The advanced combination encoder (ACE™) is an established speech-coding strategy in cochlear-implant processing that selects a number of frequency channels based on amplitudes. However, speech intelligibility outcomes with this strategy are limited in noisy conditions. To improve speech intelligibility, either noise-dominant channels can be attenuated prior to ACE™ with noise reduction or, alternatively, channels can be selected based on estimated signal-to-noise ratios. A noise power estimation stage is, therefore, required. This study investigated the impact of noise power estimation in noise-reduction and channel-selection strategies. Results imply that estimation with improved noise-tracking capabilities does not necessarily translate into increased speech intelligibility.