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James J Madden* (madden@math.lsu.edu), 222 Prescott Hall, LSU, Baton Rouge, LA 70803, and **Trevor McGuire**, North Dakota State University, NDSU Dept #2750, Fargo, ND. *Neighbors, Generic Sets and Buchberger Hypersurfaces*. Preliminary report.

The Buchberger graph of a monomial ideal in $k[x, y, z]$ is described in Miller & Sturmfels' book, *Combinatorial Commutative Algebra*. We describe a generalization. In place of the set of exponent vectors of a minimal generating set of a generic monomial ideal, we take an arbitrary discrete generic antichain A in \mathbb{R}^n . From this, we construct a PL hypersurface embedded in \mathbb{R}^n and a triangulation $B(A)$ of that. In case A the set of exponent vectors of a minimal generating set of a generic monomial ideal $S = k[x_1, \dots, x_n]$, $B(A)$ is equivalent to a barycentric subdivision of the Scarf complex of A , and if $n = 3$, the Buchberger graph is the one-skeleton of $B(A)$. In the general case, $B(A)$ is an interesting object about which little is yet known. (When A is not closed, $B(A)$ may fail to be simply connected.) We apply basic facts about $B(A)$ to describe minimal free resolutions of S -submodules of the Laurent algebra $k[x_1^{\pm 1}, \dots, x_n^{\pm 1}]$ and (by means of the equivariant methods described in Miller-Sturmfels, chapter 9) to derive from this combinatorial descriptions of resolutions of ideals of S generated by monomials and binomials. (Received September 14, 2015)