

SUBSCRIPTION AGREEMENT

THIS SUBSCRIPTION AGREEMENT is made this 24th day of May, 2023.

B E T W E E N:

ATARAXIA CAPITAL, a corporation incorporated and existing under the laws of Mauritius
(the “**Subscriber**”)

- and -

NXT ENERGY SOLUTIONS INC., a corporation incorporated and existing under the laws
of the Province of Alberta
(the “**Issuer**” or “**NXT**”)

WHEREAS the Subscriber wishes to subscribe for the Convertible Debenture (as defined herein) to be issued by the Issuer; and

WHEREAS the Issuer wishes to accept such subscription on the terms and conditions set forth herein;

NOW THEREFORE in consideration of the covenants and agreements herein set forth, the parties agree as follows:

ARTICLE 1
INTERPRETATION

1.1 **Definitions**

1.1.1 In this Agreement, unless there is something in the subject matter or context inconsistent therewith:

“**Applicable Laws**” has the meaning ascribed to that term in the Convertible Debenture;

“**Closing**” means the time of completion of the Subscription pursuant to this Agreement;

“**Closing Date**” means, in respect of the First Instalment, May 30th, 2023, unless the Subscriber otherwise consents in writing to an earlier or later date, and in respect of the Second Instalment means the fifth (5th) Business Day following the delivery by the Issuer of the officer’s certificate contemplated by s.2.2.4.

“**Closing Time**” means 9:00 a.m. (Calgary time) on the Closing Date, unless the Subscriber otherwise consents in writing to an earlier or later time;

“**Common Shares**” means the common shares in the capital of the Issuer;

“**Convertible Debenture**” means the secured convertible debenture in the principal amount of USD\$2,300,000.00, in the form attached hereto as Exhibit “A”;

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"Debenture Documents" means collectively this Agreement, the Investor Rights Agreement, the Convertible Debenture, and the General Security Agreement and any other agreements, instruments and documents entered into or delivered from time to time in connection with the transactions contemplated by this Agreement and the Convertible Debenture, in each case as amended, restated or replaced from time to time;

"Convertible Debenture Subscription Price" has the meaning ascribed to that term in Section 2.1.1;

"General Security Agreement" means the general security agreement granted by the Issuer, in favour of the Subscriber, granting a security interest in and to all of NXT's current and after-acquired personal property, to be granted on a second lien basis, as security for the obligations of the Issuer under the Convertible Debenture;

"Investor Rights Agreement" means the investor rights agreement between NXT and the Subscriber granting certain board nomination and observer rights and lender approval rights to the Subscriber;

"License Agreement" means the license agreement granted by NXT to the Subscriber providing the Subscriber with a 10-year exclusive license to use, distribute, sub-license, market and sell NXT's products and technology in the continent of Africa;

"Preferred Shares" means the voting convertible preferred shares, to be created by the board of the directors of the Issuer;

"Subscription" means the subscription for the Convertible Debenture by the Subscriber pursuant to this Agreement;

"TSX" means the Toronto Stock Exchange; and

"Use of Proceeds" means the schedule setting forth the use of proceeds by the Issuer for the Convertible Debenture Subscription Price and Debenture Subscription Price.

1.1.2 Additional capitalized terms used in this Agreement without definitions have the meanings ascribed thereto in the form of Convertible Debenture attached hereto as Exhibit A.

1.2 Interpretation

1.2.1 Unless otherwise specified, all dollar references are references to dollars of the lawful currency of the United States.

1.2.2 In this Agreement, words importing the singular number include the plural and vice-versa and words importing gender include the masculine, feminine and neuter genders.

1.2.3 The division of this Agreement into sections and paragraphs and the insertion of headings are for convenience of reference only and shall not affect the construction or interpretation hereof.

1.2.4 The terms "this Agreement", "hereof", "herein", "hereunder" and similar expressions refer, unless otherwise stated, to this Subscription Agreement taken as a whole and not to any particular Section or paragraph hereof and include any agreement or instrument in writing which amends or is supplementary to this Agreement.

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- 1.2.5 Unless otherwise specified, all references to "Section" are references to an article, section, subsection or paragraph of this Agreement.
- 1.2.6 References herein to a statute include, unless otherwise stated, regulations or rules passed or in force pursuant thereto and any amendments to such statute or to such regulations or rules from time to time, and any legislation, regulations or rules substantially replacing the same or substantially replacing any specific provision to which such reference is made.

1.3 **Severability**

If one or more of the provisions of this Agreement or any part of any of them is, or is adjudged to be, invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions hereof shall not in any way be affected or impaired thereby, and such invalid, illegal or unenforceable provision or part shall be deemed to be severable.

ARTICLE 2 SUBSCRIPTION AND FEES

2.1 **Subscription**

Subject to the terms and conditions of this Agreement, the Subscriber hereby subscribes for and agrees to purchase at the Closing the Convertible Debenture for an aggregate subscription price of USD\$2,300,000.00 (the "**Convertible Debenture Subscription Price**").

2.2 **Closing**

- 2.2.1 The Convertible Debenture Subscription Price shall be advanced to the Issuer in two instalments.
- 2.2.2 The first instalment of Convertible Debenture Subscription Price in the amount of \$1,200,000 (the "**First Instalment**") shall be subject to the satisfaction of the conditions precedent set out in Article 4.
- 2.2.3 At the Closing Time for the First Instalment:
- 2.2.3.1 the Issuer shall deliver to the Subscriber a fully executed version of the General Security Agreement;
 - 2.2.3.2 the Issuer and the Subscriber shall deliver to the other a fully executed version of the License Agreement;
 - 2.2.3.3 the Issuer and the Subscriber shall deliver to the other a fully executed version of the Investor Rights Agreement;
 - 2.2.3.4 the Subscriber shall remit the funds representing the First Instalment of the Convertible Debenture Subscription Price to the Issuer by delivery to the Issuer of a wire transfer in such amount; and
 - 2.2.3.5 the Issuer shall execute and deliver the Convertible Debenture to the Subscriber
- 2.2.4 The second instalment of the Convertible Debenture Subscription Price in the amount of \$1,100,000 (the "**Second Instalment**") shall be subject to the Issuer's delivery to the

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Subscriber of an officer's certificate confirming that the Issuer has expended the First Instalment proceeds in material compliance with Schedule B hereto.

2.2.5 At the Closing Time for Second Instalment:

2.2.5.1 the Subscriber shall remit the funds representing the Second Instalment of the Convertible Debenture Subscription Price to the Issuer by delivery to the Issuer of a wire transfer in such amount; and

2.2.5.2 the Issuer shall execute and deliver the Convertible Debenture in respect of the Second Instalment to the Subscriber.

2.3 Use of Proceeds

The net proceeds to the Issuer from the sale of the Convertible Debenture, after deduction of applicable fees and expenses, shall be used in accordance with the Use of Proceeds set out in Schedule B hereto.

ARTICLE 3 REPRESENTATIONS AND WARRANTIES AND COVENANTS

3.1 Representations and Warranties of the Issuer

The Issuer represents and warrants to the Subscriber that:

3.1.1 The Issuer has the corporate power and authority to enter into this Subscription Agreement and to perform all of its obligations hereunder. The execution and delivery of this Subscription Agreement and the consummation by the Issuer of the transactions hereunder has been duly authorized by all necessary corporate action on the part of the Issuer, and the Common Shares and/or Preferred Shares, if and when issued, will be issued as fully paid and non-assessable shares of the Issuer.

3.1.2 Neither the execution, delivery and performance of this Subscription Agreement, nor the completion of the transactions contemplated hereby, will constitute or result in a violation or breach of or a default under (or an event which, with notice or lapse of time or both, would constitute a violation or breach of or a default under), or require the further authorization, approval or consent of any person under, any constating documents or governing policies of the Issuer or any laws applicable to the Issuer.

3.1.3 The Issuer's public filings, as found on www.sedar.com, are current and up to date, and the information and statements contained therein was true, correct and complete in all material respects at the date of such information or statement and did not contain any misrepresentation as of the date of such information or statement that has not since been corrected or rectified.

3.1.4 There are no undisclosed material events or information in respect to the business of the Issuer or the Issuer itself that has not been publicly disclosed or disclosed to the Subscriber pursuant to a confidentiality agreement.

3.1.5 To the knowledge of the Issuer, there are no current or threatened claims or lawsuits or regulatory actions , nor are there any circumstances that may lead to a material claim or regulatory action.

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- 3.1.6 All due diligence material that has been supplied to the Subscriber have been true and complete, and the Issuer has not failed to provide any information or materials that might reasonably impact on the Subscriber's investment decision.
- 3.1.7 The Issuer's outstanding secured loans consist solely of a Government of Canada HASCAP loan, and except for the foregoing no other loans will rank in priority of security to the Convertible Debenture and Debenture.
- 3.1.8 The authorized share capital of the Issuer consists of an unlimited number of common shares and an unlimited number of preferred shares, of which 77,653,870 common shares and no preferred shares are issued and outstanding.
- 3.1.9 The only outstanding rights to acquire the Issuer's common shares consist of options granted pursuant to the Issuer's incentive stock option plan to purchase 2,696,370 common shares, restricted stock units granted pursuant to the Issuer's restricted stock units plan entitling holders to be awarded in the aggregate 296,668 common shares and deferred stock units granted pursuant to the Issuer's deferred stock units plan entitling holder to be awarded in the aggregate 37,354 common shares.
- 3.1.10 The Issuer is not subject to an agreement with any third party granting rights to nominate directors to the Issuer's board or rights to participate in future financings of the Issuer's securities.

The representations and warranties made in this Agreement shall survive the execution and delivery of this Agreement for the period from the date of this Agreement until the earlier of: (i) the date the Convertible Debenture is paid in full; and (ii) the date the Convertible Debenture is converted into Common Shares or Preferred Shares.

3.2 Covenants of the Issuer

The Issuer covenants and agrees that until the Closing Time, or the termination of this Agreement, whichever first occurs, it shall:

- 3.2.1 not take any action that is inconsistent with this Agreement, which might directly or indirectly interfere or affect the consummation of the transactions contemplated herein, or that would render, or that may reasonably be expected to render, any representation or warranty made by the Issuer in this Agreement or any of the other Debenture Documents untrue at any time prior to the Closing;
- 3.2.2 as expeditiously as possible make all necessary filings and applications under the applicable rules of the TSX, and otherwise comply with all requirements of the TSX in connection with the transactions contemplated herein, so as to permit Closing to occur at the Closing Time on the Closing Date; and
- 3.2.3 it will use its reasonable best efforts to satisfy or cause to be satisfied the conditions precedent set forth in Article 4, to the extent that the satisfaction of same is within the control of the Issuer.

The Issuer further covenants and agrees that it shall:

- 3.2.4 within 90 days of the date hereof, use reasonable commercial efforts to hire a Finance control employee whose credentials are acceptable to the Subscriber;

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- 3.2.5 seek approval from its shareholders at the next annual general meeting of its shareholders to cancel the currently authorized class of preferred shares, and if such approval is obtained, to create a new class of voting convertible preferred shares to enable operation of the full conversion features of the Convertible Debenture; and
- 3.2.6 use the proceeds from the First Instalment in material compliance with the Use of Proceeds set out in Schedule B hereto.

3.3 Representations and Warranties of the Subscriber

The Subscriber represents and warrants to the Issuer that:

- 3.3.1 The Subscriber has the corporate power and authority to enter into this Subscription Agreement and to perform all of its obligations hereunder. The execution and delivery of this Subscription Agreement and the consummation by the Subscriber of the transactions hereunder has been duly authorized by all necessary corporate action on the part of the Subscriber.
- 3.3.2 Neither the execution, delivery and performance of this Subscription Agreement, nor the completion of the transactions contemplated hereby, will constitute or result in a violation or breach of or a default under (or an event which, with notice or lapse of time or both, would constitute a violation or breach of or a default under), or require the further authorization, approval or consent of any person under, any constating documents or governing policies of the Subscriber or any Applicable Laws in respect of the Subscriber.
- 3.3.3 The Subscriber is purchasing the Convertible Debenture as principal within the meaning of Applicable Laws, for its own account and not for the benefit of any other person, for investment only and not with a view to the resale or distribution of all or any of: (i) the Convertible Debenture, or (ii) the Common Shares or Preferred Shares of the Issuer to be received upon conversion thereof (the **"Convertible Debenture Shares"**).
- 3.3.4 The Subscriber is an "accredited investor" as defined in National Instrument 45-106 (**"NI 45-106"**) – *Prospectus Exemptions* on the basis set forth in Section 1.1(t) of NI 45-106.
- 3.3.5 The Subscriber has not received or been provided with, nor has it requested, any offering memorandum, any prospectus, any sales or advertising literature, or any other document describing or purporting to describe the business and affairs of the Issuer which has been prepared for delivery to, and review by, prospective purchasers in order to assist in making an investment decision in respect of the Convertible Debenture, the Convertible Debenture Shares .
- 3.3.6 The Subscriber acknowledges that any certificate(s) representing the Convertible Debenture and the Convertible Debenture Shares will bear such legends as the Issuer may reasonably determine to be necessary or warranted under Applicable Laws or TSX policies.
- 3.3.7 The Subscriber has such knowledge and experience in financial, legal and business matters as to be capable of evaluating the merits and risks of the investment being made by it hereunder. The Subscriber acknowledges that neither the Issuer nor any of its directors, officers, employees or representatives has made any representations (oral or written) to the Subscriber that any person will resell or repurchase the Convertible Debenture, or the Convertible Debenture Shares , that any person will refund the purchase price of the Convertible Debenture, or regarding the future price or value of the Convertible Debenture Shares.

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- 3.3.8 The Subscriber acknowledges that there are restrictions under Applicable Laws on the Subscriber's ability to resell the Convertible Debenture and Convertible Debenture Shares, that it has been advised to consult its own legal advisors with respect to the particulars of such resale restrictions, and that it is the Subscriber's sole responsibility to find out what those restrictions are and to comply with them before selling the Convertible Debenture or the Convertible Debenture Shares.

ARTICLE 4

CONDITIONS PRECEDENT

4.1 Conditions Precedent

The obligations of the Subscriber hereunder are subject to compliance, at or prior to the Closing, with each of the following conditions precedent, which conditions precedent are for the sole and exclusive benefit of the Subscriber and may be waived in writing by the Subscriber in its sole discretion:

- 4.1.1 the representations and warranties made in or pursuant to this Agreement shall be true and correct on each Closing Date as if made on and as of such date;
- 4.1.2 the TSX shall have conditionally approved the issuance of the Convertible Debenture and the listing of the Common Shares issuable upon conversion of the Convertible Debenture and all matters relating to such approval shall be satisfactory to the Subscriber;
- 4.1.3 prior to Closing of the First Instalment, the Issuer shall have appointed a nominee of the Subscriber to the Issuer's board of directors, pursuant to a resolution of the Issuer's board of directors;
- 4.1.4 the Subscriber shall have completed, to its satisfaction, its due diligence on the Issuer;
- 4.1.5 the form of General Security Agreement to be executed on Closing shall be in a form satisfactory to the Subscriber;
- 4.1.6 the form of License Agreement shall be in a form satisfactory to the Subscriber;
- 4.1.7 the form of Investor Rights Agreement shall be in a form satisfactory to the Subscriber;
- 4.1.8 the Subscriber shall have executed an agreement in favour of RBC Royal Bank postponing and subordinating the Convertible Debenture to the Issuer's debt owing to RBC Royal Bank to the maximum principal amount of Canadian \$1,000,000; and
- 4.1.9 at the time of each Closing, no action or proceeding shall be pending by any Person or Governmental Body to enjoin, restrict, or prohibit the sale and purchase of the Convertible Debenture hereunder, or the completion of any of the transactions contemplated by the Debenture Documents or which may impose any material condition on the completion of any of the transactions contemplated by the Debenture Documents.

4.2 Non-Compliance with Conditions

If any of the conditions contained in Section 4.1 shall not be fulfilled or performed at or prior to the Closing Date to the satisfaction of the Subscriber in its sole discretion, the Subscriber may, by written notice to the Issuer, immediately terminate this Agreement and the obligations of the Subscriber under this Agreement. Any condition may be waived in whole or in part by the Subscriber without prejudice to any claims it may have for breach of covenant, representation or warranty.

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ARTICLE 5
MISCELLANEOUS

5.1 Notice

Any notice or other communication required or permitted to be given hereunder shall be given as provided in the Convertible Debenture.

5.2 Time of Essence

Time is of the essence in this Agreement.

5.3 Enurement

This Agreement shall enure to benefit of and be binding upon the Issuer, the Subscriber and their respective successors and permitted assigns.

5.4 Legal and Other Fees and Expenses

The Issuer will pay or reimburse the Subscriber for all out of pocket expenses and reasonable, pre-approved legal fees incurred by or on behalf of the Subscriber in connection with due diligence enquiries respecting the Issuer, its assets and with the negotiation, preparation, execution or maintenance of the Debenture Documents.

5.5 Inconsistency

To the extent that any provisions of this Agreement conflict with or are inconsistent with any of the provisions of the Convertible Debenture, the Convertible Debenture shall govern and prevail to resolve such conflict or inconsistency. For greater certainty, if there is any right or remedy of the Subscriber set forth in this Agreement which is not set forth in the Convertible Debenture, or if there is any right or remedy of the Subscriber set forth in the Convertible Debenture which is not set forth in this Agreement, the existence of such additional right or remedy shall not constitute a conflict or inconsistency.

5.6 Entire Agreement

This Agreement and the other Debenture Documents constitute the entire agreement between the parties pertaining to the subject matter hereof, and supersede and replace any prior understanding or arrangement relating thereto. Except as set forth herein, there are no representations, warranties or agreements between the parties in connection with such matters except as specifically set forth or referred to in the Debenture Documents.

5.7 No Finders

The parties hereto agree and acknowledge that they have not employed the service of a broker or finder in connection with any of the Debenture Documents and the transactions contemplated hereby or thereby.

5.8 Non-disclosure

- 5.8.1 Until the Closing, neither the Issuer nor the Subscriber shall, without the other party's prior consent, issue a press-release, make any other public announcement regarding, or disclose to any third parties the terms of, any of the Debenture Documents or the transactions contemplated hereby or thereby, except as may be required by Applicable Laws or necessary to consummate the transactions contemplated by this Agreement and

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the other Debenture Documents; provided, however that the Subscriber is given an opportunity to review and comment on any such press release or other public announcement. Subject to the foregoing, under no circumstances may the Issuer or its officers, directors, members, owners, employees, affiliates or agents disclose the existence or the terms of any of the Debenture Documents, or that the parties hereto are holding discussions in connection therewith, except to its legal, financial and accounting advisors on a “need to know” basis solely for the purpose of assisting their respective clients. The Subscriber shall be permitted to disclose the terms of the Debenture Documents (i) to its respective investors and potential investors on a “need to know” basis solely for the purposes of investing in or subscribing to invest in the Subscriber, and (ii) as required by Applicable Laws.

- 5.8.2 If the Issuer is required by Applicable Laws to disclose this Agreement or any other Debenture Document on SEDAR, the Issuer shall be authorized to do so after first notifying the Subscriber and incorporating any redactions that the Subscriber may reasonably request.

5.9 Assignment

The Subscriber may assign its rights, title, and interests under this Agreement as provided in the Convertible Debenture . The Issuer is not entitled to assign its rights or obligations hereunder.

5.10 Governing Law

This Agreement shall be governed by and construed in accordance with the laws of the Province of Alberta and the federal laws of Canada applicable therein. The Issuer and the Subscriber irrevocably submit to the non-exclusive jurisdiction of the courts of Alberta in respect of all matters relating to this Agreement.

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5.11 Counterparts

This Agreement may be signed in counterparts and by facsimile transmission and each of such counterparts shall constitute an original document and such counterparts, taken together, shall constitute one and the same instrument.

NXT ENERGY SOLUTIONS INC.

"Signed"

By: _____
[NAME REDACTED]
[TITLE REDACTED]

ATARAXIA CAPITAL

"Signed"

By: _____
[NAME REDACTED]
[TITLE REDACTED]

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EXHIBIT A

Form of Convertible Debenture

(See attached)

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Unless permitted under securities legislation, the holder of this security must not trade the security before September [■], 2023.

Certificate No. D-2023-1

SECURED CONVERTIBLE DEBENTURE

PRINCIPAL SUM: USD\$[●]

INTEREST RATE: 10.0%

FOR VALUE RECEIVED from **ATARAXIA CAPITAL** (the “Holder”), **NXT ENERGY SOLUTIONS INC.** (the “Issuer”) hereby acknowledges itself indebted and promises to pay, on the earlier of (a) demand and (b) the Maturity Date (as hereinafter defined) to or to the order of the Holder the sum of [●] (\$[●]) in lawful money of the United States upon presentation and surrender of this Debenture to the Issuer, and in the meantime to pay interest thereon, in arrears, at a rate calculated on the basis of a 365 day year, equal to 10.0% per annum (the “**Interest Rate**”) commencing on the date hereof (the “**Effective Date**”). Such interest shall accrue daily and shall be payable quarterly, in arrears, for the period from and including the Effective Date to and excluding the date of repayment and shall be calculated on the Principal Sum outstanding during such period and on the basis of the actual number of days elapsed divided by 365.

The Holder shall open and maintain records and accounts evidencing the Issuer’s liability to the Holder in respect of this Debenture and all amounts outstanding hereunder. The Holder shall record the amount of Outstanding Indebtedness, the payment of principal and interest on account thereof, and all other amounts becoming due to the Holder under this Debenture which remain unpaid when due. The Holder’s accounts constitute in the absence of manifest error, prima facie evidence of the indebtedness of the Issuer to the Holder pursuant to this Debenture.

1. DEFINITIONS AND INTERPRETATION

(a) Definitions

Capitalized terms used in this Debenture shall have the respective definitions ascribed thereto in Schedule A.

(b) Interpretation

- (i) Unless otherwise specified, all dollar references are references to dollars of the lawful currency of the United States.
- (ii) In this Debenture, words importing the singular number include the plural and vice-versa and words importing gender include the masculine, feminine and neuter genders.
- (iii) The division of this Debenture into sections and paragraphs and the insertion of headings are for convenience of reference only and shall not affect the construction or interpretation hereof.
- (iv) The terms “this Debenture”, “hereof”, “herein”, “hereunder” and similar expressions refer, unless otherwise stated, to this Secured Convertible Debenture taken as a whole (including all Schedules attached hereto) and not to any particular Section

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or paragraph hereof and include any agreement or instrument in writing which amends or is supplementary to this Debenture.

- (v) Unless otherwise specified, all references to "Section" are references to an article, section, subsection or paragraph of this Debenture.
- (vi) References herein to a statute include, unless otherwise stated, regulations or rules passed or in force pursuant thereto and any amendments to such statute or to such regulations or rules from time to time, and any legislation, regulations or rules substantially replacing the same or substantially replacing any specific provision to which such reference is made.

(c) **Schedules**

The following Schedules are attached hereto and form a part of this Debenture:

- Schedule A – Definitions
- Schedule B – Notice of Conversion

2. ACCELERATION UPON CHANGE OF CONTROL

In the event of the occurrence of a Change of Control, unless the Holder agrees in writing to waive such acceleration, the Outstanding Indebtedness under this Debenture shall become immediately due and payable.

3. CONVERSION

(a) **Conversion**

- (i) At any time from the Effective Date until the Holder demands repayment or the Maturity Date, the Holder shall have the option, but is not obligated to, deliver to the Issuer, a Notice of Conversion, setting forth the principal amount of the Outstanding Indebtedness to be converted, such Notice of Conversion to be substantially in the form set forth in Schedule B hereto, duly executed by the Holder or its successors or assigns or its or their attorney duly appointed by an instrument in writing in form and executed in a manner reasonably satisfactory to the Issuer, confirming the registration and delivery instructions for the Common Shares or Preferred Shares to be issued upon such conversion. Thereupon the Holder, its successors or assigns, or such Person as it or they may direct, shall be entitled to be entered in the books of the Issuer as at the Date of Conversion as the holder of the number of Common Shares or Preferred Shares, as applicable, into which the portion of the principal amount of Outstanding Indebtedness is converted at the Conversion Price in accordance with the provisions of this Section 3 and, the Issuer shall deliver to the Holder or its successors or assigns, or such Person as it or they may direct, a certificate or certificates for such Common Shares or Preferred Shares, as applicable.
- (ii) For the purposes of this Section 3, the conversion of the principal amount of the Outstanding Indebtedness converted hereunder shall be deemed to have occurred on the date upon which the Notice of Conversion is delivered to the Issuer (the "**Date of Conversion**"), and the Person or Persons entitled to receive Common Shares or Preferred Shares shall become the holder or holders of record of such Common Shares or Preferred Shares, as applicable, on such Date of Conversion.

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- (iii) From and after the Date of Conversion, the portion of this Debenture subject to the Notice of Conversion (the “**Converted Principal Amount**”) shall not be considered as outstanding, interest shall cease to accrue after such date on the Converted Principal Amount and the Holder shall have no right under this Debenture except to receive the certificate representing the Common Shares for the Converted Principal Amount. The Issuer shall issue a new Debenture certificate, dated the date of Conversion, reflecting the decreased principal amount of the Debenture after giving effect to the Converted Principal Amount.
- (iv) The Holder shall, in respect of any Outstanding Indebtedness which is converted to Common Shares or Preferred Shares in accordance with this Section 3, be entitled to receive accrued and unpaid interest in respect thereof up to the Date of Conversion, and the holder of the Common Shares or Preferred Shares, as applicable, issued upon such conversion shall be entitled to receive any dividends declared in favour of Shareholders of record on and after the Date of Conversion, from which applicable date such Common Shares or Preferred Shares will for all purposes be and be deemed to be issued and outstanding as fully paid and non-assessable Common Shares or Preferred Shares, as applicable.
- (v) The Holder may convert the interest amount of any Outstanding Indebtedness in the same manner as set out above, *mutatis mutandis*, relating to the principal amount of any Outstanding Indebtedness, provided that the Issuer first obtains any necessary approval of the TSX and the Issuer and the Holder satisfy any requirements of the TSX with respect thereto, including TSX requirements relating to the conversion price applied to the Outstanding Indebtedness. If requested by the Holder, the Issuer shall use reasonable commercial efforts to accommodate the Holder’s wish to convert the interest amount of any Outstanding Indebtedness into Common Shares and to seek and obtain any necessary approvals to effect same.
- (vi) Unless an individual who holds the ultimate investment making authority on behalf of the Holder has: (a) completed a Personal Information Form (a “**PIF**”), (b) submitted such PIF to the TSX, and (c) had such PIF cleared by the TSX, at no time shall the Holder be permitted to convert any portion of the principal amount of any Outstanding Indebtedness or interest accrued thereon if, after the conversion of such amounts, the Holder shall own (taking into account any Common Shares acquired other than as a result of this Debenture) more than 9.9% of the outstanding Common Shares of the Issuer.

(b) **Adjustment of Conversion Price**

- (i) Adjustment for Stock Dividends, Subdivisions, Combinations or Consolidations

If and whenever at any time after the date hereof the Issuer shall:

- (1) issue Common Shares to all or substantially all of the holders of outstanding Common Shares as a stock dividend or make a distribution on its outstanding Common Shares payable in Common Shares;
- (2) subdivide, redivide or change its outstanding Common Shares into a greater number of shares; or
- (3) consolidate, reduce or combine its outstanding Common Shares into a smaller number of shares;

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(each of the events enumerated in the clauses (1), (2) and (3), above, being hereinafter referred to as a “**Common Share Reorganization**”), the Conversion Price shall be adjusted effective immediately after the record date or effective date, as the case may be, which is used to determine the holders of outstanding Common Shares for the happening of a Common Share Reorganization, by multiplying the Conversion Price in effect immediately prior to such record date or effective date by a fraction, the numerator of which shall be the number of Common Shares outstanding on such record date or effective date before giving effect to such Common Share Reorganization, and the denominator of which shall be the number of Common Shares outstanding immediately after giving effect to such Common Share Reorganization.

(ii) Adjustment for Reclassification, Exchange and Substitution

If and whenever at any time after the date hereof there shall be a reclassification of the Common Shares at any time outstanding or a change of the outstanding Common Shares into other securities, (other than a Common Share Reorganization), or a consolidation, arrangement, amalgamation or merger of the Issuer with or into any other Person (other than a consolidation, arrangement, amalgamation or merger which does not result in any reclassification of the outstanding Common Shares or a change of the Common Shares into other shares), or a transfer of all or substantially all of the assets of the Issuer to another Person (any of such events being herein called a “**Capital Reorganization**”), the holder, upon any exercise of its conversion rights hereunder to acquire Common Shares after the effective date of such Capital Reorganization, shall be entitled to receive, and shall accept, upon such conversion, in lieu of the number of Common Shares to which the holder was theretofore entitled upon such conversion, the aggregate number of shares, other securities or other property which the Holder would have been entitled to receive as a result of such Capital Reorganization if, on the effective date thereof, the Holder had been the registered holder of the number of Common Shares that the Holder was theretofore entitled to acquire upon such conversion. If mutually determined appropriate by the Holder and the Issuer, each acting reasonably, appropriate adjustments shall be made following any such Capital Reorganization in the application of the provisions set forth herein, with respect to the rights and interest thereafter of the holder and the adjustments to the Conversion Price to the end that such provisions shall thereafter correspondingly be made applicable as nearly as may reasonably be possible in relation to any shares, other securities or other property thereafter deliverable upon the conversion of this Debenture.

(iii) Adjustments for Rights Offerings

If and whenever at any time after the date hereof, the Issuer shall issue, or fix a record date for the issuance of, Options to the holders of all or substantially all of the Common Shares entitling them (for a period expiring within 60 days after such record date) to subscribe for or purchase Common Shares (or securities convertible into or exchangeable for Common Shares) at a price per share (or having a conversion or exchange price per share) (the “**Rights Offering Price**”) less than the then applicable Current Market Price (each such event being herein referred to as a “**Rights Offering**”), the Conversion Price shall be adjusted effective as of such record date (or in the event that the Common Shares will commence trading on an ex-rights or similar basis prior to such record date, such adjustment shall be made effective as of such earlier time) to be equal to the Rights Offering Price.

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For greater certainty, the foregoing adjustment shall be made in the event that any Options become exercisable under any shareholder rights plan adopted by the Issuer. To the extent that such Options are not so issued, the Conversion Price shall be readjusted to the Conversion Price which would then be in effect if such record had not been fixed.

(iv) Adjustment for Special Distributions

If and whenever at any time after the date hereof, the Issuer shall issue or distribute, or fix a record date for the issuance or distribution (a "**Special Distribution**"), to holders of all or substantially all of the holders of the Common Shares, of:

- (1) shares of the Issuer of any class (other than Common Shares);
- (2) Options;
- (3) evidences of indebtedness; or
- (4) any other property or assets of the Issuer (including cash, other than cash dividends paid to Shareholders in the ordinary course of business);

and such issuance or distribution does not constitute a Common Share Reorganization, Capital Reorganization or Rights Offering, the Conversion Price shall be adjusted effective immediately as of such record date (or in the event that the Common Shares will commence trading on an ex-distribution or similar basis prior to such record date, such adjustment shall be made effective as of such earlier time) to a price determined by multiplying the Conversion Price then in effect by a fraction:

- (1) the numerator of which shall be:
 - a. the product obtained when the number of Common Shares outstanding on such record date is multiplied by the Current Market Price of the Common Shares on such record date; less
 - b. the fair market value, as mutually determined by the Holder and the Issuer, each acting reasonably, of the shares, Options, evidences of indebtedness, property or other assets distributed in the Special Distribution; and
- (2) the denominator of which shall be the product obtained when the number of Common Shares outstanding on such record date is multiplied by the Current Market Price of the Common Shares on such record date.

To the extent that such Special Distribution is not so made, the Conversion Price shall be readjusted to the Conversion Price which would then be in effect if such record date had not been fixed.

(v) No Impairment

The Issuer shall not, by amendment of its articles or through any reorganization, transfer of assets, consolidation, merger, amalgamation, arrangement, dissolution,

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issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance of any of the terms to be observed or performed hereunder by the Issuer, but will at all times in good faith assist in the carrying out of all the provisions of this Section 3(b) and in the taking of all such action as may be necessary or appropriate in order to protect the conversion rights of the Holder against impairment.

(vi) **Certificate as to Adjustments**

Upon the occurrence of each adjustment or readjustment of the Conversion Price pursuant to this Section 3(b), the Issuer at its expense shall promptly compute such adjustment or readjustment in accordance with the terms hereof and prepare and furnish to the Holder a certificate executed by the Chief Executive Officer or Chief Financial Officer of the Issuer setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based. The Issuer shall, upon the written request at any time of the Holder, furnish or cause to be furnished to such Holder a similar certificate setting forth all such adjustments and readjustments, the Conversion Price in effect at such time, and the number of Common Shares or the amount, if any, of other securities (as determined under Section 3(b)(ii)), which at such time would be issuable upon the conversion of this Debenture.

(c) **Fractional Interests**

The Issuer shall not be required to issue fractional Common Shares or fractional Preferred Shares upon the conversion of Outstanding Indebtedness pursuant to this Section 3. Any fractions will be rounded to the nearest whole number with fractions of one-half or greater being rounded to the next higher whole number and fractions of less than one-half being rounded to the next lower whole number.

4. SECURITY

(a) **Confirmation of Security**

- (i) The Issuer acknowledges that the Security shall be continuing security for, among other things, the payment, observance and performance of the Secured Obligations.
- (ii) The Security will be in the form of a general security agreement, in a form satisfactory to the Holder, acting reasonably, and will be registered in all such offices and in all such jurisdictions as the Holder may from time to time require or deem appropriate to protect or perfect the Liens created thereby.
- (iii) The Issuer will, in connection with the provision of any Security referred to in this Debenture, including any amended, new or replacement Security:
 - (1) provide or cause to be provided to the Holder such security instruments and other documents which the Holder deems are necessary to give full force and effect to the provisions of this Section 4; and
 - (2) assist the Holder in the registration or recording of such agreements and instruments in such public registry offices as the Holder considers appropriate;

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(Items (1) through (2) immediately above are hereinafter referred to as the "**Security Grant Obligations**")

- (iv) The Holder may grant extensions, take and give up securities, accept compositions, grant releases and discharges and otherwise deal with the Issuer and with other third parties, guarantors, sureties or securities as the Holder may see fit without prejudice to the liability and obligations of the Issuer to the Holder under the Debenture Documents.
- (v) The Security will not operate so as to create any merger or discharge of any amount owing by the Issuer under the Debenture Documents, or of any assignment, transfer, guarantee, Lien, contract, promissory note, bill of exchange or security of any form held or which may hereafter be held by the Holder from the Issuer.
- (vi) No failure or delay on the part of the Holder to exercise any right, power or remedy given under the Debenture Documents, by statute, at law, in equity or otherwise will operate as a waiver thereof, nor will any single or partial exercise of any right preclude any other exercise thereof or the exercise of any right, power or remedy, nor will any waiver by the Holder be deemed to be a waiver of any subsequent similar or other event.

(b) **Acknowledgement of Subordination of Security**

- (i) The Debenture will be a direct secured obligation, pursuant to a registered general security agreement, and rank ahead of unsecured debt holders and equity holders, but subordinate to the Senior Indebtedness. Subject to statutory preferred exceptions and the limited subordination to the Senior Indebtedness as provided herein, this Debenture will participate *pro rata* (based on invested capital) with any other debt secured under the Debenture Documents, but in priority to other secured obligations of the Corporation in any liquidation or distribution of assets, shares or other property as a result of any liquidation.
- (ii) The Holder expressly acknowledges and agrees that the Security shall be subordinate and subject in right of payment to the Senior Indebtedness, and the Holder agrees to provide such confirmation of the same upon request.

(c) **Effect of Amalgamation**

The Issuer acknowledges and agrees that, in the event it amalgamates with any other corporation or corporations, it is the intention of the Issuer and the Holder that the term "Issuer" when used herein shall apply to each of the relevant amalgamating corporations and to the amalgamated corporation, such that the Security shall secure the indebtedness of each of the amalgamating corporations and the amalgamated corporation to the Holder at the time of amalgamation and any indebtedness of the amalgamated corporation to the Holder thereafter arising.

(d) **Registrations**

The Issuer hereby authorizes the Holder to file or register such financing statements, financing change statements or other registrations and other documents in all such jurisdictions and offices as the Holder may deem appropriate to perfect on an ongoing basis and continue the Security and the Issuer, upon the occurrence of an Event of Default, hereby irrevocably constitutes and appoints the Holder (or its nominee) from time to time as its true and lawful attorney, with full power of

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substitution, to do any of the foregoing in the name of the Issuer whenever and wherever it may be deemed necessary or expedient.

(e) **Paramountcy**

Should any of the provisions of the Security conflict with or be inconsistent with any of the provisions of this Debenture, the provisions of this Debenture shall prevail to the extent necessary to resolve any such conflict or inconsistency. For greater certainty, if there is any right or remedy of the Holder set forth in this Debenture which is not set forth in the Security, or if there is any right or remedy of the Holder set forth in the Security which is not set forth in this Debenture, the existence of such right or remedy shall not constitute a conflict.

5. COVENANTS OF THE ISSUER

(a) **Positive Covenants**

The Issuer covenants and agrees with the Holder that, so long as there is any Outstanding Indebtedness under this Debenture, it shall:

- (i) pay duly and punctually all sums of Principal Sum and interest due by it under this Debenture;
- (ii) at all times while this Debenture is outstanding, have sufficient authorized Common Shares or Preferred Shares reserved for issuance upon any conversion of this Debenture; and
- (iii) cause any Common Shares or Preferred Shares and the certificates representing such Common Shares or Preferred Shares, as applicable, from time to time acquired by the Holder upon any conversion of this Debenture to be duly issued and delivered in accordance with the terms hereof as fully paid and non-assessable Common Shares or Preferred Shares and, in the case of the Common Shares only, to be listed on the TSX and/or any other stock exchange on which the Common Shares are then listed.

6. EVENTS OF DEFAULT

Upon the occurrence of any of the following events (each an “**Event of Default**”) which has not been remedied or waived, the Holder shall be entitled to declare the Outstanding Indebtedness owing to the Holder under this Debenture to be immediately due and payable, whereupon all Outstanding Indebtedness of the Issuer to the Holder hereunder shall be immediately due and payable without further notice or demand and the Holder in its sole discretion may exercise all or any of the remedies available to it under the Debenture Documents and in law or equity, including realization on all or any portion of the Security granted in its favour:

- (i) non-payment of principal under this Debenture when due; or
- (ii) non-payment of interest under this Debenture when due.

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7. REMEDIES ON DEFAULT

(a) Events of Default

Upon the occurrence of an Event of Default, the Holder may declare the Principal Sum together with any accrued but unpaid interest thereon and any other amounts owing hereunder, contingent or otherwise, to be immediately due and payable, whereupon the Issuer will be obligated without any further grace period to forthwith pay such amounts to the Holder and the Holder may exercise any and all rights, remedies, powers and privileges afforded by Applicable Laws, under any Debenture Documents and under any and all other instruments, documents and agreements made to secure or assure payment and performance of the obligations of the Issuer under this Debenture.

(b) Extensions of Time and Waivers

Without limiting Section 7(a):

- (i) the Holder may grant renewals, extensions of time and other indulgences, accept compositions, grant releases and discharges, and otherwise deal or fail to deal with the Issuer, debtors of the Issuer, guarantors, sureties and others as the Holder may see fit, all without prejudice to the liability of the Issuer to the Holder or the Holder's rights, remedies and powers under this Debenture or any of the Debenture Documents;
- (ii) if the Holder demands payment of any Secured Obligations that is payable on demand or if any Secured Obligations is otherwise due by maturity or acceleration, it will be deemed reasonable for the Holder to exercise its remedies immediately if such payment is not made, and any days of grace or any time for payment that might otherwise be required to be afforded to the Issuer at law or in equity is hereby irrevocably waived by the Issuer; and
- (iii) the rights of the Holder (whether arising under this Debenture, any Debenture Document, any other agreement or at law or in equity) will not be capable of being waived or varied otherwise than by an express waiver or variation in writing, and each such waiver shall apply only to the specific matter being waived and shall not constitute a waiver of any other right, and in particular any failure to exercise or any delay in exercising any of such rights will not operate as a waiver or variation of that or any other such right; any defective or partial exercise of any of such rights will not preclude any other or further exercise of that or any other such right, and no act or course of conduct or negotiation on the part of the Holder or on its behalf will in any way preclude the Holder from exercising any such right or constitute a suspension or any variation of any such right.

(c) Rights Cumulative

The rights, remedies and powers provided for in this Section 7 are in addition to, and not in substitution for, any other rights, remedies or powers that the Holder may have under any Debenture Document, at law, in equity or by or under the PPSA or any other statute or agreement. The Holder may proceed by way of any action, suit or other proceeding at law or in equity and no right, remedy or power of the Holder will be exclusive of, or dependent on, any other. The Holder may exercise any of its rights, remedies or powers separately or in combination and at any time.

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8. APPROVAL RIGHTS

Until the later of (i) the repayment of the Outstanding Indebtedness hereunder and (ii) the conversion of the Outstanding Indebtedness into Common Shares or Preferred Shares, the Issuer will not, without the written consent of the Holder, either directly or by amendment, merger, consolidation, or otherwise:

- (i) liquidate, dissolve or wind-up the affairs of the Issuer, or effect any merger or consolidation or any other Change of Control;
- (ii) amend, alter, or repeal any provision of the Issuer's articles or bylaws in a manner adverse to the Holder;
- (iii) issue any Preferred Shares (other than to the Holder) or securities convertible into or exercisable for any Preferred Shares;
- (iv) issue any Common Shares (other than to the Holder, and except pursuant to warrants or stock options granted prior to the date hereof);
- (v) purchase or redeem or pay any dividend on any Common Shares;
- (vi) make any loans to third-parties;
- (vii) create or authorize the creation of any debt security if the Issuer's aggregate indebtedness thereunder would exceed \$1;
- (viii) create or hold capital stock in any subsidiary or Joint Venture (JV) that is not a wholly-owned subsidiary or JV or dispose of any subsidiary stock, JV or all or substantially all of any subsidiary or JV assets or investments; or increase or decrease the size of the Issuer's board of directors.
- (ix) make any loan or advance to, or own any stock or other securities of, any subsidiary, JV or other corporation, partnership, or other entity unless it is wholly owned by the Company;
- (x) (make any loan or advance to any Person, including, any employee or director, except advances and similar expenditures in the ordinary course of business or under the terms of an employee stock or option plan approved by the Issuer's Board of Directors;
- (xi) Guarantee any indebtedness except for trade accounts of the Issuer or any subsidiary arising in the ordinary course of business;
- (xii) make any investment unless the investment is consistent with an investment policy that has been approved by the Issuer's board of directors;
- (xiii) incur any aggregate indebtedness in excess of \$1.00 that is not already included in a budget that has been approved by the Issuer's board of directors, other than trade credit incurred in the ordinary course of business;
- (xiv) enter into or be a party to any transaction with any director, officer or employee of the Issuer or any "associate" (as defined in the TSX Company Manual)) of any such person except transactions resulting in payments to or by the Issuer in an amount less than \$100 per year, or transactions made in the ordinary course of

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business and pursuant to reasonable requirements of the Issuer's business and upon fair and reasonable terms that are approved by the Issuer's Board of Directors;

- (xv) hire, fire, or change the compensation of the executive officers, including approving any option grants;
- (xvi) change the principal business of the Issuer, enter new lines of business, or exit the current line of business;
- (xvii) sell, assign, license, pledge or encumber material technology or intellectual property, other than licenses granted in the ordinary course of business;
- (xviii) enter into any corporate strategic relationship or JV involving the payment of a material amount of cash, or the contribution or assignment of a material portion of the Issuer's assets; or
- (xix) pay any trade debts or bonuses to directors or officers of the Issuer or their associates (as defined in the TSX Company Manual).

9. ADDITIONAL COVENANT

The Issuer covenants and agrees with the Holder that at any time and from time to time, upon the written request of the Holder, and at the sole expense of the Issuer, the Issuer will promptly and duly execute and deliver such further instruments and documents and take such further action as the Holder may reasonably request for the purpose of obtaining or preserving the full benefits of this Debenture and of the rights and powers herein granted. Without limiting the generality of the foregoing, the Issuer acknowledges that this Debenture has been prepared based on the Applicable Law of the Province of Alberta and the Issuer agrees that the Holder will have the right, acting reasonably, to require that this Debenture be amended or supplemented: (i) to reflect any changes in Applicable Law, whether arising as a result of statutory amendments, court decisions or otherwise; or (ii) to facilitate the creation and registration of appropriate security in all appropriate jurisdictions.

10. NO ASSIGNMENT

Neither the Holder nor the Issuer shall be permitted to assign its rights or obligations hereunder, as applicable, to a third party.

11. NOTICE

Any demand, notice or other communication hereunder shall be in writing, and must be delivered by courier, by personal delivery or by electronic transmission (including by email) as follows:

- (a) to the Issuer at:

NXT Energy Solutions Inc.
3320 - 17th Avenue SW
Calgary, Alberta
T3E 0B4
Attention: [NAME REDACTED]
Email: [Email REDACTED]

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with a copy (which does not constitute notice to the Issuer) to:

Norton Rose Fulbright Canada LLP
Suite 3700, 400 – 3rd Avenue SW
Calgary, Alberta T2P 4H2
Attention: [NAME REDACTED]
Email: [Email REDACTED]

(b) to the Holder at:

Ataraxia Capital
[ADDRESS REDACTED],

with a copy (which does not constitute notice to the Sellers' Representative or the Sellers) to:

[NAME AND ADDRESS REDACTED]

Any such communication shall be deemed to have been given and received on the day on which it was so delivered or transmitted (if a Business Day, and if not, then the next succeeding Business Day) unless received after 5:00 pm (local time in the place of receipt) in which case it shall be deemed to have been given and received on the next Business Day.

In the case of a communication by email or other electronic means, receipt of such communication must be confirmed by the recipient by the end of the next Business Day or, if not so confirmed, must be followed by the dispatch of a copy of such communication pursuant to one of the other methods described above; provided however that any communication originally delivered by electronic means shall be deemed to have been given on the date stipulated above for electronic delivery.

A Person may change its address for service by notice given in accordance with the foregoing and any subsequent communication must be sent to such Person at its changed address.

12. GENERAL PROVISIONS

(a) Interest Rate Provisions

- (i) The theory of deemed reinvestment shall not apply to the calculation of interest or payment of fees or other amounts hereunder and notwithstanding anything contained in this Debenture or in any other Debenture Document, all interest and fees payable by the Issuer to the Holder shall accrue from day to day and be computed as described herein in accordance with the "nominal rate" method of interest calculation.
- (ii) All interest payable under this Debenture or any document executed pursuant to this Debenture shall be payable both before and after default, demand, maturity and judgment. To the extent permitted by applicable law, the provisions of the *Judgment Interest Act* (Alberta) will not apply to this Debenture and are hereby expressly waived by the Issuer.
- (iii) Notwithstanding anything herein or in any other Debenture Document to the contrary, in the event that any provision of this Debenture or any Security would oblige the Issuer to make any payment of interest or other amount payable to the

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Holder hereunder in an amount or calculated at a rate which would be prohibited by law or would result in a receipt by the Holder of interest at a criminal or prohibited rate (as such terms are construed under the *Criminal Code* (Canada) or any other applicable law), notwithstanding such provision, such amount or rate shall be deemed to have been adjusted *nunc pro tunc* to the maximum amount or rate of interest, as the case may be, as would not be so prohibited by law or so result in a receipt by the Holder of interest at a criminal or prohibited rate, such adjustment to be effected, to the extent necessary, firstly, by reducing the amount or rate of interest exigible under this Debenture; and thereafter, by reducing any fees, commissions, premiums and other amounts which would constitute interest for the purposes of Section 347 of the *Criminal Code* (Canada), as may be amended from time to time, or any other applicable law. Any amount or rate of interest referred to in this Debenture shall be determined in accordance with generally accepted actuarial practices and principles over the term of the Debenture and, in the event of a dispute, a certificate of a fellow of the Canadian Institute of Actuaries appointed by the Holder shall be conclusive for the purposes of such determination.

- (iv) In determining whether or not the interest paid or payable under this Debenture exceeds the maximum amount permitted by the foregoing paragraph, the Issuer and the Holder shall, to the maximum extent permitted under the *Criminal Code* (Canada), or any other applicable law, characterize any non-principal payments as an expense, fee or premium or other payment rather than as interest, as may be necessary to reduce the amount otherwise characterized as interest pursuant to such applicable law, exclude voluntary prepayments and the effects thereof and amortize, prorate, allocate and spread the total amount of interest rateably over the longer of the contemplated term or the actual term of this Debenture.

(b) Lost Debenture

If this Debenture is stolen, lost, mutilated or destroyed, the Issuer shall, on such reasonable terms as to indemnity or otherwise as it may impose, deliver a replacement Debenture of like denomination, tenor and date as this Debenture which is so stolen, lost, mutilated or destroyed.

(c) No Impairment

To the extent permitted by Applicable Law, the Security shall not be impaired by any indulgence, moratorium or release which may be granted, including any renewal, extension or modification which may be granted with respect to any Secured Obligation or any part thereof or any interest therein, or any release or indulgence granted to any endorser, guarantor or surety of any of the Secured Obligations.

(d) Inconsistency

To the extent that any provisions of this Debenture conflict with or are inconsistent with any of the provisions of the Subscription Agreement, this Debenture shall govern and prevail to resolve such conflict or inconsistency. For greater certainty, if there is any right or remedy of the Holder set forth in this Debenture which is not set forth in the Subscription Agreement, or if there is any right or remedy of the Holder set forth in the Subscription Agreement which is not set forth in this Debenture, the existence of such additional right or remedy shall not constitute a conflict or inconsistency.

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(e) **No Set-Off**

The obligation of the Issuer to make all payments hereunder will be absolute and unconditional and will not be affected by any circumstance, including:

- (i) any set off, compensation, counterclaim, recoupment, defence or other right which the Issuer may have against the Holder, or anyone else for any reason whatsoever; and
- (ii) any insolvency, bankruptcy, reorganization or similar proceedings by or against the Issuer.

(f) **Disclosure**

Except to the extent otherwise required by Applicable Laws, or with the prior consent of the other party, neither the Issuer nor the Holder shall make any public announcement regarding this Debenture. If the Issuer is required by applicable law or stock exchange rules to disclose this Debenture on SEDAR, the Issuer shall be authorized to do so after first notifying the Holder and incorporating any redactions that the Holder may reasonably request.

(g) **Payments**

All payments under or in respect of this Debenture, whether of principal, interest, commitment fees or otherwise, are to be paid by wire transfer by the Issuer to such account as the Holder may advise the Issuer from time to time. The Issuer will be entitled to withhold any and all amounts as required by applicable law and shall remit such withholdings to the applicable governmental authority. If the Issuer is required to make a deduction or withholding, the amount payable to the Holder must be grossed up to ensure that, after the deduction or withholding, the amount received by the Holder is the same as the amount that would have been paid if no deduction or withholding was required.

All such payments shall be made at or before 1:00 p.m. (Calgary time) on the day such payment is due or if such day is not a Business Day, the first Business Day immediately preceding such day.

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IN WITNESS WHEREOF the Issuer has caused this Debenture to be executed and delivered by its proper officer, duly authorized in that regard.

DATED [•], 2023.

NXT ENERGY SOLUTIONS INC.

By: _____

Name:

Title:

By: _____

Name:

Title:

[INITIAL REDACTED]_____

[INITIAL REDACTED]_____

[INITIAL REDACTED]_____

[INITIAL REDACTED]_____

Schedule "A"

TO THE SECURED CONVERTIBLE DEBENTURE DATED [•], 2023 OF NXT ENERGY SOLUTIONS INC. IN FAVOUR OF ATARAXIA CAPITAL

DEFINITIONS

In this Debenture, the following terms have the meanings set forth below (unless the context otherwise requires):

- (a) **"Affiliate"** means any Person which, directly or indirectly, controls, is controlled by or is under common control with another Person; and for the purposes of this definition, "control" (including, with correlative meanings, the terms "controlled by" or "under common control") means the power to direct or cause the direction of the management and policies of any Person, whether through the ownership of voting shares or by contract or otherwise; provided that, in any event, any Person that owns directly or indirectly securities having 20% or more of the voting power for the election of directors or other governing body of any other person (other than as a limited partner of such other Person) will be deemed to control such corporation or other Person;
- (b) **"Applicable Laws"** means, in relation to any Person, property, transaction or event, all applicable provisions (or mandatory applicable provisions, if so specified) of federal, provincial, state or local laws, statutes, rules, regulations, official directives and orders of all Governmental Authorities and Governmental Actions of Governmental Authorities in actions or proceedings in which the Person in question is a party or by which it is bound or having application to the Person, property, transaction or event;
- (c) **"Business Day"** means a day of the year, other than Saturday, Sunday or a statutory holiday, on which the Holder is open for business in Alberta;
- (d) **"Capital Reorganization"** has the meaning ascribed to that term in Section 3(b)(ii);
- (e) **"Change of Control"** means:
 - (i) any transaction (other than a transaction described in clause (iii) below) pursuant to which any person or group of persons acting jointly or in concert acquires the direct or indirect beneficial ownership of securities of the Issuer representing 70% or more of the aggregate voting power of all of the Issuer's then issued and outstanding securities entitled to vote in the election of directors of the Issuer;
 - (ii) a consummated arrangement, amalgamation, merger, consolidation, take-over bid, compulsory acquisition or similar transaction involving (directly or indirectly) the Issuer if, immediately after the consummation of such arrangement, amalgamation, merger, consolidation or similar transaction, the shareholders of the Issuer immediately prior thereto do not beneficially own, directly or indirectly, either (A) outstanding voting securities representing more than 70% of the combined outstanding voting power of the surviving or resulting entity in such arrangement, amalgamation, merger, consolidation or similar transaction or (B) more than 70% of the combined outstanding voting power of the parent of the surviving or resulting entity in such arrangement, amalgamation, merger, consolidation or similar transaction; or

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- (iii) the sale, lease, exchange, license or other disposition of all or substantially all of the Issuer's assets to a person other than a person that was an Affiliate of the Issuer at the time of such sale, lease, exchange, license or other disposition, other than a sale, lease, exchange, license or other disposition to an entity, more than fifty percent (50%) of the combined voting power of the voting securities of which are beneficially owned by shareholders of the Issuer in substantially the same proportions as their beneficial ownership of the outstanding voting securities of the Issuer immediately prior to such sale, lease, exchange, license or other disposition;
- (f) **"Common Share Reorganization"** has the meaning ascribed to that term in Section 3(b)(i);
- (g) **"Common Shares"** means the common shares as currently constituted in the capital of the Issuer;
- (h) **"Conversion Price"** means USD\$0.143 per Common Share subject to adjustment as set forth herein;
- (i) **"Converted Principal Amount"** has the meaning ascribed to that term in Section 3(a)(iii);
- (j) **"Convertible Securities"** means all subscriptions, options, calls, warrants, commitments, contracts, pre-emptive rights, rights of first refusal, demands, conversion rights or other agreements, arrangements or securities of any character or nature whatsoever under which the Issuer is or may be obliged to issue any Common Shares or other securities of the Issuer or securities directly or indirectly convertible into, or exercisable or exchangeable for, Common Shares;
- (k) **"Current Market Price"** means, on any date, the volume weighted average of the trading prices per share of the Common Shares for the 5 consecutive trading days immediately preceding such date on the TSX, or such other principal stock exchange upon which the Common Shares are then listed, or, if the Common Shares are not listed on any stock exchange, then on such over-the-counter market as the Common Shares may then trade, and, in the event the Common Shares do not trade on any over-the-counter market, then such value as mutually agreed by the Holder and Issuer, each acting reasonably;
- (l) **"Date of Conversion"** has the meaning ascribed to that term in Section 3(a)(ii);
- (m) **"Debenture Documents"** has the meaning ascribed to that term in the Subscription Agreement;
- (n) **"Event of Default"** has the meaning ascribed to that term in Section 6;
- (o) **"Governmental Action"** means an authorization, consent, approval, waiver, order, decree, license, exemption, permit, registration, filing, qualification or declaration of or with any Governmental Authority (other than routine reporting requirements) or the giving of notice to any Governmental Authority or any other action in respect of a Governmental Authority;
- (p) **"Governmental Authorities"** means any federal, state, provincial, county, local or municipal government; any governmental body, agency, authority, board, bureau, department or commission (including any taxing authority); any instrumentality or office of any of the foregoing (including any quarter tribunal) exercising executive, legislative, judicial, regulatory or administrative functions of or pertaining to government; or any entity directly or indirectly controlled by any of the foregoing, and, for greater certainty, includes the securities commissions of each of the provinces of Canada;

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- (q) **"Lien"** means any assignment, mortgage, pledge, security interest, encumbrance, lien or charge (including any floating charge) of any kind (including any capital lease), whether absolute or contingent, fixed or floating, perfected or not;
- (r) **"Maturity Date"** means the date that is 24 months from the date hereof, being May [•], 2025;
- (s) **"Options"** means rights, options or warrants to subscribe for, purchase or otherwise acquire either Common Shares or Convertible Securities;
- (t) **"Outstanding Indebtedness"** means, at any time, the unpaid Principal Sum then outstanding plus all accrued but unpaid interest thereon at such time;
- (u) **"Person"** means any individual, firm, trust, partnership, company, corporation or other body corporate, government, governmental body, agency, instrumentality, unincorporated body of persons or association;
- (v) **"PPSA"** means the Personal Property Security Act (Alberta);
- (w) **"Preferred Shares"** means the voting convertible preferred shares that are proposed to be created in the capital of the Issuer;
- (x) **"Principal Sum"** means the principal amount payable to the Holder hereunder as set forth on the face page of this Debenture, or so much thereof as remains from time to time unpaid;
- (y) **"Rights Offering"** has the meaning ascribed to the term in Section 3(b)(iii);
- (z) **"Security"** means the Liens in favour of the Holder created by the Debenture Documents (as the same may be amended, supplemented and/or restated from time to time) and all other security granted from time to time by the Issuer as security for its obligations to the Holder;
- (aa) **"Security Grant Obligations"** has the meaning ascribed thereto under Section 4(a)(iii) of this Debenture;
- (bb) **"Secured Obligations"** means all indebtedness, liabilities and obligations of the Issuer under this Debenture, including, without limitation, payment of the Principal Sum, interest thereon and interest on overdue interest, and payment of all other amounts required to be paid by the Issuer hereunder;
- (cc) **"Senior Indebtedness"** means the principal amount of and interest (and any other amounts payable thereunder) on all indebtedness owing by the Corporation to Royal Bank of Canada, as lender under the Corporation's Government of Canada HASCAP loan in the principal amount of \$1,000,000.00.
- (dd) **"Shareholders"** means the holders of Common Shares from time to time;
- (ee) **"Special Distribution"** has the meaning ascribed to that term in Section 3(b)(iv);
- (ff) **"Subscription Agreement"** means the subscription agreement dated May [●], 2023 between the Holder and the Issuer providing for the issuance of this Debenture by the Issuer to the Holder;

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(gg) “**TSX**” means the Toronto Stock Exchange; and

(hh) “**United States Dollars**” and “**USD**” mean lawful money of the United States.

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SCHEDULE "B"

**TO THE SECURED CONVERTIBLE DEBENTURE DATED
[•], 2023 OF NXT ENERGY SOLUTIONS INC.
IN FAVOUR OF ATARAXIA CAPITAL**

NOTICE OF CONVERSION

TO: NXT ENERGY SOLUTIONS INC.

REFERENCE IS MADE TO the Secured Convertible Debenture dated [•], 2023 of **NXT ENERGY SOLUTIONS INC.** (the "**Issuer**") in favour of **ATARAXIA CAPITAL** (the "**Holder**") in the original principal amount of USD\$[•] (the "**Debenture**"). Capitalized terms used but not defined herein have the respective meanings ascribed to those terms in the Debenture.

THE UNDERSIGNED hereby provides notice that it wishes to convert USD\$_____ of Outstanding Indebtedness under the Debenture to _____ **[Common Shares]/[Preferred Shares]** in accordance with the terms of the Debenture on the basis that the undersigned will receive **[Common Shares]/[Preferred Shares]** at the Conversion Price of USD\$0.143 per **[Common Share]/[Preferred Share]**. The undersigned directs that these **[Common Shares]/[Preferred Shares]** be registered and the share certificate be delivered as follows:

Registration Instructions

(Name of Registered Owner)

(Address of Registered Owner)

Delivery Instructions

(Name)

Address)

DATED this _____ day of _____, 20____.

(Print Name of Holder)

By:

(Authorized Signatory)

(Print Title & Name of Signatory)

[INITIAL REDACTED] _____

[INITIAL REDACTED] _____

[INITIAL REDACTED] _____

[INITIAL REDACTED] _____

EXHIBIT B

NXT May to December 2023 Use of Funds

[FINANCIAL INFORMATION REDACTED AS CONFIDENTIAL AND SERIOUSLY PREJUDICIAL]

[INITIAL REDACTED] _____

[INITIAL REDACTED] _____

[INITIAL REDACTED] _____

[INITIAL REDACTED] _____