thereunder.

In the ordinary course of their various business activities, the underwriter and its affiliates, officers, directors and employees may purchase, sell or hold a broad array of investments and actively trade securities, derivatives, loans, commodities, currencies, credit default swaps and other financial instruments for their own account and for the accounts of their customers, and such investment and trading activities may involve or relate to assets, securities and/or instruments of the issuer (directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with the issuer. The underwriter and its affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments.

Notice to Prospective Investors in the European Economic Area

In relation to each member state of the European Economic Area that has implemented the Prospectus Directive (each, a relevant member state), with effect from and including the date on which the Prospectus Directive is implemented in that relevant member state (the relevant implementation date), an offer of shares described in this prospectus supplement may not be made to the public in that relevant member state prior to the publication of a prospectus in relation to the shares that has been approved by the competent authority in that relevant member state or, where appropriate, approved in another relevant member state and notified to the competent authority in that relevant member state, all in accordance with the Prospectus Directive, except that, with effect from and including the relevant implementation date, an offer of securities may be offered to the public in that relevant member state at any time:

to any legal entity that is authorized or regulated to operate in the financial markets or, if not so authorized or regulated, whose corporate purpose is solely to invest in securities;

to any legal entity that has two or more of (1) an average of at least 250 employees during the last financial year; (2) a total balance sheet of more than $\[\le \]$ 43,000,000 and (3) an annual net turnover of more than $\[\le \]$ 50,000,000, as shown in its last annual or consolidated accounts;

to fewer than 100 natural or legal persons (other than qualified investors as defined below) subject to obtaining the prior consent of the representatives for any such offer; or

in any other circumstances that do not require the publication of a prospectus pursuant to Article 3 of the Prospectus Directive.

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Each purchaser of shares described in this prospectus supplement located within a relevant member state will be deemed to have represented, acknowledged and agreed that it is a "qualified investor" within the meaning of Article 2(1)(e) of the Prospectus Directive.

For purposes of this provision, the expression an "offer to the public" in any relevant member state means the communication in any form and by any means of sufficient information on the terms of the offer and the securities to be offered so as to enable an investor to decide to purchase or subscribe the securities, as the expression may be varied in that member state by any measure implementing the Prospectus Directive in that member state, and the expression "Prospectus Directive" means Directive 2003/71/EC and includes any relevant implementing measure in each relevant member state.

The sellers of the shares have not authorized and do not authorize the making of any offer of shares through any financial intermediary on their behalf, other than offers made by the underwriter with a view to the final placement of the shares as contemplated in this prospectus supplement. Accordingly, no purchaser of the shares, other than the underwriter, is authorized to make any further offer of the shares on behalf of the sellers or the underwriter.

Notice to Prospective Investors in the United Kingdom

This prospectus supplement and the accompanying prospectus are only being distributed to, and are only directed at, persons in the United Kingdom that are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive that are also (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, or the Order, or (ii) high net worth entities, and other persons to whom it may lawfully be communicated, falling within Article 49(2)(a) to (d) of the Order (each such person being referred to as a "relevant person"). This prospectus supplement and its contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other persons in the United Kingdom. Any person in the United Kingdom that is not a relevant person should not act or rely on this document or any of its contents.

Notice to Prospective Investors in France

Neither this prospectus supplement nor any other offering material relating to the shares described in this prospectus supplement has been submitted to the clearance procedures of the Autorité des Marchés Financiers or of the competent authority of another member state of the European Economic Area and notified to the Autorité des Marchés Financiers. The shares have not been offered or sold and will not be offered or sold, directly or indirectly, to the public in France. Neither this prospectus supplement nor any other offering material relating to the shares has been or will be:

released, issued, distributed or caused to be released, issued or distributed to the public in France; or

used in connection with any offer for subscription or sale of the shares to the public in France.

Such offers, sales and distributions will be made in France only:

to qualified investors (investisseurs qualifiés) and/or to a restricted circle of investors (cercle restreint d'investisseurs), in each case investing for their own account, all as defined in, and in accordance with articles L.411-2, D.411-1, D.411-2, D.734-1, D.744-1, D.754-1 and D.764-1 of the French Code monétaire et financier:

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to investment services providers authorized to engage in portfolio management on behalf of third parties; or

in a transaction that, in accordance with article L.411-2-II-1-or-2-or 3 of the French Code monétaire et financier and article 211-2 of the General Regulations (Règlement Général) of the Autorité des Marchés Financiers, does not constitute a public offer (appel public à l'épargne).

The shares may be resold directly or indirectly, only in compliance with articles L.411-1, L.411-2, L.412-1 and L.621-8 through L.621-8-3 of the French Code monétaire et financier.

Notice to Prospective Investors in Switzerland

This prospectus supplement as well as any other material relating to the shares which are the subject of the offering contemplated by this prospectus supplement do not constitute an issue prospectus pursuant to Articles 652a and/or 1156 of the Swiss Code of Obligations. The shares will not be listed on the SIX Swiss Exchange and, therefore, the documents relating to the shares, including, but not limited to, this prospectus supplement, do not claim to comply with the disclosure standards of the listing rules of the SIX Swiss Exchange and corresponding prospectus schemes annexed to the listing rules of the SIX Swiss Exchange.

The shares are being offered in Switzerland by way of a private placement, i.e., to a small number of selected investors only, without any public offer and only to investors who do not purchase the shares with the intention to distribute them to the public. The investors will be individually approached by the issuer from time to time.

This prospectus supplement as well as any other material relating to the shares is personal and confidential and do not constitute an offer to any other person. This prospectus supplement may only be used by those investors to whom it has been handed out in connection with this offering described herein and may neither directly nor indirectly be distributed or made available to other persons without express consent of the issuer. It may not be used in connection with any other offer and shall in particular not be copied and/or distributed to the public in (or from) Switzerland.

Notice to Prospective Investors in the Dubai International Financial Centre

This prospectus supplement relates to an exempt offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority, or the DFSA. This prospectus supplement is intended for distribution only to persons of a type specified in the Offered Securities Rules of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with exempt offers. The DFSA has not approved this prospectus supplement nor taken steps to verify the information set forth herein and has no responsibility for the prospectus supplement. The shares may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the shares offered should conduct their own due diligence on the shares. If you do not understand the contents of this prospectus supplement you should consult an authorized financial adviser.

Notice to Prospective Investors in Hong Kong

The shares may not be offered or sold in Hong Kong by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong), or (ii) to "professional investors" within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder, or (iii) in

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other circumstances which do not result in the document being a "prospectus" within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong) and no advertisement, invitation or document relating to the shares may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the laws of Hong Kong) other than with respect to shares which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder.

Notice to Prospective Investors in Australia

No prospectus or other disclosure document (as defined in the Corporations Act 2001 (Cth) of Australia, or the Corporations Act, in relation to the shares of common stock has been or will be lodged with the Australian Securities & Investments Commission, or the ASIC. This document has not been lodged with ASIC and is only directed to certain categories of exempt persons. Accordingly, if you receive this document in Australia:

- (a) you confirm and warrant that you are either:
 - (i) a "sophisticated investor" under section 708(8)(a) or (b) of the Corporations Act;
 - (ii) a "sophisticated investor" under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant's certificate to us which complies with the requirements of section 708(8)(c)(i) or (ii) of the Corporations Act and related regulations before the offer has been made;
 - (iii) a person associated with the company under section 708(12) of the Corporations Act; or
 - (iv) a "professional investor" within the meaning of section 708(11)(a) or (b) of the Corporations Act, and to the extent that you are unable to confirm or warrant that you are an exempt sophisticated investor, associated person or professional investor under the Corporations Act any offer made to you under this document is void and incapable of acceptance; and
- (b) you warrant and agree that you will not offer any of the shares of common stock for resale in Australia within 12 months of that shares of common stock being issued unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

Notice to Prospective Investors in Chile

The shares are not registered in the Securities Registry (Registro de Valores) or subject to the control of the Chilean Securities and Exchange Commission (Superintendencia de Valores y Seguros de Chile). This prospectus supplement and other offering materials relating to the offer of the shares do not constitute a public offer of, or an invitation to subscribe for or purchase, the shares in the Republic of Chile, other than to individually identified purchasers pursuant to a private offering within the meaning of Article 4 of the Chilean Securities Market Act (Ley de Mercado de Valores) (an offer that is not "addressed to the public at large or to a certain sector or specific group of the public").

Legal matters

The validity of the shares of common stock offered hereby and certain other matters relating to Maryland law will be passed on by Venable LLP, Baltimore, Maryland. Latham & Watkins LLP, Los Angeles, California, is our counsel and O'Melveny & Myers LLP, San Francisco, California, is counsel to the underwriter.

Experts

The consolidated financial statements of Sunstone Hotel Investors, Inc. appearing in Sunstone Hotel Investors, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2013 (including schedules appearing therein), and the effectiveness of Sunstone Hotel Investors, Inc.'s internal control over financial reporting as of December 31, 2013 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

SUNSTONE HOTEL INVESTORS, INC.

Common Stock Preferred Stock Depositary Shares

Sunstone Hotel Investors, Inc., or the Company, from time to time may offer to sell common stock and preferred stock, either separately or represented by depositary shares, in one or more offerings. The preferred stock may be convertible into or exercisable or exchangeable for common or preferred stock or other securities of the Company or debt or equity securities of one or more other entities. The common stock of the Company is listed on the New York Stock Exchange, or NYSE, and trades under the ticker symbol "SHO." On January 9, 2014, the last reported sales price of our common stock on the NYSE was \$13.31 per share.

The Company may offer and sell any combination of these securities, in one or more offerings, to or through one or more underwriters, dealers and agents, or directly to purchasers, on a continuous or delayed basis. The securities also may be offered hereunder by securityholders, if so provided in a prospectus supplement hereto. We will provide specific information about any selling securityholders in one or more supplements to this prospectus.

This prospectus describes some of the general terms that may apply to certain of these securities. The specific terms of any securities to be offered will be described in a supplement to this prospectus.

Neither the Securities and Exchange Commission nor any other regulatory body has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

Prospectus dated January 10, 2014.

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ABOUT THIS PROSPECTUS

This prospectus is part of a "shelf" registration statement that we filed with the United States Securities and Exchange Commission, or the SEC. By using a shelf registration statement, we may sell any combination of the securities described in this prospectus from time to time and in one or more offerings. This prospectus only provides you with a general description of the securities that we may offer. Each time we or any selling securityholders sell securities, we will provide a supplement to this prospectus that contains specific information about the terms of the securities. The supplement may also add, update or change information contained in this prospectus. Before purchasing any securities, you should carefully read both this prospectus and any supplement, together with the additional information described under the headings "Available Information" and "Incorporation of Certain Information by Reference."

This prospectus does not contain all of the information in the registration statement. The full registration statement may be obtained from the SEC or us, as indicated below under the section entitled "Available Information." Forms of the articles supplementary and other documents establishing the terms of our securities are filed as exhibits to the registration statement or documents incorporated by reference therein. Statements in this prospectus about these documents are summaries and each statement is qualified in all respects by reference to the document to which it refers. You should refer to the actual documents for a more complete description of the relevant matters.

You should rely only on the information contained or incorporated by reference in this prospectus and in any applicable supplement to this prospectus. We have not authorized any other person to provide you with 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 these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus and the supplement to this prospectus is accurate as of the dates on their covers. Our business, financial condition, results of operations and prospects may have changed since those dates.

Unless this prospectus otherwise indicates or the context otherwise requires, when we refer to "we," "our" and "us" in this prospectus, we mean Sunstone Hotel Investors, Inc. and its consolidated subsidiaries. When we refer to "you" or "yours," we mean the holders of the applicable series of securities.

AVAILABLE INFORMATION

We are required to file annual, quarterly and current reports, proxy statements and other information with the SEC. 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-SEC-0330 for further information on the public reference room. Our filings with the SEC are also available to the public through the SEC's Internet site at http://www.sec.gov and through the New York Stock Exchange, 20 Broad Street, New York, New York 10005, on which our common stock is listed.

We have filed with the SEC a registration statement on Form S-3 relating to the securities covered by this prospectus. This prospectus is a part of the registration statement and does not contain all the information in the registration statement. Whenever a reference is made in this prospectus to a contract or other document of the Company, the reference is only a summary and you should refer to the exhibits that are a part of the registration statement for a copy of the contract or other document. You may review a copy of the registration statement at the SEC's public reference room in Washington, D.C., as well as through the SEC's Internet site.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC's rules allow us to incorporate by reference information into this prospectus. This means that we can disclose important information to you by referring you to another document. Any information referred to in this way is considered part of this prospectus from the date we file that document. Any reports filed by us with the SEC after the date of this prospectus and before the date that the offering of the securities by means of this prospectus is terminated will automatically update and, where applicable, supersede any information contained in this prospectus or incorporated by reference in this prospectus.

We incorporate by reference into this prospectus the following documents or information filed with the SEC (other than, in each case, documents or information deemed to have been furnished and not filed in accordance with SEC rules):

- (1)
 Annual Report on Form 10-K for the fiscal year ended December 31, 2012, filed with the SEC on February 25, 2013 (including information specifically incorporated by reference therein from our Proxy Statement for our 2013 Annual Meeting filed with the SEC on March 25, 2013);
- Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2013, June 30, 2013 and September 30, 2013, filed with the SEC on May 8, 2013, August 7, 2013 and November 12, 2013, respectively;
- Current Reports on Form 8-K filed with the SEC on January 25, 2013 (but only with respect to Item 2.01), February 1, 2013, February 19, 2013 (but only with respect to Item 5.02), April 29, 2013, May 6, 2013 (but only with respect to Items 2.01, 5.02, 5.07 and 9.01), July 2, 2013, November 1, 2013 and December 2, 2013 and our Current Reports on Form 8-K/A filed with the SEC on July 15, 2013 and July 17, 2013;
- (4)
 The description of the common stock included in our registration statement on Form 8-A, filed with the SEC on October 7, 2004, together with any amendment or report filed with the SEC for the purpose of updating such description;
- (5)
 The description of our Series D Cumulative Redeemable Preferred Stock, par value \$0.01 per share, contained in the Registration Statement on Form 8-A filed with the SEC on April 6, 2011; and
- (6)
 All documents filed by the Company under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, on or after the date of this prospectus and before the termination of the offering described in this prospectus and the applicable prospectus supplement.

We will provide without charge to each person, including any beneficial owner, to whom this prospectus is delivered, upon his or her written or oral request, a copy of any or all documents referred to above which have been or may be incorporated by reference into this prospectus excluding exhibits to those documents unless they are specifically incorporated by reference into those documents. You may request a copy of these filings at no cost, by writing or calling us at the following address or telephone number:

Sunstone Hotel Investors, Inc. Attn: Secretary 120 Vantis, Suite 350 Aliso Viejo, California 92656 Telephone: (949) 330-4000