

## Converting EER to Cooling-EIR

$$EIR_a = \frac{(CAP_a / EER) - ARIFanPower}{(CAP_a / 3.413) + ARIFanPower}$$

where:

CAP = total cooling capacity (Btu/hr)

EER = ARI Rated Energy Efficiency Ratio (dimensionless)

The *ARI Fan Power* is required to calculate the electrical input ratios described above. The reference method determines the *ARI Fan Power* for systems 1, 2 and 3 by assuming that the *ARI Fan Power* is fixed at 365 watts per 1000 cfm with supply air flow rate fixed at 400 cfm per 12,000 Btuh net cooling capacity.

**System 1:** Packaged Single Zone (PSZ), Gas furnace and electric air conditioner

**System 2:** Packaged Single Zone (PHP), Electric heat pump and air conditioner

**System 3:** Packaged Variable Air Volume (PVAV), Central gas boiler with hydronic reheat and electric air conditioner

eQUEST maps the Wizard input for EER to DOE-2 BDL (COOLING-EIR) using the following equation:

$$\text{COOLING-EIR} = (1/\text{EER} - 0.012167) / ((1 / 3.413) + 0.012167)$$

where:

$$\text{the constant } 0.012167 = (365/1000) * (400/12000)$$

## Relationship between EER and SEER

