The initial angular divergence ($\sigma_{\theta x}$) parameter used in Hogstrom's pencil beam algorithm is due to multiple coulomb scattering in air between the scattering foils and the edge of the applicator trimmers. Accuracy of this parameter is particularly important for dose distributions in the presence of inhomogeneous tissue. As part of the commissioning of our 3D treatment planning system , we have measured the angular distributions of our clinical electrons beams. Silver bromide films were exposed in air at increasing distances (L) from the bottom of the electron applicator. These films were scanned using a film scanning system. The measured penumbra widths (90%-10% and 80%-20%) were plotted as a function of distance and fitted to a linear function. From the slopes of these curves, the initial angular divergence ($\sigma_{\theta x}$) of each electron beam was calculated using the relationships given by Hogstrom. Recently, these authors reported a consolidated $\sigma_{\theta x}$ data sets for scanning electron beams and scattered electron beams. Their pooled scattering foil machine data shows significantly higher angular divergence than the scanning electron beam data. Our data is not in agreement with Hogstrom's pooled data. The $\sigma_{\theta x}$ values, derived from our measurements for Varian series III foil/applicator systems, are lower than the reported consolidated data for scattered beams. However, our numbers are in better agreement with their scanning beam data. We conclude that use of Hogstrom's scattered beam data for Varian Clinac 2100C/D machines could lead to as much as 20% increase in the angular divergence values.