

NexGen Energy (Canada) Ltd.

ARBN 649 325 128

A foreign company registered in its original jurisdiction of British Columbia, Canada as NexGen Energy Ltd.

SECOND SUPPLEMENTARY PROSPECTUS

1. Important Information

This is a supplementary prospectus (**Second Supplementary Prospectus**) which supplements and is intended to be read with the prospectus dated 12 December 2023 (**Original Prospectus**) as supplemented by a refresh supplementary prospectus dated 8 March 2024 (**First Supplementary Prospectus**), each of which were issued by NexGen Energy (Canada) Ltd. (ARBN 649 325 128), a foreign company registered in its original jurisdiction of British Columbia, Canada as NexGen Energy Ltd. (British Columbia company incorporation number BC0983846) (**NexGen**).

This Second Supplementary Prospectus is dated 11 March 2024, and was lodged with ASIC on that date.

ASIC, the ASX and their respective officers take no responsibility for the contents of this Second Supplementary Prospectus.

This Second Supplementary Prospectus should be read together with the Original Prospectus and the First Supplementary Prospectus (together, the **Prospectus**). Other than as set out below, all details in relation to the Prospectus remain unchanged. Terms and abbreviations defined in the Prospectus have the same meaning in this Second Supplementary Prospectus. If there is any conflict between the Prospectus and this Second Supplementary Prospectus, this Second Supplementary Prospectus will prevail.

This Second Supplementary Prospectus will be issued with the Prospectus as an electronic prospectus, copies of which can be downloaded from <https://www2.asx.com.au/markets/trade-our-cash-market/todays-announcements> under the code "NXG". This is an important document and should be read in its entirety. If you do not understand it, you should consult your professional advisers without delay. NexGen will send a copy of this Second Supplementary Prospectus to all applicants who have subscribed for CDIs under the Prospectus to the date of this Second Supplementary Prospectus.

2. Purpose of this Second Supplementary Prospectus

The purpose of this Second Supplementary Prospectus is to provide additional information to investors as set out in Section 4 below.

3. No investor action required

The Directors believe that the changes in this Second Supplementary Prospectus are not materially adverse from the point of view of an investor. Accordingly, no additional investor action is required. An investor may apply to be issued CDIs pursuant to the Cleansing Offer in the manner set out in section 1.5 of the Prospectus.

4. New Information – NexGen Announces Discovery of New Intense Mineralization in Greenfields Discovery 3.5 Kilometers from Arrow

NexGen has today released the announcement attached to this Second Supplementary Prospectus.

The Directors of NexGen are not aware of any other acts, matters or things (not already described in the Prospectus) which may be material to the making of and informed assessment of the effect of the Cleansing Offer on NexGen or the rights attaching to the CDIs.

5. Authorisation and consent to lodgement

This Second Supplementary Prospectus is issued by NexGen and its issue has been authorised by a resolution of the Directors.

In accordance with section 720 of the Corporations Act, each Director has consented to the lodgement of this Second Supplementary Prospectus with ASIC and has not withdrawn that consent.

Signed for and on behalf of NexGen.

A handwritten signature in black ink, appearing to read "LR Curyer". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Leigh Curyer
President and Chief Executive Officer
NexGen Energy (Canada) Ltd

Dated: 11 March 2024



NexGen Announces Discovery of New Intense Mineralization in Greenfields Discovery 3.5 Kilometers from Arrow

Vancouver, BC, March 11, 2024 - NexGen Energy Ltd. ("NexGen" or the "Company") (TSX: NXE) (NYSE: NXE) (ASX: NXG) is pleased to announce the discovery of new intense uranium mineralization on its 100% owned SW2 Property, 3.5 kilometers (km) east of NexGen's world-class Arrow Deposit (Figure 1). The new mineralized occurrence in RK-24-183 is located on a previously untested conductor segment of Patterson Corridor East ("PCE"). Localized uranium mineralization was intersected for 19.8 meters (m) between 347.7 and 367.5 m, with peaks up to >61,000 counts per second (cps)*. Exploration is predominantly open in all directions including over 1.5 km along strike (Figures 2 and 3).

Leigh Curyer, Chief Executive Officer, commented: "Ten years after the discovery of our world-class Arrow deposit, we are thrilled to be sharing this exciting news. This new intercept reflects the high potential of NexGen's extensive land package in the south-western section of the Athabasca Basin, Saskatchewan and is a testament to the strategic and disciplined approach to identifying new Arrow-type zones of mineralization. Drilling activity is being fully dedicated to this new discovery area to advance our understanding of scope and scale of mineralization. This hole which intersected 3.0 m of up to 61,000 cps is significantly better on all metrics than RK-14-21 (the Arrow discovery hole) which intersected less than 0.5 m of greater than 9,999 cps.

"I would like to take the opportunity to congratulate and acknowledge the fine dedicated work of the NexGen geological team. Our understanding of the markers of mineralization in the region improve with every drill hole and geophysical survey, and the NexGen exploration programs of the past years have been extremely valuable in contributing to this result. Our highly prospective land position in the south-western section of the mighty Athabasca Basin is still in its infancy, and a significant amount of exploration is in front of us to fully define the extent of mineralization at this location and the balance of Rook I / SW2."

Follow up drilling intersected anomalous features including hematite-quartz breccia, strong silicification, dravitic clay fracture fill, redox alteration, and elevated radioactivity similar to early discovery holes at Arrow in 2014 at the upper limits of that system. Kinematics indicate reverse displacement synonymous with the interpreted structural setting. Use of geological spatial relationships observed at Arrow allows for controlled vectoring of additional drill targets across the prospective hydrothermal system which spans over 1.5 km. Results to date indicate potential that extends along strike and down dip.

The overall setting is an approximate analog for the structural controls of Arrow. The target area lies within a large gravity low coupled with a series of disjointed conductive responses. An interpreted regional, north-south cleavage plane bisects the gravity low. A cleavage plane is also interpreted to connect Arrow, South Arrow, and Camp East. Sinistral, strike-slip displacement via contractional jog was hypothesized to account for the geophysical characteristics. This movement sense compares favourably with the sinistral, strike-slip reactivation noted as a key contributor to deposit formation at Arrow.

This is a Designated News Release

Semi-massive replacement by uranium mineralization is tied to brittle-ductile reactivation of steeply dipping, discrete shear zones bracketed by silicified orthogneiss. Localized semi-massive mineralization includes

primary uraninite and secondary uranium minerals. Textural characteristics of mineralization and associated alteration indicate a well-developed hydrothermal system with fluid pathways provided by the structural disruption. In particular, the role of bounding silicification, mineralization style, and stacked brittle-ductile faults are analogous to features found at Arrow (Figures 4 to 7).

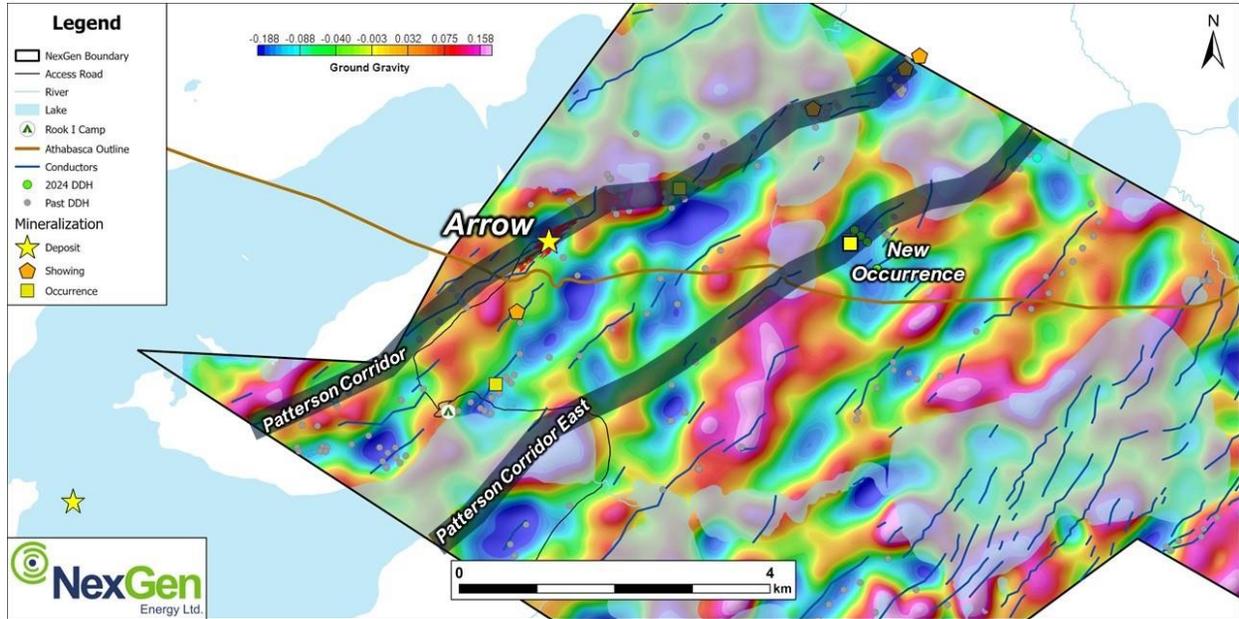


Figure 1: New occurrence on PCE relative to Arrow

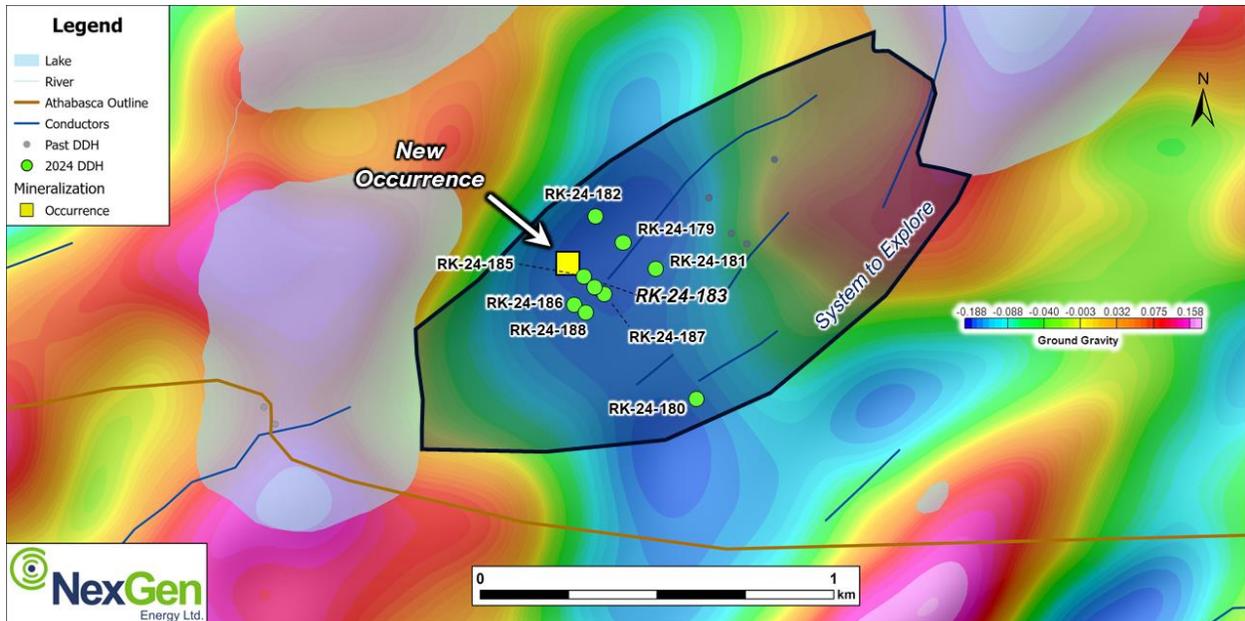


Figure 2: PCE occurrence with area of interest for further exploration outlined, 2024 drillholes shown as green dots

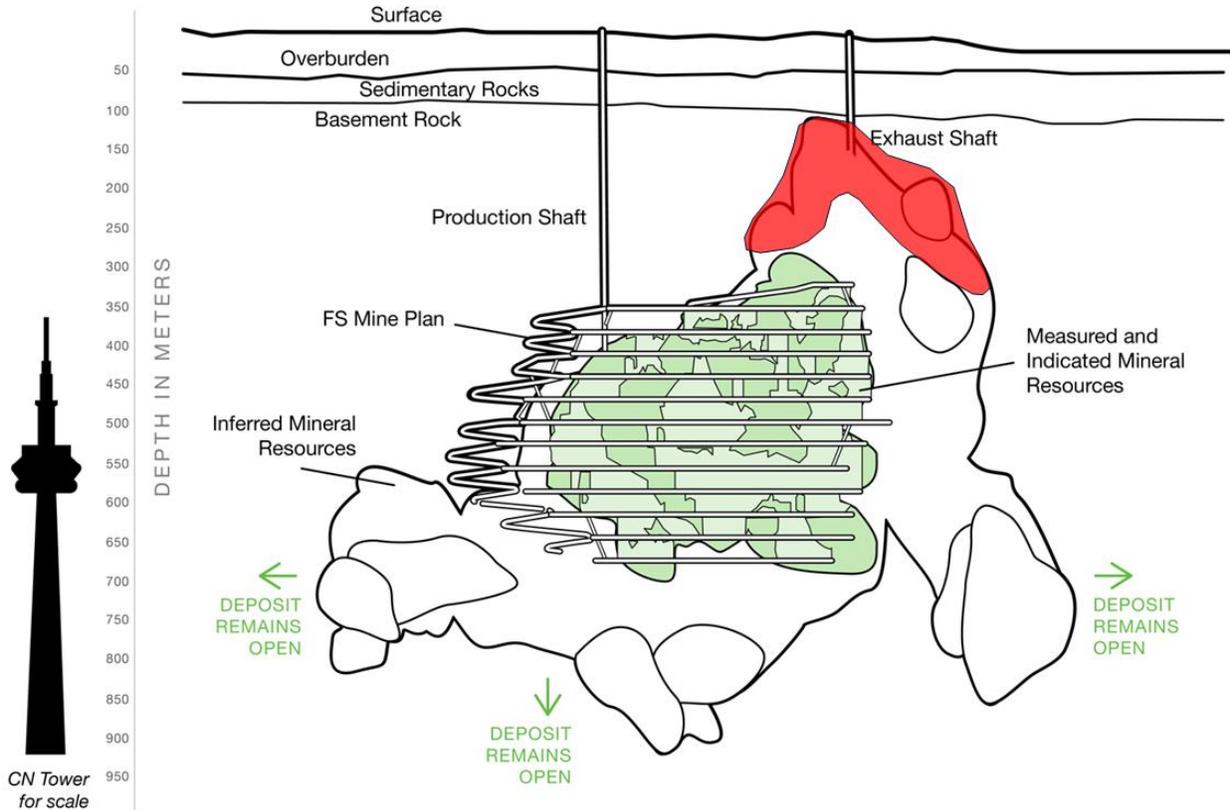


Figure 3: RK-24-183 mineralization is similar to Arrow holes that intercepted within the area highlighted in red above; Arrow figure from 2021 Rook I Feasibility Study



Figure 4: Localized basement-hosted uranium mineralization between 347.7 and 367.5 m (outlined in yellow)



Figure 5: Semi-massive, primary uranium mineralization at 348.5 m, maximum peak of 47,200 cps as shown



Figure 6: Semi-massive, primary uranium mineralization hosted in competent garnetiferous orthogneiss at 356.9 m, maximum peak of >61,000 cps



Figure 7: Secondary mineralization along microfractures and foliation at 367.3 m, maximum peak of 28,500 cps

Table 1: Spectrometer results to date

Drillhole				Unconformity Depth (m)	Handheld Spectrometer Results (RS-125)			
Hole ID	Azimuth	Dip	Total Depth (m)		From (m)	To (m)	Width (m)	CPS Range
RK-24-179	310	-70	462.0	138.0	141.0	141.5	0.5	<500 - 1,100
					150.0	157.0	7.0	<500 - 560
RK-24-180	310	-70	366.0	N/A	No Significant Intersections			
RK-24-181	310	-70	573.0	115.7	191.5	192.0	0.5	<500
RK-24-182	310	-70	411.0	N/A	No Significant Intersections			
RK-24-183	310	-70	527.0	125.3	347.7	350.0	2.3	500 - 52,000
					350.0	351.0	1.0	<500 - 1,200
					351.0	354.0	3.0	700 - 16,200
					354.0	355.0	1.0	<500 - 570
					355.0	358.0	3.0	1,300 - >61,000
					358.0	358.8	0.8	790 - 2,100
					358.8	362.5	3.7	<500 - 680
					362.5	363.0	0.5	<500 - 1,070
					363.0	365.0	2.0	<500
					365.0	365.5	0.5	800 - 7,700
					365.5	367.0	1.5	<500
					367.0	367.5	0.5	<500 - 28,000
RK-24-184	280	-70	534.0	137.70	No Significant Intersections			
RK-24-185	310	-70	399.0	N/A	312.5	313.5	1.0	<500
					335.0	335.5	0.5	<500
RK-24-186	310	-70	440.0	128.2	181.5	182.0	0.5	<500 - 700
					211.0	212.0	1.0	<500 - 600
RK-24-187	310	-70	501.0	116.8	163.0	164.5	1.5	<500
					191.0	191.5	0.5	<500 - 830
RK-24-188	310	-70	510.0	120.5	338.0	340.0	2.0	<500
					410.5	412.5	2.0	<500
					418.5	421.5	3.0	<500

- All depths and intervals are meters downhole, true thicknesses are yet to be determined.
- "Off-scale" refers to >61,000 cps total readings by gamma spectrometer type RS-125
- Unconformity of 'N/A' denotes a lack of visible contact between Athabasca sandstone and basement rock.

About NexGen

NexGen Energy is a Canadian company focused on delivering clean energy fuel for the future. The Company's flagship Rook I Project is being optimally developed into the largest low cost producing uranium mine globally, incorporating the most elite standards in environmental and social governance. The Rook I Project is supported by a NI 43-101 compliant Feasibility Study which outlines the elite environmental performance and industry leading economics. The Project is located in the Province of Saskatchewan, Canada - a world leading uranium producing Province expressly committed to advancing nuclear energy opportunities that sustainably promote economic growth and reduce greenhouse gas emissions.

NexGen is led by a team of experienced uranium and mining industry professionals with expertise across the entire mining life cycle, including exploration, financing, project engineering and construction, operations, and closure. NexGen is leveraging its proven experience to deliver a Project that leads the entire mining industry socially, technically, and environmentally. NexGen's Project and prospective portfolio in northern Saskatchewan will provide generational long-term economic, environmental, and social benefits for Saskatchewan, Canada, and the world.

NexGen is listed on the Toronto Stock Exchange, the New York Stock Exchange under the ticker symbol "NXE" and on the Australian Securities Exchange under the ticker symbol "NXG" providing access to global investors to participate in NexGen's mission of solving three major global challenges in decarbonization, energy security and access to power. The Company is headquartered in Vancouver, British Columbia, with its primary operations office in Saskatoon, Saskatchewan.

Contact Information

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Technical Disclosure*

All technical information in this news release has been reviewed and approved by Jason Craven, NexGen's Manager, Exploration, a qualified person under National Instrument 43-101.

Natural gamma radiation in drill core reported in this news release was measured in counts per second (cps) using a Radiation Solutions Inc. RS-125 gamma spectrometer. The reader is cautioned that total count gamma readings may not be directly or uniformly related to uranium grades of the rock sample measured; they should be used only as a preliminary indication of the presence of radioactive minerals.

A technical report in respect of the FS is filed on SEDAR (www.sedar.com) and EDGAR (www.sec.gov/edgar.shtml) and is available for review on NexGen Energy's website (www.nexgenenergy.ca).

Cautionary Note to U.S. Investors

This news release includes Mineral Reserves and Mineral Resources classification terms that comply with reporting standards in Canada and the Mineral Reserves and the Mineral Resources estimates are made in accordance with NI 43-101. NI 43-101 is a rule developed by the Canadian Securities Administrators that establishes standards for all public disclosure an issuer makes of scientific and technical information concerning mineral projects. These standards differ from the requirements of the Securities and Exchange Commission ("SEC") set by the SEC's rules that are applicable to domestic United States reporting companies. Consequently, Mineral Reserves and Mineral Resources information included in this news release is not comparable to similar information that would generally be disclosed by domestic U.S. reporting companies subject to the reporting and disclosure requirements of the SEC Accordingly, information concerning mineral deposits set forth herein may not be comparable with information made public by companies that report in accordance with U.S. standards.

Forward-Looking Information

The information contained herein contains "forward-looking statements" within the meaning of applicable United States securities laws and regulations and "forward-looking information" within the meaning of applicable Canadian securities legislation. "Forward-looking information" includes, but is not limited to, statements with respect to mineral reserve and mineral resource estimates, the 2021 Arrow Deposit, Rook I Project and estimates of uranium production, grade and long-term average uranium prices, anticipated effects of completed drill results on the Rook I Project, planned work programs, completion of further site investigations and engineering work to support basic engineering of the project and expected outcomes. Generally, but not always, forward-looking information and statements can be identified by the use of words such as "plans", "expects", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates", or "believes" or the negative connotation thereof or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur" or "be achieved" or the negative connotation thereof. Statements relating to "mineral resources" are deemed to be forward-looking information, as they involve the implied assessment that, based on certain estimates and assumptions, the mineral resources described can be profitably produced in the future.

Forward-looking information and statements are based on the then current expectations, beliefs, assumptions, estimates and forecasts about NexGen's business and the industry and markets in which it operates. Forward-looking information and statements are made based upon numerous assumptions, including among others, that the mineral reserve and resources estimates and the key assumptions and parameters on which such estimates are based are as set out in this news release and the technical report for the property, the results of planned exploration activities are as anticipated, the price and market supply of uranium, the cost of planned exploration activities, that financing will be available if and when needed and on reasonable terms, that third party contractors, equipment, supplies and governmental and other approvals required to conduct NexGen's planned exploration activities will be available on reasonable terms and in a timely manner and that general business and economic conditions will not change in a material adverse manner. Although the assumptions made by the Company in providing forward looking information or making forward looking statements are considered reasonable by management at the time, there can be no assurance that such assumptions will prove to be accurate in the future.

Forward-looking information and statements also involve known and unknown risks and uncertainties and other factors, which may cause actual results, performances and achievements of NexGen to differ materially from any projections of results, performances and achievements of NexGen expressed or implied by such forward-looking information or statements, including, among others, the existence of negative

operating cash flow and dependence on third party financing, uncertainty of the availability of additional financing, the risk that pending assay results will not confirm previously announced preliminary results, conclusions of economic valuations, the risk that actual results of exploration activities will be different than anticipated, the cost of labour, equipment or materials will increase more than expected, that the future price of uranium will decline or otherwise not rise to an economic level, the appeal of alternate sources of energy to uranium-produced energy, that the Canadian dollar will strengthen against the U.S. dollar, that mineral resources and reserves are not as estimated, that actual costs or actual results of reclamation activities are greater than expected, that changes in project parameters and plans continue to be refined and may result in increased costs, of unexpected variations in mineral resources and reserves, grade or recovery rates or other risks generally associated with mining, unanticipated delays in obtaining governmental, regulatory or First Nations approvals, risks related to First Nations title and consultation, reliance upon key management and other personnel, deficiencies in the Company's title to its properties, uninsurable risks, failure to manage conflicts of interest, failure to obtain or maintain required permits and licences, risks related to changes in laws, regulations, policy and public perception, as well as those factors or other risks as more fully described in NexGen's Annual Information Form dated February 24, 2023 filed with the securities commissions of all of the provinces of Canada except Quebec and in NexGen's 40-F filed with the United States Securities and Exchange Commission, which are available on SEDAR at www.sedar.com and Edgar at www.sec.gov .

Although the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in the forward-looking information or statements or implied by forward-looking information or statements, there may be other factors that cause results not to be as anticipated, estimated or intended. Readers are cautioned not to place undue reliance on forward-looking information or statements due to the inherent uncertainty thereof.

There can be no assurance that forward-looking information and statements will prove to be accurate, as actual results and future events could differ materially from those anticipated, estimated or intended. Accordingly, readers should not place undue reliance on forward-looking statements or information. The Company undertakes no obligation to update or reissue forward-looking information as a result of new information or events except as required by applicable securities laws.