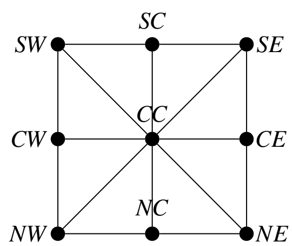
We define the following raw variables over each region of land $\lambda_i \in \lambda$ in some region of land in Minnesota where λ is a land partition of Minnesota according to some rule (street, neighborhood, ..., city, county, district, ...) and $i \in [1, |\lambda|] \cap \mathbb{N}$. ex.) $\lambda = \{\text{Ramsey, Anoka, St. Louis}, \ldots\}$ is a partition of Minnesota into counties.

$$E_i := \text{average energy cost}$$
$$T_i := \text{road density (number of roads per acre)}$$
$$Y_i := \text{average yield of corn ,sugarbeets ,soy, other grains (bushels/acre)}$$
$$N_i := \frac{\text{Nitrogen needed}}{\text{Crop Production Index}} \text{ (N/cpi)}$$

Normalized Variables:

We translate the Minnesota district map; Minnesota partitioned by districts, to the graph $G = (\lambda, E)$ below, where the vertices $\lambda_i \in \lambda$ are districts and the edges represent a shared border or corner between vertices:



$\lambda = \{\lambda_i \in \lambda \mid i \in [1, |\lambda|] \cap \mathbb{N}\} = \{SW, SC, SE, CW, CC, CE, NW, NC, NE\}$.

Now, let $f : \lambda \to \mathbb{R}^4$ be defined by $f(\lambda_i) = \begin{pmatrix} \hat{E}_i \\ \hat{T}_i \\ \hat{Y}_i \\ \hat{N}_i \end{pmatrix}$. f produces a tuple containing the normalized variables for each of our districts $\lambda_i \in \lambda$. We know define our weight row vector as follows $w = (16, 20, 24, 40)$ which scales $\hat{E}_i, \hat{T}_i, \hat{Y}_i, \hat{N}_i$, respectively, which are ranked in order from most to least important out of 100%. These weights are order according to most significant with respect to economic feasibility. Finally, we mutliply $f(\lambda_i)$ by w from the left in order to produce a linear combination for each district, once again centered around economic feasibility, which we call it's rank R:

$$R(\lambda_i) = wf(\lambda_i)w$$

Finally, we select