(Adapted from the *Handbook for Electricity Metering*, 9th Ed., p. 228 ff., Edison Electric Institute)

Active Energy (Wh)

Active energy is defined as *delivered* when watts = EI cos θ is positive, and as *received* when watts = EI cos θ is negative. Wh are registered bidirectionally, and require two registers, one for Wh delivered and one for Wh received.

Reactive Energy (VARh)

Quadrant	Power Factor	Watts	VARs
I	Lagging	Delivered (+)	Delivered (+)
II	Leading	Received (-)	Delivered (+)
III	Lagging	Received (-)	Received (-)
IV	Leading	Delivered (+)	Received (-)

Reactive energy is defined in terms of quadrants, as follows:
VARs are also defined as VARs = EI sin θ. VARh are registered by quadrant, that is, there are four registers needed to store 'bidirectional' VARh.

Apparent Energy (VAh)

VAh are registered bidirectionally, according to the direction of active energy (Wh). In other words, VAh are delivered in quadrants I and IV and received in quadrants II and III. Two registers are required.

Q Hours

Q Hours are defined as delivered in quadrant I and that portion of quadrant IV where Q is positive, i.e. for phase angles between 0° and 90°, and 330° and 0°.

Q Hours are defined as received in quadrant III and that portion of quadrant II where Q is negative, i.e. for phase angles between 150° and 270°.

Q Hours are undefined, and not registered, in that region of quadrant IV (270° to 330°) where Q is not defined (and would be negative, if calculated); and in that region of quadrant II (90° to 150°) where Q is not defined (and would be positive, if calculated).

Two registers are required.

☐	Q Hours Undefined
▨	Q Hours Defined