Heater Size to Heat Ventilation Air

Air brought into livestock housing during cold weather often is heated to prevent cold draft on livestock. The amount of heat required to heat thin incoming air can be approximated as follows:

\[
\text{Heat (BTU/Hr)} = 1.1 \times \text{CFM} \times \Delta \ ^\circ\text{F}.
\]

Where the heat required is given in BTU per hour, CFM is the air flow rate in cubic feet per minute and \(\Delta \ ^\circ\text{F}\) is the temperature rise of the air to be heated in degrees fahrenheit. For example if the morning air is heated 50°F and 1,000 cubic feet per minute is being brought in the heat required is as follows:

\[
\text{Heat (BTU/Hr)} = 1.1 \times 1,000 \times 50\ ^\circ\text{F}.
\]

\[
\text{BTU/Hr} = 55,000
\]

Add to this the heat lost from the structure and subtract heat produced by the animals and you have the heater size needed to maintain temperatures.