1086-VN-2175 **Hollis Brewer***, hbrewer1@students.kennesaw.edu, and **Mari F. Castle** and **Joe DeMaio**.

Total Efficient Dominating Sets in Cayley Graphs of Finite Abelian Groups.

A set $S \subseteq V$ is a **total efficient dominating set** (**TEDS**) of a graph $G = (V, E)$ if each vertex in V is adjacent to exactly one vertex in S. From the work of Gavlas and Schultz we have that a TEDS S exists on the path graph P_n if and only if $n \not\equiv 1 \mod 4$, and in the cycle graph, C_n, if and only if $n \equiv 0 \mod 4$. Let H be a finite group with identity e. Let C be a subset of H satisfying $e \notin C$ and $C = C^{-1}$, that is, $a \in C$ if and only if $a^{-1} \in C$. The **Cayley graph** on H with **connection set** C, denoted $G(H, C)$, satisfies: the vertices of $G(H, C)$ are the elements of H; there is an edge joining $a, b \in G(H, C)$ if and only if $a^{-1}b \in C$. For the dihedral group D_n of size $2n$, DeMaio and Castle have shown that a TEDS S exists in $G(D_n, C)$ if and only if $k \mid n$ where $|C| = k$. In this talk we will extend this result to Cayley graphs of finite abelian groups. (Received September 25, 2012)