1067-22-2391 **T. Christine Stevens*** (stevensc@slu.edu), Dept. of Mathematics and Computer Science, Ritter Hall 104, 220 N. Grand Blvd., St. Louis, MO 63103. *Changing the rate at which a sequence in $\mathbb{R}^n$ is forced to converge to zero.*

We continue our investigation of translation-invariant metrics for $\mathbb{R}^n$ that are defined by choosing a sequence $\{v_i\}$ of elements of $\mathbb{R}^n$ and specifying the rate $\{p_i\}$ at which it converges to zero. If $\{v_i\}$ goes to infinity sufficiently fast in the usual topology, then such a metric always exists, and its translation-invariance guarantees that it will make $\mathbb{R}^n$ an additive topological group. In previous papers (joint with J.W. Short), we investigated the effect on the topology of changing the "converging sequence," and we now determine the consequences of changing the "rate sequence." The main theorem is that two "rate sequences" $\{p_i\}$ and $\{q_i\}$ will determine the same topology for $\mathbb{R}^n$ if and only if the ratios $\{p_i/q_i\}$ and $\{q_i/p_i\}$ are bounded. These results have implications for the study of minimal groups and of Lie groups of transformations. (Received September 23, 2010)