

2002 August 29

Subject: Noise Impact Assessment at the Spruce Meadows Power Plant – AEUB ID 99-8

Howell·Mayhew Engineering has been engaged to prepare and submit the AEUB's application for interconnection of a new electric generating plant already constructed at Spruce Meadows Farms Ltd in Calgary.

The purpose of this letter is to satisfy the AEUB's Noise Impact Assessment (NIA) requirements as part of the application. AEUB Noise Control Directive ID 99-08 states "An NIA must be conducted for any new permanent facilities or for modifications to existing permanent facilities where there is a reasonable expectation of a continuous noise source." This Spruce Meadows' power plant will emit a continuous electric power hum as well as intermittent noise caused by a heat-ventilating device.

A major component of this installation consists of 40 solar photovoltaic generating modules mounted on the south-facing wall of British House. This electric generating equipment, in our professional opinion, does not cause any direct objectionable noise during any phase of its operation. This holds true even at its rated output power of 2.5 kW_{DC} during which 2 300 000 000 000 000 000 000 (equal to 2 300 billion billion or 2.3×10^{21}) sun-derived short-wave non-ionizing photons violently smash into the modules every second at a nearly constant speed of 300 000 km/s pervading and bouncing around every cubic nanometre (nm³) inside its single crystalline solid-state semi-conductor substrate. Throughout this violent interaction, some photons are reflected back into the environment, some are absorbed into heat, and some extend their momentum to knock electrons out of their eternal silicon homes and into the void of the nearby embedded aluminum pick-up conductors, thereby causing an electrical charge and the ensuing electrical current. Notwithstanding the environmental stress of the aforementioned process, the modules are in fact, really quite silent. The system is, however, the direct and the specific cause of "collateral" noise to the extent of outbursts of exclamation, salubrious remarks, the clinking of liquid-filled glass containers, and other human-generated noise profiles of nearby guests and patrons of British House as they examine the system and discuss newly-inspired opportunities of applying such systems on a more personal basis.

The only other noise-generating device in the plant consists of a Xantrex STXR 2 kWAC inverter located in the basement of British House. It is our professional opinion that this electric conversion equipment will not cause an undue and objectionable noise impact on the environment surrounding British House for the following reasons:

1. Its noise emissions are only slightly audible at a distance of 1 m using standard-issue personal sound pressure wave detection devices (more colloquially termed "ears").
2. The inverter is surrounded on five sides by concrete walls, concrete floor, and concrete ceiling, by operable glass doors on the south side, and by earth berms on two sides.

3. No person lives within 300 m. It is noted that a new subdivision is being planned within 1000 m.
4. Its noise emissions are much less than the ambient noise environment, which is primarily generated in the immediate surrounds of British House by humans at the completion of sundry breath-taking rounds of world-class equestrian competition televised internationally.

No computer modelling, field measurements, acoustical engineering examples or calculations were used as the basis on which to arrive at the above assessment, nor to develop a predicted comprehensive sound level (CSL). No sound survey or modelling was used to determine the present sound environment.



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