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Noise Impact Assessment of Unit 1 at the Hélène Narayana Power Plant – AEUB ID 99-8

Howell·Mayhew Engineering has been engaged to prepare and submit the AEUB's application for interconnection of Unit 1 of the new electric generating plant at the residence of Dr. Hélène Narayana in Edmonton.

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 "Narayana Power" residential power plant will emit a barely audible electric power hum.

A major component of this installation consists of 2 solar photovoltaic generating modules mounted on the south-facing wall of her 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 0.1 kW_{DC} during which 100 000 000 000 000 000 000 (equal to 100 billion billion or 100×10^{18}) 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, amazement, salubrious remarks, the clinking of liquid-filled glass containers, and other human-generated noise profiles by friends, neighbours, guests, media, and passers-by as they examine the system, socialise from the passive solar greenhouse doubling as the power plant's viewing station, and discuss newly-inspired opportunities of applying such systems to fit their own personal lifestyle.

The only other noise-generating device in the plant consists of a Trace MicroSine 100 W_{AC} inverter located in her basement. It is our professional opinion that this electric conversion equipment will not cause an undue and objectionable noise impact on the environment surrounding her house for the following reasons:

1. Its noise emissions are only slightly audible by closely applying standard-issue personal sound pressure wave detection devices (more colloquially termed "ears") against the case of the inverter.
2. The inverter is surrounded by an earth-bermed concrete structure.

3. Notwithstanding the plant's noise emissions and that neighbours will live within a mere 7 m of this plant, solar power plants are usually greeted by neighbours expressing a typical IWOOMRT psychology (pronounced "ywoomirt", or "I want one on my roof too") instead of the more prevalent NIMBY syndrome expressed against plants powered by fossil fuels.
4. Its noise emissions are much less than the ambient noise environment, which is primarily generated in the immediate surrounds of her house by automobile traffic and the everyday white noise of humans in a busy city.

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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