Fresh cows experience negative protein balance and mobilize body protein to meet lactational demands. Reducing mobilization by increasing metabolizable protein (MP) supply or improving the AA profile may improve milk production later into lactation. Our objective was to determine whether increasing MP concentrations at the expense of either non-forage or forage NDF (fNDF), or improving the AA profile affected empty body (EB) crude protein (CP) through transition and into early lactation. In a randomized block design, 40 primigravid and 40 multigravid Holsteins were blocked by calving date and fed a common, prefresh diet (11.5% CP). After calving to 25 d in milk (DIM), cows were fed 1 of 4 diets: 1) deficient in MP (DMP, 17% CP, 24% fNDF), 2) adequate in MP using high inclusion of lignosulfonate-treated soybean meal (AMP, 20% CP, 24% fNDF), 3) adequate in MP using a blend of RUP and rumen-protected AA (Blend, 20% CP, 24% fNDF), or 4) a similar diet but substituting forage NDF rather than non-forage NDF with the blend (Blend-ND, 20% CP, 19% fNDF). Cows were fed a common diet (17% CP) from 26 to 50 DIM. At 7 d before anticipated calving, and at 7, 25 and 50 DIM, body composition was estimated using the urea dilution method. Mixed models with fixed effects of treatment, day (repeated), parity, their interactions, covariate effect of prepartum measurements and random effects of block nested within parity were used to analyze data. Day by treatment (P < 0.03) interactions were observed for EB CP. From 7 d before calving to 7 DIM, the loss of EB CP was similar (avg. 34 g/d), but from 7 to 25 DIM, cows fed AMP (139 g/d) and Blend-ND (147 g/d) lost more EB CP compared with Blend (8 g/d). After treatments ended (>25 DIM), gains/losses of EB CP were similar, and the average (2 g/d) was not different from zero (P > 0.15). Final EB CP was similar (avg. 81.5 kg) at 50 DIM. Overall, feeding fresh cows a high MP diet from a blend of proteins and AA reduced the loss of EB CP, which may be why these cows had higher milk production during the carry-over period.