

Coaldale Renewable Energy Project – Noise and Shadow Flicker Memo

Prepared by: Green Cat Renewables Canada Corporation

Prepared for: Coaldale Renewables GP Inc.

Date: December 2024



Subject: Coaldale Renewable Energy Project – Shadow Flicker Assessment and Noise Impact Assessment for the School in Chin

Coaldale Renewables GP Inc (Coaldale GP) is proposing to construct and operate the Coaldale Renewable Energy Project (the Project), located approximately 10km northeast of the Town of Coaldale, near the Hamlet of Chin. The Project was submitted to the Alberta Utilities Commission (AUC) in September 2024¹ and is proposed to have a total capacity of up to 40-megawatts (MW), comprised of five 7MW wind turbine generators, and a 5MW_{AC} solar photovoltaic (PV) facility. Green Cat Renewables Canada Corporation (GCR) previously completed a shadow flicker assessment (SFA) and noise impact assessment (NIA) at receptors within 1.5km of Project infrastructure as required by AUC Rule 007 and 012, respectively.

Coaldale GP understands that stakeholders have raised concerns regarding the potential noise and shadow flicker impacts the Project may have on the students attending the school in Chin (the School). Coaldale GP has retained GCR to assess the potential noise and shadow flicker impacts on the School during the school day.

An overview of the Project study area is provided in **Figure 1**. The solar project area is highlighted in yellow, with the wind Project area highlighted in red.

Shadow Flicker Assessment

Shadow flicker is experienced when a moving shadow is cast through a small opening, such as a window, and as a result changes the amount of light entering into the building. A flickering effect can be observed by the blades of a turbine during certain times of the year and day when shadows are cast over a building.

The duration of shadow flicker can be determined through a modelling software, which identifies the times, duration and specific turbines causing shadow flicker on a receptor.

GCR completed the shadow flicker assessment following the same methodology as was conducted in the Shadow Flicker Assessment Report² to assess the impact of the Project on the School. Based on the assessment, no shadow flicker is predicted at the school during the assumed school operating hours of 7:00am to 5:00pm. **Figure 2** illustrates the times of year and day when shadow flicker is expected to occur, and the School operating hours.

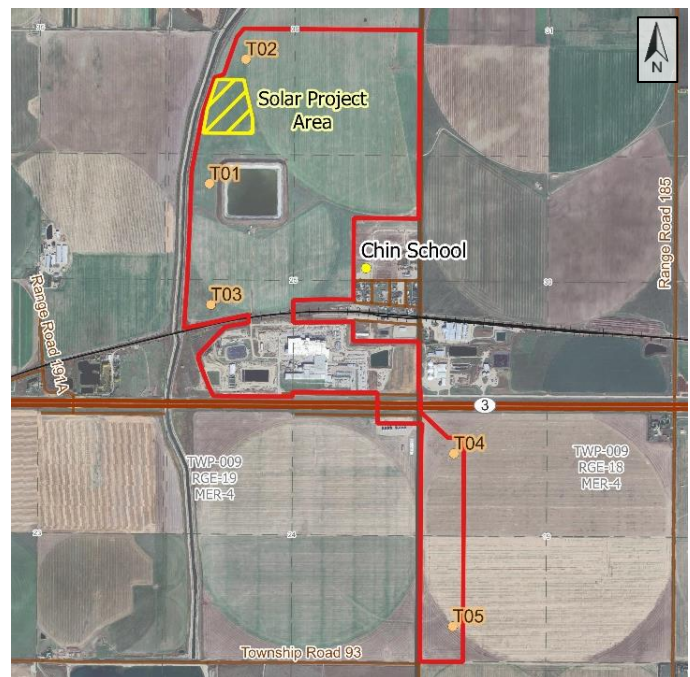


Figure 1 – Coaldale Renewable Energy Project Study Area

¹ AUC Proceeding 29294

² AUC Exhibit 29294 – X0007

It is in GCR's view that students and staff of the School will not be negatively impacted by shadow flicker due to the Project turbines as no shadow flicker will be experienced during school hours.

Noise Impact Assessment

The Project is expected to generate noise from the turbine blades as they spin and cut through the air, the turbine generators, the solar inverters, and the medium-voltage transformer within the solar area. All renewable energy projects in Alberta must operate in compliance with the daytime and night-time Permissible Sound Levels (PSLs), as defined by AUC Rule 012, at all receptors within 1.5km of the Project.

AUC Rule 012 outlines how the PSLs are calculated based on existing infrastructure, dwelling density and nearby roads. Per AUC Rules, the baseline sound level, inclusive of existing third-party facilities, and the Project cannot exceed the PSL defined at each receptor.

GCR determined the baseline sound level at the School and calculated the Project noise contribution. GCR has determined that the cumulative sound levels from the baseline and the Project is 5dB below the established PSL, as shown in **Table 1**.


Table 1 - Cumulative Sound Level Assessment for Daytime (DT) Periods for the Assessed School

Receptor ID	Baseline Sound Level (dBA)	Project Sound Level (dBA)	Cumulative Sound Level (dBA)	PSL (dBA)	PSL Compliance Margin (dB)
School	53.0	39.1	53.2	58	5

The noise model has assumed the Project is operating at full capacity at all times, to represent the worst-case and provide a conservative assessment. In practice, there will be periods when the Project turbines operate at lower wind speeds or in standby mode, and when the solar PV facility does not operate at full power. During these times, the sound emissions from both the turbines and solar PV will be much lower than the peak sound output assumed throughout this assessment. Additionally, the noise model assumed that the School is simultaneously downwind of all Project infrastructure during operation; a significant conservatism that will never occur in practice. Despite all of the modelled conservatisms, the results show that the Project is fully compliant with the daytime PSL at the School, with a compliance margin of 5 dB. GCR also conducted a low frequency noise assessment and concluded that noise from the Project is not expected to produce any significant low frequency noise effects.

For these reason, GCR concludes that the Project is not expected to have any negative noise impacts on students and staff at the School.

Kind regards,



Jacqueline Gallagher

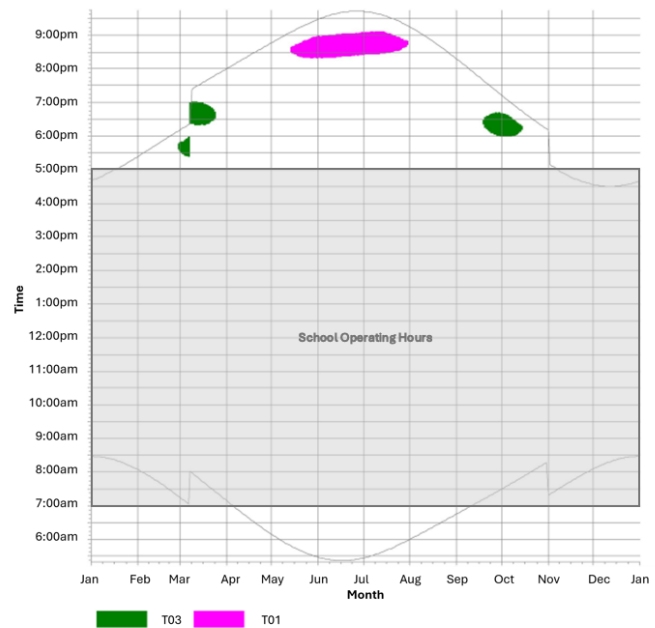


Figure 2 – Shadow Flicker Occurrences at School