

$$\begin{aligned}\text{Per-Unit } Z_{\text{new}} &= \text{per-unit } Z_{\text{given}} * (\text{base kV}_{\text{given}}/\text{base kV}_{\text{new}})^2 * (\text{base kVA}_{\text{new}}/\text{base kVA}_{\text{given}}) \\ &= 0.25 * (18/20)^2 * (100/500)\end{aligned}$$

$$\text{Per-Unit } Z_{\text{new}} = 0.040500 \text{ per unit}$$