

Database Project — Protocol Review Matrix									
	<i>CORRIM/Athena</i>	<i>ISO</i>	<i>AF&amp;PA</i>	<i>Aluminium</i>	<i>Steel North America</i>	<i>Steel International</i>	<i>BRE</i>	<i>Canadian Standards Association</i>	<i>Canadian Raw Materials Database</i>
Substances	essential:6 air, 5 water;non-essential: 2 air, 11 water excluding phosphates and COD	clearly described and consistent with goals	landfill gases and leachate should be estimated, carbon emissions and sinks, report emissions in disaggregated fashion	air: 13; water:6 (combined category for phosphates and ammonia); water: ground or surface	air: comb.7, pre-comb. 10; water: 9	air:5; water: 16; water: gross water input, excluding salt water	air: record measured emissions, use stnd. factors for combustion; seq. Of CO <sub>2</sub> , recarbonation; water: measured emissions, volume extracted.	air: weight of all pollutants including fugitive; water: same: include volume of water unavailable for beneficial uses	all reported considered
Data Quality	data specified as primary or secondary, six DQ parameters, compare to published data	comparative and public studies use ten elements for indicators; if results interpreted, DQ and uncertainty required	depends on audience and intended purpose	DQI values given with data in appendices; group met an evaluated each data point	DQI's described	4 DQI's summarized in appendix data	DQ descriptors described; preferred sources of data	discussion, but no application; recommend use of variability measures	brief discussion; peer review will provide assessment of data
Estimated/Missing Data	data estimates must be practical and appropriate; use process analysis.	documentation required	?	average of reported data	secondary or surrogate	ND	commercial databases	data hierarchy	calculated, based on average of reported
Uncertainty/Sensitivity	no discussion	helpful if ranges given	uncertainty ranges based on probability distributions	ND	mean, max and stand. deviation calculated; selected sensitivity anal.	sens. for allocations, averages include ranges, stand. Dev., max and min	gross calorific value of economic fuels extracted	sensitivity anal. Recommended for key assumptions	ND
Energy of Material Resources	energy value as if fuel burned	heat of combustion, either higher or lower heats can be used	not discussed	higher heating value of extracted resources	ND	not clear, state that it is near zero	combustion values, but for non-economic energy sources such as timber	track as a separate category; wood may or may not be included	for materials considered as energy sources
Boundaries	excludes construction of plants, vehicles, machinery; use domestic data when data on imported products unknown.	consistent with goals	only trees harvested for product, include entire carbon cycle, recov. Fiber extends to forest product systems producing them, landfills include air emissions	exclude capital assets, transport infrastructure and human activities associated with production; man. Scrap and post consumer ready for transport at shipping location; fuel emissions from North American factors.	capital infra., personnel inputs and outputs	cradle-to-gate, but expanded system to include recovery outside of steel-works	cradle-to-gate or cradle-to-grave, suggest 60 year life, energy to heat and cool included, burning waste materials included, exclude capital equipment	imported fuels use U.S. data; energy from wastes can be credited back to the system	cradle-to-grave or gate; Canadian or Canadian/US systems, average production technology used
Exclusion of small amounts	2% of mass excluded, 15% of env. Category	criteria and assumptions need to be clearly stated	ND	95% cumulative from ranking list, 99% of energy, 15% of env. category.	similar to aluminum	99.9% of inputs, wastes 99%	98% of mass, more if significant effects	latitude given, >95% recommended for mass and energy	defer to Canadian Standard
Electricity Grids	regional or smaller	ND	use actual fuel, observe energy hierarchy, use regional or national grid depending on functional unit, marginal fuels if incremental product studied.	U.S. census regions, Canada national grid, Western hydropower, smelter-based industry supplied grid, North American used for off-shore	2 NERC regions for U.S., and also used for Canadian operations	national country grids, for North America regional grids	UK national grid, or specific information if available	provincial or national grids; for electro-process use local or company data	Canadian national grid
Co-Product Allocation	use mass or volume	methods need to be clearly stated; when a clear alternative is present, use sensitivity, use functions that reflect other relationships between products	use physical units such as mass, energy, volume; use sensitivity; woodlands use volume; for paper, assume from chipping; use energy hierarchy for fuels	energy or mass	mass or economic value	mass or energy, system expansion used for blast furnace co-products such as waste gases and slag	physical properties preferred, economic allowed; two products from a single stream allocate burdens on revenue	mass is generally the basis, or energy or moles; economic value not suitable	mass, or other physical basis
Recycling	post-consumer is free, others are fully burdened; some latitude given for gray areas.	physical priorities, economic value or number of subsequent uses.	mass basis, open or closed loop	100% virgin and 100% recycled handled separately, allocations unknown	ready for transport at shipping location	no upstream burdens for ferrous scrap	closed loop: consumer scrap unburdened: open loop residual value of waste used; preferred no burdens to recycled materials.	industrial scrap is co-product at point of production; post cons. Not discussed; loop options discussed	pre-consumer and post-consumer modeled with no burdens from virgin systems