

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

**FORM S-8
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

GLOBAL CLEAN ENERGY HOLDINGS, INC.

(Exact name of registrant as specified in its charter)

Utah
(State or other jurisdiction of
incorporation or organization)

87-0407858
(I.R.S. Employer
Identification No.)

**6033 W. Century Blvd, Suite 895,
Los Angeles, California 90045**
(Address of principal executive offices)

2002 Stock Incentive Plan
(Full title of the plan)

Richard Palmer
Chief Executive Officer
Global Clean Energy Holdings, Inc.
6033 W. Century Blvd, Suite 895,
Los Angeles, California 90045
(Name and address of agent for service)
(310) 641-4234
(Telephone number, including area code, of agent for service)

Copy to:
Istvan Benko
Troy Gould PC
1801 Century Park East, Suite 1600
Los Angeles, California 90067
(310) 789-1226

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

☐ Large accelerated filer ☐ Accelerated filer ☐ Non-accelerated filer ☒ Smaller reporting company
(Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of securities to be registered	Amount to be registered ⁽¹⁾	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee ⁽⁴⁾
Common Stock, no par value per share ⁽²⁾	12,350,000 shares ⁽²⁾	\$ 0.03 ⁽²⁾	\$ 370,500 ⁽²⁾	\$ 26.42
Common Stock, no par value per share ⁽²⁾	350,000 shares ⁽²⁾	\$ 0.07 ⁽²⁾	\$ 24,500 ⁽²⁾	\$ 1.75
Common Stock, no par value per share ⁽²⁾	500,000 shares ⁽²⁾	\$ 0.25 ⁽²⁾	\$ 125,000 ⁽²⁾	\$ 8.91
Common Stock, no par value per share ⁽³⁾	4,800,000 shares ⁽³⁾	\$ 0.01 ⁽³⁾	\$ 48,000 ⁽³⁾	\$ 3.42
TOTAL	18,000,000 shares	—	\$ 568,000	\$ 40.50

- (1) Pursuant to Rule 416(a) of the Securities Act of 1933, this registration statement covers, in addition to the shares of common stock specified above, an indeterminate number of additional shares of common stock that may become issuable under the 2002 Stock Incentive Plan as a result of the anti-dilution adjustment provisions contained therein.
- (2) The registration fee for shares of common stock issuable upon exercise of outstanding options under the 2002 Stock Incentive Plan was calculated pursuant to Rule 457(h) of the Securities Act of 1933 using the prices at which such outstanding options may be exercised.
- (3) Represents shares reserved for issuance pursuant to future awards under the 2002 Stock Incentive Plan. The proposed maximum offering price per share and maximum aggregate offering price for these shares were estimated pursuant to Rules 457(c) and 457(h) of the Securities Act of 1933 on the basis of the \$0.01 average of the high and low trading prices of the registrant's common stock as reported on the OTC Bulletin Board on April 8, 2010.
- (4) Amount of registration fee was calculated pursuant to Section 6(b) of the Securities Act of 1933, which provides that the fee shall be \$71.30 per \$1,000,000 of the proposed maximum aggregate offering price of the securities proposed to be offered.

EXPLANATORY NOTE

A Registration Statement on Form S-8, File No. 333-92446, filed on July 16, 2002, registered 2,000,000 shares of common stock, no par value per share, of Global Clean Energy Holdings, Inc. (f/k/a Medical Discoveries, Inc., the “Company”), all of which were issuable upon the exercise of options issued under the Company’s 2002 Stock Incentive Plan (the “Plan”). A registration fee of \$10.76 was paid in connection with the foregoing Form S-8 filing.

Subsequently, the Company amended the Plan to increase the number of shares issuable upon the exercise of options and other awards granted thereunder to 20,000,000 shares. The Company is filing this registration statement to register such additional shares of common stock issuable under the Plan.

INCORPORATION BY REFERENCE OF PRIOR REGISTRATION STATEMENT

The contents of the Company’s Registration Statement on Form S-8, File No. 333-92446, filed on July 16, 2002, are incorporated into this Registration Statement by this reference, pursuant to General Instruction E to Form S-8.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference

The following documents previously filed by Global Clean Energy Holdings Inc. (“we,” “us,” “our,” or the “Company”) with the Securities and Exchange Commission (the “SEC”) under the Securities Exchange Act of 1934 are incorporated by reference in this registration statement:

- Our Annual Report on Form 10-K for the fiscal year ended December 31, 2009 (“Form 10-K”) filed on April 1, 2010 (as amended by Amendment No. 1 to the Form 10-K filed on April 1, 2010);
- Our Current Report on Form 8-K filed on March 22, 2010;
- Our Current Report on Form 8-K filed on April 7, 2010; and
- The description of our common stock as described in our Registration Statement on Form 10 filed on June 28, 1984, and any amendment or report filed for the purpose of updating any such description.

In addition, each document that the Company files with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934 after the date of this registration statement and prior to the filing of a post-effective amendment to this registration statement which indicates that all shares of common stock registered hereunder have been sold or that deregisters all such shares of common stock then remaining unsold, shall be deemed to be incorporated by reference into this registration statement and to be part thereof from the date of the filing of such document.

Item 8. Exhibits

The following exhibits are filed with this registration statement or are incorporated by reference as a part of this registration statement:

<u>Exhibit No.</u>	<u>Exhibit Description</u>
4.1	2002 Stock Incentive Plan of Global Energy Clean Holdings, Inc. (previously filed by the Company as Exhibit 4.3 to Registration Statement on Form S-8 (Registration No. 333-92446) on July 16, 2002, and incorporated herein by reference).
5.1	Opinion of TroyGould PC (included with this registration statement).
23.1	Consent of Hansen, Barnett & Maxwell. P.C. (included with this registration statement).
23.2	Consent of TroyGould PC (included in the opinion filed as Exhibit 5.1).
24.1	Power of Attorney (included on the signature page of this registration statement).

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Los Angeles, State of California on April 8, 2010.

GLOBAL CLEAN ENERGY HOLDINGS, INC.

Date: April 8, 2010

By: /s/ BRUCE NELSON
Bruce Nelson
Chief Financial Officer

POWER OF ATTORNEY

Each person whose signature appears below constitutes and appoints Richard Palmer as his true and lawful attorney-in-fact and agent, with full power of substitution, for him in any and all capacities, to sign this registration statement on Form S-8 and any amendments hereto (including post-effective amendments), and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as he might do or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute or substitutes, may do or cause to be done by virtue of this power of attorney.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ RICHARD PALMER Richard Palmer	Chief Executive Officer, President and Director	April 9, 2010
/s/ DAVID R. WALKER David R. Walker	Chairman – Board of Directors	April 9, 2010
/s/ MARK BERNSTEIN Mark Bernstein	Director	April 9, 2010
 Martin Wenzel	Director	April __, 2010

EXHIBIT INDEX

The following exhibits included herewith or incorporated herein by reference are made part of this Registration Statement:

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TroyGould PC
1801 Century Park East
16th Floor
Los Angeles, California 90067
Telephone: (310) 553-4441
Facsimile: (310) 201-4746

April 8, 2010

Global Clean Energy Holdings, Inc.
6033 W. Century Blvd., Suite 895
Los Angeles, California 90045

Re: Registration Statement on Form S-8

Ladies and Gentlemen:

We have acted as counsel to Global Clean Energy Holdings, Inc, a Utah corporation (the "Company"), in connection with a Registration Statement on Form S-8 (the "Registration Statement") that the Company intends to file with the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Securities Act"), on or about April 9, 2010 for the purpose of registering the offer and sale of up to 18,000,000 shares (the "Shares") of the Company's common stock, no par value per share, issuable under the Company's 2002 Stock Incentive Plan (as amended, the "Plan").

As such counsel and for purposes of our opinion set forth herein, we have examined and relied upon the following:

- i. the Registration Statement;
 - ii. the Company's Amended and Restated Articles of Incorporation and Amended Bylaws, each as amended to date;
 - iii. the Plan;
 - iv. the form of stock option agreement under the Plan;
 - v. minutes or resolutions of the Company's Board of Directors and stockholders (or other documents) pertaining to the adoption of the Plan (and any amendments thereto), issuance of the Shares, the Registration Statement and related matters; and
 - vi. originals or copies of such other documents, resolutions, certificates and instruments of the Company we have reviewed, and such certificates of public officials as we have deemed necessary or appropriate as a basis for the opinion set forth below.
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In addition, we have made such investigations of law as we have deemed necessary or appropriate as a basis for the opinion set forth below. In our examination of the foregoing, we have assumed, without independent investigation: (i) the genuineness of all signatures and the authority of all persons or entities signing all documents examined by us; (ii) the due authorization, execution and delivery of all such documents by all of the parties thereto; (iii) the authenticity and completeness of all documents submitted to us as originals and the conformity to authentic and complete original documents of all documents submitted to us as certified, conformed or photostatic copies; (iv) the authenticity and completeness of the originals of such latter documents; (v) the legal capacity of all individuals executing documents; and (vi) that the representations and other statements as to factual matters contained in the documents we have reviewed are accurate and complete. As to questions of fact material to this opinion letter, we have relied, without independent investigation or verification, upon representations and certificates or comparable documents of officers and representatives of the Company.

The law covered by our opinion is limited to Title 16, Chapter 10a of the Utah Revised Business Corporation Act and the reported judicial decisions interpreting such statute, as currently in effect. We neither express nor imply any opinion with respect to any other laws or the laws of any other jurisdiction, and we assume no responsibility with respect to the application or effect of any such laws.

This opinion letter is limited to the opinion expressly stated below, does not include any implied opinions and is rendered as of the date hereof. We do not undertake to advise you of matters that may come to our attention subsequent to the date hereof and that may affect our opinion, including, without limitation, future changes in applicable law.

Based upon and subject to all of the foregoing, we are of the opinion that all Shares that are issued, delivered and paid for in accordance with the terms and conditions of the Registration Statement, the Plan, and stock option agreements duly authorized, executed and delivered under the Plan, will be validly issued, fully paid and non-assessable.

We consent to the filing of this opinion letter as an exhibit to the Registration Statement. However, by giving you this opinion letter and consent, we do not thereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission promulgated thereunder.

Very truly yours,

/s/ TROYGOULD PC
TROYGOULD PC

HANSEN, BARNETT & MAXWELL, P.C.

A Professional Corporation
CERTIFIED PUBLIC ACCOUNTANTS
5 Triad Center, Suite 750
Salt Lake City, UT 84180-1128
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www.hbmcpas.com

**Registered with the Public Company
Accounting Oversight Board**



CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors
Global Clean Energy Holdings, Inc.

We consent to the incorporation by reference in this Registration Statement on Form S-8 of our report dated March 31, 2010, relating to the consolidated financial statements of Global Clean Energy Holdings, Inc. (which report expresses an unqualified opinion and includes an explanatory paragraph relating to the adoption of new accounting guidance for noncontrolling interests effective January 1, 2009), which appears in the Annual Report on Form 10-K of Global Clean Energy Holdings, Inc. for the year ended December 31, 2009.

HANSEN, BARNETT & MAXWELL, P.C.

Salt Lake City, Utah
April 9, 2010
