Dose perturbations (backscatter dose perturbation factor, BSDF, and forward dose perturbation factor, FDPF) near high Z material interfaces have been reported to be intense and significant in photon beams for biological and clinical applications. In kilovoltage beams, BSDF and FDPF have been measured up to 20-fold at 5 μm from a Pb interface that falls off rapidly suggesting that low energy electrons are responsible for the interface effect. The magnitude of dose perturbation has been debated due to limitations in the measuring devices (mainly window thickness). Monte Carlo (MC) simulations have been proposed for interface effects but poor statistics in small bins (1 μm) near interface makes such data questionable even with a well designed MC code. The PENELOPE MC code was used for simulation at a 0.1 mm Pb interface with 6×10^5 photons traced to the secondary electrons down to 1 keV. A moving window least squares polynomial fit method is used to smooth simulated data. Results of smoothing MC data for BSDF and FDPF are extremely positive. The near agreement of smooth MC data beyond 5 μm from interfaces with ion chamber suggests that interpolation of data near interface can be reasonably accepted. Such estimation of dose perturbations is important in the estimation of biological effects of low energy electrons from high Z interfaces. It is concluded that reasonable accuracy can be acquired to the statistically poor MC data by moving window least squares polynomial fit to reduce statistical fluctuations and make MC simulation in a reasonable computation time.