

TO Emily Herdman

DATE March 29, 2017

CC Corey De La Mare, Jacinta McNairn, Julie Carignan, Golder Associates Ltd.

FROM Jeff Sansom, Capital Power

PROJECT No. 1543760

CAPITAL POWER HALKIRK 2 WIND PROJECT ENVIRONMENTAL EVALUATION REPORT – ADDENDUM

Dear Ms. Herdman:

Golder Associates Ltd. (Golder) is pleased to submit this addendum to the Environmental Evaluation (EE) for the Halkirk 2 Wind Power Project (the Project) submitted to Alberta Environment and Parks (AEP) on February 23, 2017. The supplemental information provided in this addendum address the clarifications requested by AEP during the meeting on March 14, 2017.

1. AEP requested additional information on the locations of Project footprint encroachment on native prairie habitat. The recommendation from AEP is to avoid any disturbance to native prairie, if feasible.

The Project footprint, as described in the EE, marginally encroaches native prairie at three locations (Table 1). In each instance, the encroachment results from the construction footprint of an access road. This construction footprint was generated via a geographic information system (GIS) exercise using a fixed 25 meter (m) buffer from the access road centerlines. These access road locations were selected due to existing disturbance (i.e., existing roads will be upgraded for use as Project access roads), and the full 25 m construction right-of-way may not be required in all places.

In response to AEP's recommendation, Capital Power will avoid these three instances of native prairie disturbance by locally reducing the access road construction right-of-way width. As a result, the Project footprint will be slightly modified to exclude the native prairie areas from the access road construction footprint, and no native prairie habitat will be disturbed by the Project construction or operation footprint.

| Legal Land Description | Project Footprint | Area of Native Prairie (ha) | | |
|------------------------|-------------------|-------------------------------|---------------------|--|
| | | Construction Footprint | Operation Footprint | |
| SW-26-39-14-W4M | Access Road | 0.033 | 0.000 | |
| SE-25-39-14-W4M | Access Road | 0.003 | 0.000 | |
| NW-15-40-14-W4M | Access Road | 0.004 | 0.000 | |
| | Total | 0.040 | 0.000 | |

Table 1: Native Prairie within the Project Footprint

2. AEP requested additional information on the encroachment of Project infrastructure within the wetland buffers.

Capital Power undertook an exhaustive siting exercise with several (10 major iterations) iterations that resulted in no turbines being permanently located within 100 m buffer of wetlands. However, there are some access roads





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that will be permanently located within wetlands buffers. For indirect effects to wetlands from roads, Capital Power followed the best management practice outlined in *Stepping Back from the Water* (AEP 2012) of a 20 m vegetated buffer on glacial till materials with <5% strip slope. The number of wetlands within 20 m from permanent access are as follows:

- The EE identified 11 wetlands that will require compensation, resulting in a loss of 0.2 ha of wetlands.
- An additional 23 wetlands identified occur within 20 m of permanent access roads, of these 13 occur within cultivated lands, 4 within desktop assessed agricultural lands (i.e., not field-verified), 4 are within modified pasture and 2 are within wooded cover types (i.e., likely in a windrow). These wetland boundaries were largely delineated through desktop interpretation and 10% of wetland permanency classes III-V were field verified. Consequently, additional changes to wetland boundaries and/or permanent road locations may affect the realized number of wetlands within 20 m of permanent access roads. Capital Power will diligently reduce this number where it addresses the needs of the landowner (i.e., minimizes impacts to farming operations) and where there is the opportunity to move roads.

3. AEP requested additional information on Project infrastructure located within Environmentally Sensitive Areas (ESAs).

The Project infrastructure located within ESAs is described in Table 2. All of the infrastructure described in Table 2 is sited on cultivated land.

| Logal Land Decarintian | Project Footprint | Area of ESA (ha) | |
|------------------------|-------------------|------------------------|----------------------------|
| Legal Land Description | | Construction Footprint | Operation Footprint |
| SE 31-039-13 W4M | Turbine T103 | 0.87 | 0.18 |
| SE 31-039-13 W4M | Access Road | 0.65 | 0.19 |
| SE 31-039-13 W4M | Collector System | 0.63 | 0.00 |
| NW 25-039-14 W4M | Turbine T091B | 0.74 | 0.16 |
| NW 25-039-14 W4M | Access Road | 3.89 | 1.26 |
| NW 25-039-14 W4M | Collector System | 1.42 | 0.00 |
| NW 25-039-14 W4M | Crane Path | 0.40 | 0.00 |
| SE 25-039-14 W4M | Turbine T116 | 0.87 | 0.18 |
| SE 25-039-14 W4M | Access Road | 0.29 | 0.06 |
| SE 25-039-14 W4M | Collector System | 0.27 | 0.00 |
| NW 27-039-14 W4M | Turbine T080A | 0.83 | 0.18 |
| NW 27-039-14 W4M | Access Road | 2.18 | 0.68 |
| NW 27-039-14 W4M | Collector System | 0.65 | 0.00 |
| SW 36-039-14 W4M | Turbine T092A | 0.88 | 0.18 |
| SW 36-039-14 W4M | Access Road | 1.86 | 0.59 |
| SW 36-039-14 W4M | Collector System | 0.26 | 0.00 |
| SW 04-040-14 W4M | Turbine T057A | 0.88 | 0.18 |
| SW 04-040-14 W4M | Access Road | 0.53 | 0.16 |
| SW 04-040-14 W4M | Collector System | 1.72 | 0.00 |

Table 2: Environmentally Sensitive Areas within the Project Footprint





| Level Level Description | Project Footprint | Area of ESA (ha) | |
|-------------------------|-------------------|------------------------|----------------------------|
| Legal Land Description | | Construction Footprint | Operation Footprint |
| SE 07-040-14 W4M | Turbine T039B | 0.87 | 0.18 |
| SE 07-040-14 W4M | Access Road | 0.82 | 0.25 |
| SE 07-040-14 W4M | Collector System | 1.08 | 0.00 |
| SE 07-040-14 W4M | Crane Path | 0.61 | 0.00 |
| NE 35-039-15 W4M | Substation | 2.51 | 0.60 |
| NE 35-039-15 W4M | Turbine T022A | 0.87 | 0.18 |
| NE 35-039-15 W4M | Access Road | 1.51 | 0.47 |
| NE 35-039-15 W4M | Collector System | 1.13 | 0.00 |
| NE 03-040-15 W4M | Access Road | 0.25 | 0.07 |
| NW 09-040-15 W4M | Collector System | 0.07 | 0.00 |
| SE 12-040-15 W4M | Access Road | 0.43 | 0.13 |
| Total | | 29.99 | 5.85 |

Erratum:

On Page 34 of the EE Report, the following incorrect statement can be found:

None of the turbines are located within these ESAs; however, some supporting infrastructure (e.g., access roads and underground collector system) are located within these ESAs.

In actuality, eight (8) turbines, the substation and access roads will be permanently located within these ESAs and collectively comprise a total footprint of 5.85 ha, of which the majority of the footprint is comprised of access roads (i.e., 3.86 ha).

4. AEP requested additional information on the acoustic bat data gaps.

Bat surveys were completed in the spring (April 28 – June 12), and in the summer/fall period (July 13 – October 16), with the migratory season (August 1 – September 10) presented separately, but also included in the summer/fall data. Table 3 below outlines the missing detector data (i.e., number of nights and timing).

| Detector | General Location | Number of Spring Nights Missing (46 nights/ detector) | Number of Summer/Fall Nights Missing (96 nights/ detector) | Number of Fall Migratory Nights Missing (41 nights/ detector) |
|----------|----------------------------|--|--|--|
| CPHBO1G | NW quadrant | 2 | 0 | 0 |
| CPHB02M | 30 m height in NW quadrant | 2 | 16 | 13 |
| CPHB03G | eastern edge | 1 | 15 | 3 |
| CPHB04G | NE quadrant | 3 | 8 | 5 |
| CPHB05M | 30 m height in NE quadrant | 8 | 15 | 8 |
| CPHB06G | north central | 2 | 0 | 0 |
| CPHB07G | NW corner | 14 | 20 | 10 |

Table 3: Acoustic Bat Data Gaps





| Detector | General Location | Number of Spring Nights Missing (46 nights/ detector) | Number of Summer/Fall Nights Missing (96 nights/ detector) | Number of Fall Migratory Nights Missing (41 nights/ detector) |
|----------|--------------------|--|--|--|
| CPHB08G | south central edge | 6 | 16 | 8 |
| | Total | 38 | 90 | 47 |

Passes per detector night, however, were calculated based on sampling effort and not maximum potential sampling effort, which would have diluted results. The percentage of missing sampling nights is as follows based on the maximum potential sampling effort for each period:

- Spring 10.3% (i.e., 38 missing nights of a total potential maximum of 368);
- Total Summer/Fall 11.7% (i.e., 90 missing nights of a total potential maximum of 768); and
- Fall Migratory 14.3% (i.e., 47 missing nights of a total potential maximum of 328).

The majority (23 missing nights) of the missing detector nights in the spring were for Detector CPHB05M and CPHB08G from May 20 – May 24 and CPHB07G from May 31 through June 12. Remaining missing detector nights were predominantly during the first night of deployment (6 nights) and the last few nights of deployment (9 missing nights over the last two nights of deployment).

For the Total Summer/Fall (July 13 – October 16) and the Fall Migratory season (August 1 – September 10), the majority of detector nights with no sampling are presented as follows:

- Six detectors, all but CPHB06G and CPHB07G, on the first night (July 13);
- CPHB02M: Aug 10-12, Aug 29 Sep 6 (9 nights), Sep 10-12;
- CPHB03G: July 21 August 3 (14 nights);
- CPHB04G: July 30 Aug 3 (5 nights), Aug 11- 12;
- CPHB05M: July 23 26 (4 nights), July 30-31, Aug 13-20 (8 nights);
- CPHB07G: July 15 July 20 (6 nights), Aug 11 12, Aug 18 Aug 20, Sep 7-12; and
- CPHB08G: Aug 30 Sep 6 (8 nights), Oct 6 Oct 10.
- 5. AEP stated that no clearing of vegetation shall be completed during bird and bat carcass surveys and searcher efficiency trials during post construction monitoring.

Capital Power acknowledges this statement and will not clear vegetation underneath the turbines during bird and bat carcass surveys or searcher efficiency trials associated with the post construction monitoring for the Project.





6. Alberta Transportation required that Project infrastructure meet the minimum setback distance of 150 meters from the Highway 861 right-of-way to issue a permit.

To support Alberta Transportation Roadside Development Permit issuance, Capital Power moved turbine T069 outside the minimum setback requirement of 150 meters from the highway right-of-way. The new turbine location, T069A, was relocated 45 meters east of the original location (Figure 1) and its associated access road, crane path and collector system were slightly extended to accommodate this request from Alberta Transportation.

Avoidance of wetlands is the primary mitigation employed during construction and operation of the Project by Capital Power; therefore; turbine T069A and its associated Project components have been re-sited to avoid both permanent and temporary effects on wetlands. Additionally, no indirect impact to wetlands is anticipated from this change as the nearest Project component is located 98 m from the nearest wetland.



