Final Interpretation for Inverter Assembly

The OPA and MEI have provided final interpretations regarding Exhibit D Domestic Content: Table 2, Activity #5, Table 3, Activity #3 and Table 4, Activity #5. The interpretations are regarding inverter assembly, specifically, what are considered to be components that may be fabricated outside Ontario but must be assembled and integrated into the inverter in Ontario.

For inverters 10 kW or smaller:

1. In order to qualify as "assembly, final wiring and testing", including as clarified below, all components must be assembled and finally wired into the final inverter in Ontario. All final testing must be performed entirely in Ontario.

The following are considered to be components that may be fabricated outside Ontario but must be assembled and integrated into the inverter in Ontario, with the noted qualifications:

a. printed circuit boards (PCBs)
   i. PCBs that are to be assembled and integrated into the inverter in Ontario are not required to be populated with components (*e.g.*, capacitors, resistors, microchips or similar components) in Ontario.
   ii. stacked PCBs: each PCB is considered a separate component. Multiple PCBs may not be assembled together outside of Ontario but must be connected together (structurally and electrically) in Ontario.
   iii. wiring connecting one part of a PCB to another part of the same PCB is considered integral to the PCB component, whatever the type of wiring connection used, and is not considered "final wiring" or "assembly" necessary to be performed in Ontario.
   iv. other than wiring as set out in (iii) above, wiring connected to a PCB using a screw terminal must be assembled and finally wired in Ontario.
   v. other than wiring as set out in (iii) above, for wiring connected to a PCB using soldering, only one end of the wiring may be soldered to the PCB and is thereafter considered integral to the PCB. The unsoldered end must be assembled and finally wired in Ontario.

b. cables/cable harnesses
   i. cables/cable harnesses may be fabricated outside Ontario to the extent they do not constitute final wiring outside of Ontario.
   ii. a component on a cable/cable harness is considered integral to the cable/cable harness only if it cannot be easily pulled off and/or cannot slide off the cable or cable harness without damaging the component or the cable/cable harness itself. Tie wraps and similar

iii. components normally used to hold together a cable harness are considered integral to the cable harness.

c. enclosure/enclosure lid
   i. the entire inverter enclosure and its lid may be fabricated outside Ontario to the extent that, except as set out herein, it is assembled and finally wired in Ontario. The enclosure and its lid must be assembled together in Ontario.
   ii. parts required to operate the inverter, *e.g.*, fuses, switches or comparable items, are not considered part of the enclosure or enclosure lid.
   iii. other types of parts (*e.g.*, ground lugs, racking or comparable items inessential to operate the inverter) that are normally welded to the enclosure are considered integral to the enclosure/enclosure lid and are not considered final wiring or assembly of the enclosure.

d. housings
   i. the housings for housing PCBs, other electronics equipment, or other components, may be fabricated outside Ontario to the extent that, except as set out herein, it is assembled and finally wired in Ontario.

e. whether it or is not part of a PCB, a fan/blower/heatsink component.
   i. a fan, blower or heatsink component may be fabricated outside Ontario to the extent that, except as set out herein, the component is integrated into the inverter and finally wired in Ontario.

For inverters larger than 10 kW:

1. In order to qualify as "assembly, final wiring and testing", including as clarified below, all components must be assembled and finally wired into the final inverter in Ontario. All final testing must be performed entirely in Ontario.

Other than those listed in g. to m., the following are considered to be components that may be fabricated outside Ontario but that must be assembled and integrated into the inverter in Ontario:

a. printed circuit boards (PCBs)
   i. PCBs that are to be assembled and integrated into the inverter in Ontario are not required to be populated with components (*e.g.*, capacitors, resistors, microchips or similar components) in Ontario.
   ii. stacked PCBs: each PCB is considered a separate component. Multiple PCBs may not be assembled together outside of Ontario but must be connected together (structurally and electrically) in Ontario.
   iii. wiring: connecting one part of a PCB to another part of the same PCB is considered integral to the PCB component, whatever the type

of wiring connection used, and is not considered "final wiring" or "assembly" necessary to be performed in Ontario.

iv. other than wiring as set out in (iii) above, wiring connected to a PCB using a screw terminal must be assembled and finally wired in Ontario.

v. other than wiring as set out in (iii) above, for wiring connected to a PCB using soldering, only one end of the wiring may be soldered to the PCB and is thereafter considered integral to the PCB. The unsoldered end must be assembled and finally wired in Ontario.

b. cables/cable harnesses

i. cables/cable harnesses may be fabricated outside Ontario to the extent they do not constitute final wiring outside of Ontario.

ii. a component on a cable/cable harness is considered integral to the cable/cable harness only if it cannot be easily pulled off and/or cannot slide off the cable or cable harness without damaging the component or the cable/cable harness itself. Tie wraps and similar components normally used to hold together a cable harness are considered integral to the cable harness.

c. enclosure/enclosure lid

i. the entire inverter enclosure and its lid may be fabricated outside Ontario to the extent that, except as set out herein, it is assembled and finally wired in Ontario. They may be attached together outside of Ontario.

ii. parts required to operate the inverter, *e.g.*, fuses, switches or comparable items, are not considered part of the enclosure or enclosure lid.

iii. other types of parts (*e.g.*, ground lugs, racking or comparable items inessential to operate the inverter) that are normally welded to the enclosure are considered integral to the enclosure/enclosure lid and are not considered final wiring or assembly of the enclosure.

d. housings

i. the housings for housing PCBs, other electronics equipment, or other components, may be fabricated outside Ontario to the extent that, except as set out herein, it is assembled and finally wired in Ontario.

e. fan/blower/heatsink components (component cooling)

i. a fan, blower or heatsink component whose purpose is to specifically cool an inverter component (*e.g.* a PCB heatsink) and not a fan or blower whose purpose is to cool the entire inverter may be fabricated outside Ontario to the extent that, except as set out herein, the component is integrated into the inverter and finally wired in Ontario.

f. mounting plates

i. circuit breakers, fuse holders, and/or thermal sensors may be assembled onto inverter mounting plates outside Ontario as long as the mounting plate itself is assembled into the inverter and finally wired in Ontario. For clarity, a mounting plate is a separate component from the enclosure, and the components on the mounting plate must be finally wired together in Ontario.

The following are considered to be components that may be fabricated and/or mounted into the enclosure outside of Ontario:

g. fan/blower components (inverter cooling)
   i. fan and blower components whose purpose is to cool the entire inverter may be mounted to the enclosure outside of Ontario. For clarity, this includes any power supplies that are used to only power these fan and blower components. Final wiring and assembly must be performed in Ontario.

h. 3-phase AC inductor/reactor/choke components
   i. the 3-phase alternating current inductors, reactors and choke components may be mounted into the enclosure outside of Ontario. Final wiring and assembly must be performed in Ontario.

i. DC capacitor banks and their heatsinks and metal work
   i. direct current capacitor banks, their heatsinks and associated metal work may be mounted into the enclosure outside of Ontario. Final wiring and assembly must be performed in Ontario.

j. 3-phase AC transformer
   i. 3-phase alternating current transformers may be mounted into the enclosure outside of Ontario. Final wiring and assembly must be performed in Ontario.

k. power transistors
   i. power transistors, (*e.g.*, insulated-gate bipolar transistors), the PCBs directly controlling them, and their heatsinks may be mounted into the enclosure outside of Ontario. Final wiring and assembly must be performed in Ontario.

l. control, monitoring and communications electronics
   i. the PCBs, power supplies, fuses, wiring, terminal blocks and housings for control, monitoring and communication electronics may be mounted into the enclosure outside of Ontario. Final wiring and assembly must be performed in Ontario.

m. wiring and cabling between items ‘g’ through ‘l’

i. wiring and cabling as between items ‘g’ through ‘l’ may be performed outside Ontario, although final wiring of the inverter must be performed in Ontario.