Algonquin to Adirondacks Collaborative
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RE: Comments on Alto High Speed Rail Project

To Alto & Cadence Consortium,

The Algonquin to Adirondacks (A2A) Collaborative is dedicated to protecting and enhancing the ecological connectivity of the region between and encompassing Algonquin Park in Ontario and the Adirondacks in New York State. The A2A region represents one of the only viable terrestrial pathways for continental wildlife movement in eastern North America, serving as a critical land bridge across the Great Lakes–St. Lawrence River. The proposed Alto High-Speed Rail (HSR) project directly intersects this irreplaceable pathway and is therefore of paramount importance to our organization.

The rail represents both a significant risk and a major opportunity. Without strong ecological safeguards, the Alto project could create a near-impenetrable linear barrier across one of the most important wildlife movement areas in eastern North America. Conversely, if designed with best-in-class mitigations and a nature-positive goal, it could establish a national benchmark for how major transportation infrastructure can proceed while maintaining ecological function. For these reasons, A2A staff and Board of Directors offer the following comments to ensure that ecological connectivity is treated as a central design consideration from the outset.

Ecological Imperative

The Alto study area bisects the A2A corridor and encompasses ecologically significant portions of both the Northern Lanark Highlands and Southern Frontenac. The Northern Lanark Highlands are vital anchors for regional biodiversity, featuring extensive intact greenfield landscapes with large contiguous tracts of Canadian Shield forests that provide interior habitat crucial for disturbance-sensitive species. An intricate network of interconnected wetlands in this region is essential for regulating local water tables and providing rare wildlife breeding grounds.

Southern Frontenac serves as a critical pinch point for continental wildlife movement, encompassing key biodiversity areas including a UNESCO-designated Biosphere Reserve and large Nature Conservancy of Canada properties that support many species at risk.

Both proposed Alto HSR routes overlap directly with A2A's mapped ecological corridors, where even minor disruptions could sever essential north-south wildlife pathways needed for climate adaptation and biodiversity continuity. It is important that ecological assessments are completed along potential routes *before* a final route is selected to ensure the rail line follows the least environmentally harmful path. Regardless of the route ultimately chosen, comprehensive mitigation strategies must be incorporated from the outset to ensure the landscape continues to provide the ecosystem functions that both wildlife and communities depend on.

Principal Ecological Risks

The proposed high-speed rail, operating at up to 300 km/h and secured by continuous fencing, poses serious risks of habitat fragmentation and barrier effects across the A2A corridor. Sensory disturbance from noise and vibration can inhibit bird reproduction and displace interior-forest species, increasing the risk of biotic homogenization as disturbance-sensitive species are replaced by human-tolerant generalists. In Southern Frontenac, an alignment just north of Highway 401 could create a double-barrier effect, trapping animals that survive highway crossings and increasing mortality within a narrow corridor.

Continuous fencing—while necessary for rail safety—functions as a near-complete barrier to medium- and large-bodied wildlife and may also exclude or trap smaller animals depending on mesh size and ground sealing. Without frequent, well-designed crossing opportunities, the rail line will function as an artificial wall across the A2A corridor.

Wetlands require particularly careful consideration. They are not only important habitats in themselves, but are critical to ecological connectivity, supporting amphibian breeding, reptile movement, mammal and bird foraging, seasonal refuge, and hydrological continuity. Rail construction in or near wetlands can alter drainage, fragment wetland complexes, sever aquatic-upland connections, and create artificial edge effects. Furthermore, construction activities and permanent infrastructure risk significant hydrological impairment through soil destabilization, sedimentation, and the potential leaching of contaminants into sensitive aquifers. These disturbances facilitate the expansion of opportunistic invasive species, which threaten to displace specialized native flora and diminish regional biodiversity—with ecological consequences that extend well beyond direct habitat loss.

Comprehensive Mitigation Framework Recommendations

Mitigation must be built into the project at the earliest design stage, before a route is chosen. In the most sensitive parts of the corridor, avoidance should be the primary approach: ground-level rail should not cross major wetland complexes, riparian movement zones, core forest areas, key biodiversity areas, or mapped wildlife movement corridors. We recommend a minimum ecological buffer of 400m around these features, within which at-grade construction, marsh infill, blasting, and other activities that disrupt hydrology should not occur.

Where the line must cross sensitive features, elevated rail (viaducts) should be treated as the preferred design solution rather than an exceptional one. Viaducts substantially reduce barrier effects by allowing wildlife movement beneath the structure, preserving local hydrology, reducing the need for continuous ground-level exclusion fencing, and avoiding fragmentation caused by raised rail beds, excavation, and infilling. This is especially important in wetlands, where viaducts permit water movement, amphibian and reptile passage, and mammal use in ways that embankments cannot. While elevated infrastructure involves higher up-front costs, it avoids far greater long-term expenses from retrofitting the corridor to address ecological and hydrological impacts.

Where ground-level construction is unavoidable, impacts must be reduced through a dense sequence of wildlife crossing structures designed for different species groups. Academic research on railway ecology points to the need for frequent dedicated structures rather than occasional flagship crossings (Clauzel, 2017) in areas of high value to wildlife movement:

Taxonomic Group	Recommended Spacing	Structure Type
Herpetofauna	Every 300–500 m	Dedicated tunnels
Meso-mammals & Small Carnivores	Every 1–2 km	Large box culverts
Large Mammals & Apex Predators	Every 5–8 km	Landscape-scale overpasses & open-span underpasses

Fencing and crossing structures must be planned together. Where fencing is necessary, it should be designed as wildlife-guiding fencing that funnels animals safely to crossing opportunities. Fine-scale design details—mesh size, buried skirts, climb resistance, escape opportunities, and integration with crossing entrances—all have ecological implications. The Alto project should specify fencing in both ecological and engineering terms, including how fence design will differ by landscape context and target wildlife group.

Coordination between rail mitigation and other regional connectivity investments is critical. For example, if sections of the Alto route run adjacent to Highway 401, then at locations where wildlife crossings are being studied in relation to the highway, elevated sections of the Alto rail should be designed in parallel with the highway. The need for highway expansion and a high-speed rail through the same corridor should also be assessed. Should both take place, the objective should be true multi-infrastructure permeability: if a wildlife overpass is justified at a given location because it is a critical linkage, a new high-speed rail barrier in that same corridor should not be permitted. These measures must work together to preserve corridor function.

Mapped Wildlife Corridors & Collaboration Imperative

Over the last decade, A2A has conducted studies to map critical wildlife connectivity corridors within the region. This connectivity mapping is available online; we are also willing to share the associated shapefiles to help Alto visualize the impact of the finalized rail corridor on wildlife connectivity.

We recommend that the rail alignment and subsequent mitigation strategies be developed through a collaborative framework that actively integrates academic research, local GIS data, and the critical ecological and cultural knowledge held by Indigenous peoples and local conservation groups.

This collaborative approach must be a formal, foundational requirement of the planning process, ensuring that the route is informed by those who best understand wildlife's functional movement across this landscape. Furthermore, to maintain public trust and scientific rigour, Alto must ensure that all Environmental Impact Assessments and technical monitoring reports are made fully transparent and publicly accessible. By bridging high-level planning with localized expertise, Alto can ensure the project’s design is rooted in the specific ecological realities of A2A Corridor.

Compensation for Unavoidable Damage

Where damage cannot be fully avoided or mitigated, Alto should provide compensation that strengthens the corridor over the long term. One key opportunity would be securing land on both sides of elevated rail sections and transferring it to land trusts, conservation organizations, or Indigenous-led conservation bodies for permanent protection—ensuring that the movement opportunities created by elevated rail are matched by protected habitat on either side, since passage structures are only as effective as the habitat they connect.

Compensation should go beyond small on-site restoration measures to include long-term conservation outcomes: wetland protection, habitat securement, stewardship funding, and legal conservation mechanisms that persist over the project's lifespan. These measures should result in at least twice as much habitat protected as is destroyed by

the project, making it as nature-positive as possible. Indigenous-led conservation and management of these lands should be prioritized wherever possible.

Closing

The scale and permanence of the Alto project demands that ecological accountability be treated not as a condition of approval, but as a foundational design requirement — regardless of how the project ultimately proceeds. For infrastructure of this magnitude to be genuinely nation-building, its definition of sustainability must extend beyond the tracks to encompass the wildlife and plant communities that depend on a connected landscape for survival. The long-term viability of this corridor is inseparable from its ability to meaningfully integrate the protections outlined above. A2A submits these comments as essential requirements for safeguarding the A2A Corridor. Thank you for considering them as a vital part of your planning process.

Sincerely,

Jessica Lax
Executive Director
Algonquin to Adirondacks Collaborative
On behalf of the A2A Collaborative Board of Directors and Staff

Referenced case study from France: Railway ecology case study (Clauzel, 2017)