1056-15-78 **Duy D Nguyen*** (duy.nguyen@tcu.edu), 11480 Audelia Road APT. #343, Dallas, TX 75243, **Katelyn L McCall** (katelyn.mccall@rochester.edu), 8 Borrowby Circle, Princeton, NJ 08540, **Laura J Buggy** (ljbuggy@csbsju.edu), 14508 Woodhill Circle, Minnetonka, MN 55345, **Amalia V Culiuc** (culiu22a@mtholyoke.edu), 1682 Blanchard, 50 College St, South Hadley, MA 01075, and **Sivaram K Narayan** (sivaram.narayan@cmich.edu), Department of Mathematics, Central Michigan University, Mount Pleasant, MI 48859. *The Energy of Graphs and Matrices.*

Let G be a finite, undirected, and simple graph. If $\{v_1, \cdots, v_n\}$ is the set of vertices of G, then the *adjacency matrix* $A(G) = [a_{ij}]$ is an *n-by-n* matrix where $a_{ij} = 1$ if v_i and v_j are adjacent and $a_{ij} = 0$ otherwise. The *energy* of a graph, $E(G)$, is defined as the sum of the absolute values of eigenvalues of $A(G)$. The concept of energy originates in chemistry and was first defined by I. Gutman in 1978. It has been generalized recently as follows: For a graph G on n vertices, let M be a matrix associated with G. Let $\mu_1, \cdots, \mu_n$ be the eigenvalues of M and let $\bar{\mu}$ be the average of $\mu_1, \cdots, \mu_n$. The more general *M-energy of G* is then defined as:

$$E_M(G) = \sum_{i=1}^{n} |\mu_i - \bar{\mu}|.$$

In this talk we present our results on graph energy when M is the Laplacian matrix, the signless Laplacian matrix, or the distance matrix. In particular we give bounds for energy of different graph classes and study the effect of edge deletion. (Received July 22, 2009)