THE STATE OF NEW HAMPSHIRE
BEFORE THE
NEW HAMPSHIRE
SITE EVALUATION COMMITTEE

SEC DOCKET NO. 2019-02

APPLICATION OF CHINOOK SOLAR, LLC FOR A CERTIFICATE OF SITE AND FACILITY FOR THE CHINOOK SOLAR PROJECT IN FITZWILLIAM, NEW HAMPSHIRE

PREFILED TESTIMONY OF LISE LAURIN
ON BEHALF OF
CHINOOK SOLAR, LLC
OCTOBER 14, 2019

Qualifications of Lise Laurin

Q. Please state your name and business address.

A. My name is Lise Laurin. My business address is EarthShift Global, LLC, 37 ME-236 #112, Kittery, Maine 03904.

Q. Who is your current employer and what position do you hold?

A. I am the founder and CEO of EarthShift Global, LLC ("EarthShift").

Q. Please describe your responsibilities at EarthShift, including those that relate to the Chinook Solar Project that is the subject of this docket.

A. As CEO, I have oversight and management responsibilities for all of the services that EarthShift provides to its clients. My primary roles include direct involvement in and reviewing all aspects of projects in which EarthShift is involved and all of the services we provide to our clients, including greenhouse gas ("GHG") impact analyses. As the result of all of these activities, I am very familiar with the proposed Chinook Solar Project ("the Project") and the Greenhouse Gas Assessment for this Project ("the Assessment"), which has been referred to in the Application and has been marked as

Appendix 15A to the Application, which we prepared for Chinook Solar, LLC ("Chinook Solar or the Applicant").

Q. What are your background and qualifications?

A. I have been CEO of EarthShift since 2015 when the company I founded in January of 2000, EarthShift, LLC, transitioned to EarthShift Global, LLC. Prior to that, I held various positions in process technology, product management, sales and marketing as further described in my résumé, which is attached to this testimony and is labeled Attachment A. I have a Bachelor of Science degree in Physics from Yale University and I have been or am currently a member of various centers and committees, including the American Center for Life Cycle Assessment. I have also published a number of related articles which are cited in my résumé.

Q. Have you previously testified before this Committee and/or any other state permitting agencies?

A. I have not testified before the New Hampshire Site Evaluation Committee ("SEC" or "Committee"), but under my direction the EarthShift team has provided testimony to the Vermont Agency of Natural Resources, the Vermont Public Utility Commission, and the Connecticut Siting Council, all related to the life cycle impacts of utility solar installations.

Purpose of Testimony

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide the Committee with an analysis of certain impacts of the Project, including more specifically information on the following topics that are contained in the Application for a Certificate of Site and Facility ("the Application"): the effects of the Project on air quality and the environment, including the potential change in GHG emissions to the atmosphere that could result from the proposed Project, as well as the Project's consistency with the objectives of certain state public policies.

Site Information

Q. Please describe the location and basic characteristics of the proposed Project site.

A. The Project is proposed to be located in Fitzwilliam, New Hampshire. Specifically, the Project footprint is proposed to be located on approximately 110 acres of private lands which are currently under either an option to purchase or an option to lease agreement between Chinook Solar and each of five landowners. The total amount of land subject to these agreements is in excess of 500 acres of land, though as noted above the footprint of the proposed Project and thus the amount of land that will be disturbed by the Project is a much smaller portion of the land under agreement. The proposed Project is a 30MW electric generating facility, with the electricity to be generated through the use of solar panels. In general, the Project site is one which has been actively forested for a number of years. More information about the location and characteristics of the Project site and surrounding area is contained in the Application.

EarthShift's Assessment of the Impact of the Project

Q. Did you and/or others with whom you work at EarthShift prepare a Greenhouse Gas Assessment for this Project?

A. Yes. In conjunction with others at EarthShift I prepared the Assessment for this Project.

Q. Please describe the analysis EarthShift conducted in completing the Assessment.

A. As noted in the Assessment, our primary objective was to determine the potential change to GHG emissions that could result from the Project. This analysis included modeling the addition of 30MW of electricity generation to the electricity grid from a solar array, as compared with adding capacity from additional natural gas-fired generation, which has grown to become the largest source of electric generation in New England in recent years. This analysis also included determining the relative life cycle GHG emissions of the two different options and then to quantify the potential GHG emission benefits of the Project.

Q. Please explain how you went about quantifying the change in GHG emission.

A. In order to compare the two scenarios noted above, the addition of 30MW of electricity generation to the electricity grid from a solar arrays compared with adding capacity from additional natural gas generation, we quantified the GHG emissions that would result from building and installing the solar array ("Solar Scenario") and the total GHG emissions that would result from adding conventional natural gas-based electricity

generation using a combustion turbine equivalent to produce the capacity of the proposed Project ("Baseline Scenario"). To calculate the GHG emissions for the Solar Scenario we assumed the Project would result in clearing 132 acres of the existing forest, the emissions from the production of the solar panels and infrastructure, the lost forest carbon, and any sequestration from planted grasses. In doing this we assumed that a fully forested 132 acres would be lost as a result of the construction of the Project; it is our understanding that this is a conservative estimate given that much of the acreage to be used for the Project footprint, which has been reduced to 110 acres, has been harvested for timber in recent years. To calculate the GHG emissions for the Baseline Scenario, we calculated the GHG emissions from the actual combustion of the natural gas, as well as a proportionate amount of the life cycle impacts from building and maintaining a natural gas fired electric generation plant. The difference between these two values became our estimate of the GHG reduction that the Project can expect to achieve. The study period was 30 years, which is the expected minimum service life of the Project.

Q. Please explain in more detail how you went about modeling these scenarios.

A. We utilized SimaPro LCA software (www.pre.nl) and calculated the results using the 2013 Intergovernmental Panel on Climate Change ("IPCC") 100 year Global Warming Potential (IPCC, 2013) impact assessment method. SimaPro has been in existence for 25 years and is one of the world's leading life cycle assessment software packages. It is used by industry and academics throughout the world.

Q. What was the conclusion of the Assessment you conducted?

A. The conclusion was that construction and operation of the 30MW solar generating facility would result in substantial GHG emissions reductions of 84-91% over the 30-year study period relative to adding natural gas generation capacity. We also concluded that these significant reductions in GHG emissions could be achieved despite the proposed land use change for acreage of forest in the proposed footprint of the Project at the site, and despite annual reductions of 0.5% in solar generated energy output over the study period beyond year one. Taking into account the lost carbon dioxide sequestration over the life of the facility due to tree clearing and the carbon dioxide emitted from manufacturing the solar equipment, the estimated payback period is three years.

Consistency with Public Policies

Q. In your opinion is the Project consistent with public policies relating to renewable energy and climate change?

A. Yes. As a solar renewable energy electric generating facility, the Project is consistent with and promotes several public policy goals that are contained in New Hampshire law. These include the goals in RSA 362-F, New Hampshire's renewable portfolio standard ("RPS") law, which requires that 25% of the electricity sold by retail suppliers in New Hampshire come from renewable sources by 2025. The Project is also consistent with the purpose of the RPS statute articulated in RSA 362-F:1 in that it will provide fuel diversity to the state and the region's generation supply through the use of a local renewable resource that is emission-free (during generation) and which can displace and lower regional dependence on fossil fuels, and it will help to reduce the amount of

greenhouse gases, nitrogen oxides and particulate matter emissions generated in the state, thereby improving air quality, public health, and mitigating against the risks of climate change.

Because the Project will produce electricity with greatly reduced life cycle greenhouse gas emissions, it is consistent with the state's Regional Greenhouse Gas Initiative ("RGGI") set forth in RSA 125-O:19 *et seq.* which is aimed at reducing greenhouse gas emissions resulting from energy use in New Hampshire. The New Hampshire Legislature has determined that global climate change is a significant environmental problem that can be addressed through reducing greenhouse gases such as carbon dioxide which is produced by electric power plants that combust fossil fuels. By generating electricity without using fossil fuels, the Project will assist in addressing the issue of climate change.

Conclusion

Q. In your opinion, will the Project have an unreasonable adverse effect on public health and safety?

A. No. Based upon the information set forth in our Assessment and in my testimony above, I believe that the Project will not have an unreasonable adverse effect upon public health and safety. In fact, it is my opinion that the Project will have a positive effect on public health and safety in New Hampshire and the New England region as compared with obtaining an equivalent amount of electricity from natural gas-fired generation.

Q. Does this conclude your testimony?

A. Yes, this concludes my testimony at this time, though I reserve the right to file supplemental testimony in accordance with the Committee's procedural schedule.

ATTACHMENT A

LISE LAURIN

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CAREER SUMMARY

CEO, EarthShift Global, LLC, Kittery ME **August 2015 to present**
EarthShift Global (www.earthshiftglobal.com) developed out of EarthShift, LLC to expand the leverage of optimized sustainability tools and training and to add support of policy decisions through the advanced sustainability assessment methodologies of Anticipatory Life Cycle Assessment and Sustainable Return on Investment. Lead the company using employee and client empowerment as key drivers to success. Provide guidance to clients in all areas of S-ROI and LCA. Clients include manufacturers, governmental organizations, NGOs, and consultants from the US, Canada, Europe, Latin America, Asia, and Africa.

Founder, EarthShift, LLC, Kittery ME **Jan 2000 to July 2015**
Founded EarthShift to support sustainable business decisions. Provided life cycle assessment (LCA) and Sustainability Return on Investment (S-ROI) capacity building within industry. Provided training, software tools, custom tools, support consulting, as well as direct project consulting and management. Provided technical direction for EarthShift's staff and financial and strategic management for the corporation.

Director of Product Marketing, IBEX Process Technology, Inc., Lowell, MA **Mar 2002 to Sept 2003**
Directed all aspects of marketing and product management for this artificial intelligence software company including defining product requirements, project management, sales support, and marketing communications with full budget responsibility in this semiconductor software start up.

Founder and President, Clear Tech, Newton, NH **1996 to 2002**
Founded Clear Tech to provide marketing services to high tech companies including research, strategy, promotion, public relations, and event coordination. Provided market research and marketing plans for both startup and larger companies, focusing on creating the most impact for the fewest dollars.

Product Manager, Progressive Technologies, Inc., Tewksbury, MA **1994 to 1996**
Responsible for product positioning and promotion of exhaust control devices for applications in the semiconductor industry. (Progressive Technologies is now part of Brooks Automation)

US Sales and Marketing Manager ASM France, Phoenix, AZ **1992 to 1994**
Opened up the US to low-medium end semiconductor tools previously sold only in Europe. Developed manufacturers' rep network to support sales of the tools and other parts.

Product Manager ASM America, Phoenix, AZ **1987 to 1994**
Represented high-end US, European and Japanese semiconductor equipment globally.

Process Technology Limited, Oromocto, NB, Canada **1982 to 1987**
Supplier of CVD and diffusion furnaces and retrofits into the semiconductor industry
Marketing/Sales Manager, 1983 to 1987
Lab manager, 1982 to 1983

Process Engineer, Intel Corporation, Aloha, OR **1981 to 1982**

EDUCATION

Bachelor of Science in Physics, Yale University, 1981

PROFESSIONAL AND OTHER ACTIVITIES

Vice President, Sustainability Conoscente Network (SCN)
Board Member, American Center for Life Cycle Assessment; Certified Life Cycle Professional
Steering Committee Member, SETAC LCA Interest group
Member, North American ISO Technical Committee on LCA and Type III Ecolabels
Member, Technical Advisory Panel on EPDs, USGBC
Contributor UNEP SETAC Life Cycle Initiative
Member SCN, ACLCA, AIChE, SETAC

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