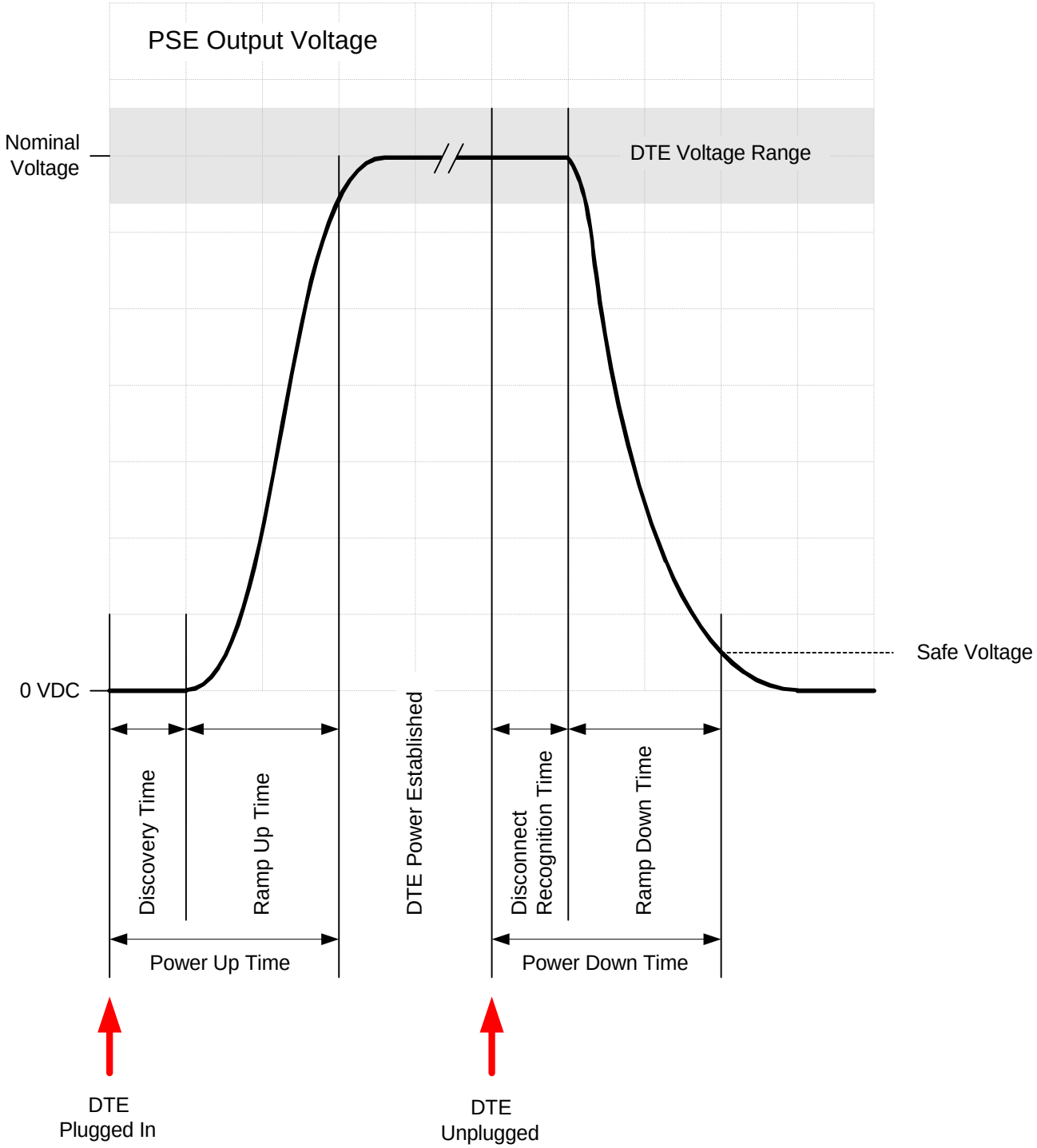
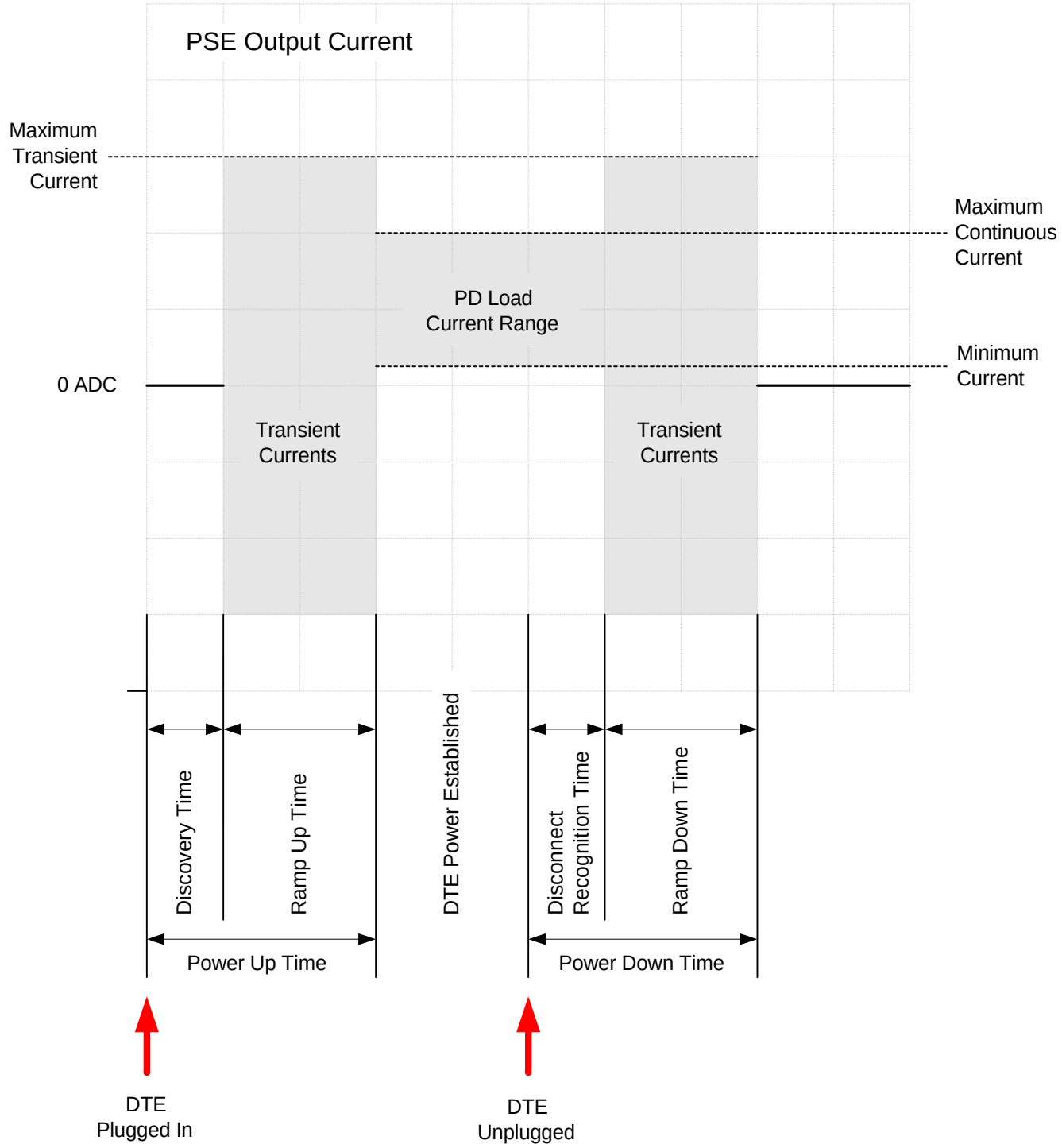
A Proposal for
DTE Power Sequencing Definitions

The figures below describe the expected DTE Voltage and Current power turn on and turn off sequencing from the point of view of the PSE (power sourcing equipment).
Terms are also given to describe the sequencing intervals.





Notes:
1) current is defined as positive, when it is sourced from the PSE
2) transient currents can be either polarity in general, although they are expected to be positive during power ramp up, and negative during power ramp down.

Definitions:

- Discovery Time
  The time it takes to successfully discovery a proper powerable PD from the time that it is plugged in.

- Ramp Up Time
  The time it takes the PSE power source to ramp up to a voltage that is within the proper DTE Voltage range window

- Power Up Time
  The total time it takes from the insertion of the UTP link to the PD from the PSE until the PSE is properly powered. i.e. the sum of the discovery time and the ramp up time.

- Disconnect Recognition Time
  The time it takes the PSE to determine that a powered port has become disconnected, and therefore the DTE power has been commanded to turn off.

- Ramp Down Time
  The time it takes the power source to ramp down to a "safe" voltage. A safe voltage meaning that any exposed RJ-45 contacts have a voltage that is safe to humans and other ports.

- Power Down Time
  The total time it takes from the physical removal of the RJ-45 cable until the PSE is sending out a voltage that is less than or equal to the safe voltage. i.e. the sum of the disconnect recognition time and the ramp down time.

- DTE Voltage Range
  The allowable voltage range of the PSE output, when the PD load is within the acceptable range of continuous current draw.

- Safe Voltage
  The voltage that is the lower of the following:
  - The voltage deemed safe for humans to touch directly
  - The voltage deemed safe to connect to any RJ-45 port, i.e. port swapping, migration, etc…

Suggested Ranges:

- Discovery Time
  1 ms to 250 ms

- Ramp Up Time
  20 ms to 250 ms

- Power Up Time
  roughly 20 ms to 500 ms

- Disconnect Recognition Time
  10 ms to 200 ms

- Ramp Down Time
  10 ms to 200 ms

- Power Down Time
  20 ms to 400 ms

- DTE Voltage Range
  48 VDC nominal, 42 VDC min, 54 VDC max

- Safe Voltage
  5 VDC