

Sunstone Hotel Investors, Inc.
 Form 424B7
 July 17, 2014

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CALCULATION OF REGISTRATION FEE

Title of each Class of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Share(2)	Proposed Maximum Aggregate Offering Price(2)	Amount of Registration Fee(3)
Sunstone Hotel Investors, Inc. Common Stock, par value \$0.01 per share	4,034,970	\$14.77	\$59,596,507	\$7,677

(1) Includes an indeterminate number of shares of common stock which we may issue by way of a stock dividend, stock split or similar transaction.

(2) Estimated solely for purposes of calculating the registration fee pursuant to Rule 457(c) under the Securities Act and based upon a \$14.77 per share average of high and low prices of the registrant's common stock as reported on the New York Stock Exchange on July 11, 2014.

(3) 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.

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Filed pursuant to Rule 424(b)(7)
Reg. Statement No. 333-193311

Prospectus Supplement
(To Prospectus dated January 10, 2014)

4,034,970 Shares of Common Stock

SUNSTONE HOTEL INVESTORS, INC.

Common Stock

This prospectus supplement relates to the potential resale from time to time by the selling securityholders identified in this prospectus supplement of some or all of 4,034,970 shares of our common stock, or the securities. The registration of the securities covered by this prospectus supplement does not necessarily mean that any of the securities will be offered or sold by the selling securityholders.

We will receive no proceeds from any resale of the shares of common stock, but we have agreed to pay certain registration expenses.

The selling securityholders identified in this prospectus supplement (which term as used herein includes their pledgees, donees, transferees, or other successors in interest), may offer the securities from time to time as they may determine directly or through underwriters, broker-dealers or agents and in one or more public or private transactions and at fixed prices, prevailing market prices, at prices related to prevailing market prices or at negotiated prices. If these securities are sold through underwriters, broker-dealers or agents, the selling securityholders will be responsible for underwriting discounts or commissions or agents' commissions. See the sections entitled "Plan of Distribution" and "About this Prospectus Supplement" for more information.

Our common stock is listed on the New York Stock Exchange, or the NYSE, under the trading symbol "SHO." On July 16, 2014, the last sale price of our common stock as reported on the New York Stock Exchange was \$15.03 per share.

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

Investing in our common stock involves risks. You should carefully read and consider the risk factors included in our periodic reports and set forth under the heading "Risk Factors" on page S-5 of this prospectus supplement to obtain information about where to read certain factors you should consider before buying shares of our common stock.

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

The date of this Prospectus Supplement is July 17, 2014.

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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 is inconsistent 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 selling securityholders have 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 selling securityholders are 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.

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 supplement or the accompanying prospectus.

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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), May 5, 2014 (but only with respect to Items 5.02, 5.07 and "filed" portions of 9.01) and June 25, 2014, 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.

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SUNSTONE HOTELS INVESTORS, INC.

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; 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.

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 supplement. This prospectus supplement 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 supplement 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 at 100 F Street, N.E., Washington, D.C. 20549, as well as through the SEC's Internet site.

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ABOUT THIS OFFERING

The securities offered in this prospectus supplement relate to the potential resale of 4,034,970 shares of our common stock. The 4,034,970 shares of common stock were issued to BRE/Hawaii Holdings LLC, or BRE/Hawaii, in connection with our acquisition of the 544-room Wailea Beach Marriott Resort and Spa on July 17, 2014, pursuant to the Real Estate Purchase Agreement dated as of June 19, 2014 between BRE/Wailea LLC, Sunstone Hotel Acquisitions, LLC and us, or the Real Estate Purchase Agreement. In connection with this acquisition, we agreed to file this prospectus supplement to register the shares of our common stock issued to BRE/Hawaii.

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RISK FACTORS

Investment in any securities offered pursuant to this prospectus supplement involves risks. You should carefully consider 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.

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USE OF PROCEEDS

This prospectus supplement relates to the securities that may be offered and sold from time to time by the selling securityholders who will receive all of the proceeds from any sale of the securities. We will not receive any of the proceeds from any sales of the securities by the selling securityholders. However, we will pay the registration expenses.

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When we refer to the "selling securityholders" in this prospectus supplement we mean the person listed in the table below and its pledgees, donees, transferees or other successors in interest. The selling securityholders may from time to time offer and sell any or all of the securities set forth below pursuant to this prospectus supplement. The selling securityholder listed in the table below initially acquired shares of our common stock in connection with our acquisition of Wailea Beach Marriott Resort and Spa on July 17, 2014 pursuant to the Real Estate Purchase Agreement. See "About this Offering" above. The selling securityholders may sell any or all of the shares of our common stock offered under this prospectus supplement.

Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to the securities. The percentage of shares beneficially owned prior to the offering is based on 205,431,629 shares of common stock outstanding as of July 17, 2014, which includes the 4,034,970 shares issued to BRE/Hawaii that are being registered pursuant to this prospectus supplement.

We do not know when or in what amounts the selling securityholder may offer securities for sale, if at all. It is possible that the selling securityholder will not sell any or all of the shares offered under this prospectus supplement. Because the selling securityholder may offer all or some of the securities pursuant to this prospectus supplement and because we have been advised that there are currently no agreements, arrangements or understanding with respect to the sale of any such securities, we cannot estimate the number of securities that will be held by the selling securityholder after the completion of this offering. Solely for purposes of the table below, we have assumed that the selling securityholder will sell all of the securities held by it and therefore would hold no securities following the offering and hold zero percentage of the securities following the offering.

	Shares of Common Stock Beneficially Owned Prior to the Offering		Maximum Shares of Common Stock Being Offered Hereby	Shares of Common Stock Owned After the Offering(1)	
	Shares	Percent		Shares	Percent
BRE/Hawaii Holdings LLC(2)	4,034,970	1.96%	4,034,970		

(1) For purposes of this table only, we have assumed that the selling securityholder will sell all of its shares offered pursuant to this prospectus supplement.

(2) Blackstone Real Estate Partners IV L.P., Blackstone Real Estate Partners IV.TE.2 L.P., Blackstone Real Estate Partners (DC) IV.TE.1 L.P., Blackstone Real Estate Partners (DC) IV.TE.2 L.P., Blackstone Real Estate Partners (DC) IV.TE.3-A L.P., Blackstone Real Estate Partners IV.F L.P. and Blackstone Real Estate Holdings IV L.P. are the members of BRE/Hawaii Holdings LLC. Blackstone Real Estate Associates IV L.P. is the general partner of Blackstone Real Estate Partners IV L.P., Blackstone Real Estate Partners IV.TE.2 L.P., Blackstone Real Estate Partners (DC) IV.TE.1 L.P., Blackstone Real Estate Partners (DC) IV.TE.2 L.P., Blackstone Real Estate Partners (DC) IV.TE.3-A L.P. and Blackstone Real Estate Partners IV.F L.P., and BREP IV Side-by-Side GP L.L.C. is the general partner of Blackstone Real Estate Holdings IV L.P. BREA IV L.L.C. is the general partner of Blackstone Real Estate Associates IV L.P. Blackstone Holdings II L.P. is the managing member of BREP IV Side-by-Side GP L.L.C. and BREA IV L.L.C. Blackstone Holdings I/II GP Inc. is the general partner of Blackstone Holdings II L.P. The Blackstone Group L.P. is the sole shareholder of Blackstone Holdings I/II GP Inc. The Blackstone Group L.P. is controlled by its general partner, Blackstone Group Management L.L.C., which is in turn wholly owned by Blackstone's senior managing directors and controlled by its founder, Stephen A. Schwarzman. Each of such entities and Mr. Schwarzman may be deemed to beneficially own the securities beneficially owned by BRE/Hawaii Holdings LLC, but each disclaims beneficial ownership of such securities. The address of Mr. Schwarzman and each entity listed in this footnote is c/o The Blackstone Group, L.P., 345 Park Ave. New York, NY 10154.

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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-5 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;

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;

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

financial and other covenants in our debt and preferred stock;

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;

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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.

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PLAN OF DISTRIBUTION

The selling securityholders, or their pledgees, donees, transferees, or any of their successors in interest selling the securities received from a named selling securityholder as a gift, partnership distribution or other non-sale-related transfer after the date of this prospectus supplement (all of whom may be selling securityholders), may sell the securities from time to time on any stock exchange or automated interdealer quotation system on which the securities are traded, in the over-the-counter market, in privately negotiated transactions or otherwise, at fixed prices that may be changed, at market prices prevailing at the time of sale, at prices related to prevailing market prices or at prices otherwise negotiated. The selling securityholders may sell the securities by one or more of the following methods, without limitation:

block trades in which the broker or dealer so engaged will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction, or in crosses in which the same broker acts as agent on both sides;

purchases by a broker or dealer as principal and resale by the broker or dealer for its own account pursuant to this prospectus supplement;

an exchange distribution in accordance with the rules of any stock exchange on which the securities are listed;

ordinary brokerage transactions and transactions in which the broker solicits purchases;

privately negotiated transactions;

short sales;

through the writing of options on the securities, swaps or other derivatives, whether or not the options or such instruments are listed on an exchange;

through the distribution of the securities by any selling securityholder to its partners, members, equityholders or creditors;

one or more underwritten offerings on a firm commitment or best efforts basis or other purchases by underwriters, brokers, dealers, and agents who may receive compensation in the form of underwriting discounts, concessions or commissions from the selling securityholders and/or the purchasers of the securities for whom they may act as agent;

pledges of the securities as security for any loan or obligation, including pledges to brokers or dealers who may from time to time effect distributions of the securities;

sales in other ways not involving market makers or established trading markets, including direct sales to institutions or individual purchasers; and

any combination of the foregoing methods or by any other legally available means.

The selling securityholders may also transfer the securities by gift. We do not know of any arrangements by the selling securityholders for the sale of any of the securities.

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The selling securityholders may engage underwriters, brokers or dealers, and any underwriters, brokers or dealers may arrange for other underwriters, brokers or dealers to participate in effecting sales of the securities. These brokers, dealers or underwriters may act as principals, or as an agent of a selling securityholder. Broker-dealers may agree with a selling securityholder to sell a specified number of the securities at a stipulated price per security. If the broker-dealer is unable to sell securities acting as agent for a selling securityholder, it may purchase as principal any unsold securities at the stipulated price. Broker-dealers who acquire securities as principals may thereafter resell the securities from time to time in transactions in any stock exchange or automated interdealer quotation system on which the

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securities are then listed or in over-the-counter market, at prices and on terms then prevailing at the time of sale, at prices related to the then-current market price or in negotiated transactions. Broker-dealers may use block transactions and sales to and through broker-dealers, including transactions of the nature described above. The selling securityholders may also sell the securities in accordance with Rule 144 under the Securities Act, or in accordance with Section 4(1) of the Securities Act, rather than pursuant to this prospectus supplement, regardless of whether the securities are covered by this prospectus supplement.

From time to time, one or more of the selling securityholders may pledge, hypothecate or grant a security interest in some or all of the securities owned by them. The pledgees, secured parties or persons to whom the securities have been so pledged or hypothecated (or otherwise subject to a security interest) will, upon foreclosure in the event of default, be deemed to be selling securityholders. The plan of distribution for that selling securityholders' securities will otherwise remain unchanged. The selling securityholders (or their pledgees, donees, transferees or other successors in interest) also may transfer and donate the securities in other circumstances in which case the transferees, donees, pledgees or other successors in interest thereof will be the selling securityholders for purposes of this prospectus supplement.

In addition, selling securityholders may, from time to time, sell the securities short, and, in those instances, this prospectus supplement may be delivered in connection with the short sales and the securities offered under this prospectus supplement may be used to cover short sales.

To the extent required under the Securities Act, the aggregate amount of selling securityholders' securities being offered and the terms of the offering, the names of any agents, brokers, dealers or underwriters and any applicable commission with respect to a particular offer will be set forth in an additional prospectus supplement. Any underwriters, dealers, brokers or agents participating in the distribution of the securities may receive compensation in the form of underwriting discounts, concessions, commissions or fees from a selling securityholder and/or purchasers of selling securityholders' securities, for whom they may act (which compensation as to a particular broker-dealer might be in excess of customary commissions). The maximum commission or discount to be received by any member of the Financial Industry Regulatory Authority, Inc. (FINRA) or independent broker-dealer will not be greater than 8% of the initial gross proceeds from the sale of any securities being sold.

The selling securityholders and any underwriters, brokers, dealers or agents that participate in the distribution of the securities may be deemed to be "underwriters" within the meaning of the Securities Act, and any discounts, concessions, commissions or fees received by them and any profit on the resale of the securities sold by them may be deemed to be underwriting discounts and commissions.

The selling securityholders may enter into hedging transactions with broker-dealers and the broker-dealers may engage in short sales of the securities in the course of hedging the positions they assume with that selling securityholder, including, without limitation, in connection with distributions of the securities by those broker-dealers. The selling securityholders may enter into options or other transactions with broker-dealers that involve the delivery of the securities offered hereby to the broker-dealers, who may then resell or otherwise transfer those securities. The selling securityholders may also loan or pledge the securities offered hereby to a broker-dealer and the broker-dealer may sell the securities offered hereby so loaned or upon a default may sell or otherwise transfer the pledged securities offered hereby.

The selling securityholders and other persons participating in the sale or distribution of the securities will be subject to applicable provisions of the Exchange Act, and the rules and regulations thereunder, including Regulation M. This regulation may limit the timing of purchases and sales of any of the securities by the selling securityholders and any other person. The anti-manipulation rules under the Exchange Act may apply to sales of securities in the market and to the activities of the selling

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securityholders and their affiliates. Furthermore, Regulation M may restrict the ability of any person engaged in the distribution of the securities to engage in market-making activities with respect to the particular securities being distributed for a period of up to five business days before the distribution. These restrictions may affect the marketability of the securities and the ability of any person or entity to engage in market-making activities with respect to the securities.

We have agreed to indemnify in certain circumstances the selling securityholders and any brokers, dealers and agents who may be deemed to be underwriters, if any, of the securities covered by the registration statement, against certain liabilities, including liabilities under the Securities Act. The selling securityholders have agreed to indemnify us in certain circumstances against certain liabilities, including liabilities under the Securities Act. In addition, the selling stockholders may agree to indemnify any underwriter, broker-dealer or agent against certain liabilities related to the selling of the securities, including liabilities arising under the Securities Act.

The securities offered hereby were originally issued to BRE/Hawaii pursuant to an exemption from the registration requirements of the Securities Act. We agreed to register the securities under the Securities Act, and to keep the registration statement of which this prospectus supplement is a part effective until the earliest time as one of the following shall have occurred: (i) the selling securityholders no longer own any securities or (ii) all such securities may be freely sold in a transaction pursuant to Rule 144 under the Securities Act or any successor to such rule or any other rule or regulation of the SEC that may at any time permit the selling securityholders to sell their securities to the public without registration and without limitations. We have agreed to pay all expenses in connection with this offering, but not including underwriting discounts, concessions, commissions or fees of the selling securityholders or any fees and expenses of counsel or other advisors to the selling securityholders.

We will not receive any proceeds from sales of any securities by the selling securityholders.

We cannot assure you that the selling securityholders will sell all or any portion of the securities offered hereby.

To the extent permitted by applicable law, this plan of distribution may be modified in an additional prospectus supplement or otherwise. All of the foregoing may affect the marketability of the securities offered hereby. This offering will terminate on the date that all securities offered by this prospectus supplement have been sold by the selling securityholders.

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LEGAL MATTERS

The validity of the shares of common stock offered hereby and certain other matters relating to Maryland law have been passed on by Venable LLP, Baltimore, Maryland. Latham & Watkins LLP, Los Angeles, California, is our counsel and has passed upon certain legal matters described under the caption "U. S. Federal Income Tax Considerations" in the accompanying prospectus.

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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.

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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.

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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);
- (2) 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;
- (3) 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

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RISK FACTORS

Investment in any securities offered pursuant to this prospectus involves risks. You should carefully consider the risk factors incorporated by reference to our most recent Annual Report on Form 10-K, our Quarterly Reports for the three months ended March 31, 2013, June 30, 2013 and September 30, 2013, any subsequent Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q or Current Reports on Form 8-K we file after the date of this prospectus, and all other information contained or incorporated by reference into this prospectus, as updated by our subsequent filings under the Exchange Act, and the risk factors and other information contained in the applicable prospectus supplement before acquiring any of such securities. The occurrence of any of these risks might cause you to lose all or part of your investment in the offered securities.

USE OF PROCEEDS

We intend to use the net proceeds from the sales of the securities as set forth in the applicable prospectus supplement. We will not receive any proceeds from sales of securities by selling securityholders, if any, pursuant to this prospectus.

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RATIO OF COMBINED FIXED CHARGES AND PREFERRED DIVIDENDS TO EARNINGS

The following table shows the ratio of combined fixed charges and preferred dividends to earnings for us and our consolidated subsidiaries for the periods indicated. You should read these ratios of combined fixed charges and preferred dividends to earnings in connection with our consolidated financial statements, including the notes to those statements, incorporated by reference into this prospectus.