

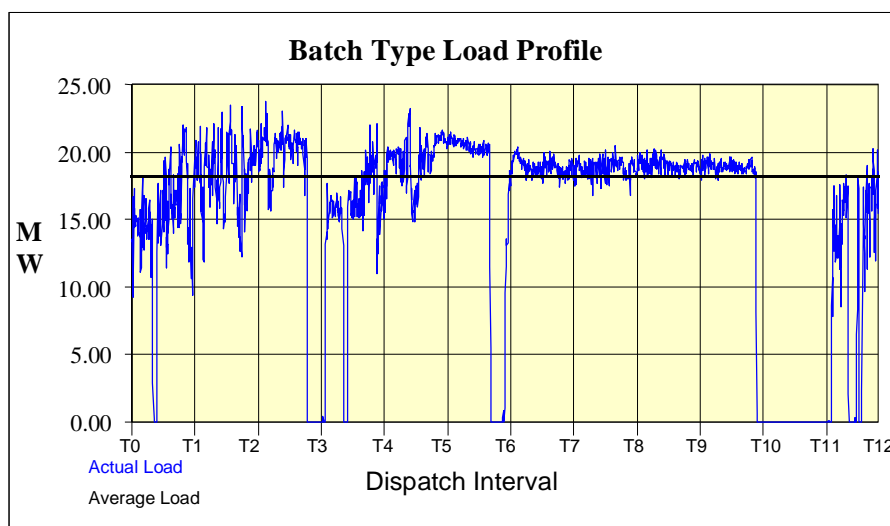
## SUPPLEMENTAL ASSESSMENT INFORMATION

### Background on Electric Arc Furnaces (EAF)

Generally, an EAF has a process cycle of around 60 minutes that includes several operations:

- charging, when scrap is loaded into the melter;
- melting, when electrical energy is supplied via electrodes to melt the load;
- refining, when chemical components are removed to improve the quality of steel;
- de-slagging, when impurities resulted from previous operations are removed from the furnace; and
- tapping, when steel is poured out.

Tapping and charging are periods of zero electrical consumption that in total last for approximately 5 to 20 minutes. Melting is the core operation of an EAF's process cycle and usually occurs simultaneously with refining and de-slagging. During these operations, the electrical consumption of the furnace is fluctuating, primarily as a result of electrode movement to stabilize the electric arc. A typical EAF load profile is presented below.



EAFs can reduce or increase their consumption within 5 minutes, which makes them good candidates for participation as dispatchable loads in the energy market. For an additional financial benefit and provided that they meet specific eligibility criteria<sup>1</sup>, dispatchable loads could also participate in the operating reserve market. However, because EAF's consumption is fluctuating, their ability to comply with all energy dispatch instructions is limited and intimately related to the specific stages of their process cycles. For example, when at zero consumption during a tapping and re-charging period, the EAF may not be able to comply with a energy dispatch instruction that sends them to full consumption based on their bid price.

Therefore, to operate as dispatchable loads, EAFs need an exemption from the *market rule* requirements to follow energy dispatch instructions at all times.

<sup>1</sup> Dispatchable load participants wishing to participate in the 10-minute non-spinning and 30-minute non-spinning operating reserve markets must meet specific eligibility criteria. This is assessed via the facility registration process and will not be addressed within this recommendation. Refer to the eligibility criteria for dispatchable load participation as 10-minute non-spinning and 30-minute non-spinning operating reserve provided in section 3.4.2 of Market Manual 1.2 "Facility Registration, Maintenance and De-registration".