City of Denton

City Hall
215 E. McKinney Street
Denton, Texas
www.cityofdenton.com

AGENDA INFORMATION SHEET

DEPARTMENT: **Denton Municipal Electric**

CM/ DCM/ ACM: **Todd Hileman, City Manager**

DATE: **January 9, 2018**

SUBJECT

Receive an informational report regarding the Denton Municipal Electric program for underground electric lines.

BACKGROUND

Denton Municipal Electric (DME)'s service territory is comprised of both overhead and underground distribution lines. Currently, the service territory is 57% underground and 43% overhead. A recent survey showed that the City of Denton ranked number 3 out of 72 municipal electric utilities in the state for percentage of distribution system installed underground.

DME has an ongoing electric underground program and related budget. The FY 2018 budget is $350,000 with about $2 million in underground projects planned over the next 5 years. The funding has enabled DME to design and build various underground capital improvement and revenue-related projects throughout the service territory. If there is either a design, operational, or economic advantage to install facilities underground, then DME installs the distribution system underground. Electric service to all new residential subdivisions and new businesses are installed underground with only limited exceptions.

There are a number of pros and cons of underground versus overhead electric lines.

Underground lines are more aesthetic and are less impacted by outages. Repairing an underground line requires more time, however, and maintenance is generally more costly. Engineering and building underground circuits is more complex. Underground facilities are relatively "permanent" (i.e. difficult to reconfigure and expand) so future planning is more critical. The capital costs for undergrounding are also higher by a factor of 2 or 3 times.

Overhead lines are less costly to build and maintain. While outages occur more frequently, restoration times are less. Overhead lines are more flexible and can be relatively easily expanded or increased in capacity.

A landmark project for DME that established a cost standard for underground systems was the recent installation of an underground duct system along the west side of Western Blvd. from Airport Road to Jim Christal Road. This duct system had to be designed to not only provide the required service of a new customer, but also needed to accommodate service requirements of future customers and allow flexibility to interconnect to lines from several neighboring substations. This project cost $450 per linear foot ($2.7 million total).

A residential project completed in the mid-to-late 1990s involved an overhead to underground conversion in backyards. It provided DME with firsthand knowledge that such conversions can be complex. It involved significant amounts of hand digging and manual placement of equipment, easement encroachments that required relocation, hiring of electricians to replace the overhead meter bases with underground meter bases,

repairs to the homeowner's property/home related to the meter base change out, and repair and/or replacement of impacted landscape. Interestingly, even after this overhead to underground conversion work was completed, the cable television (CATV) providers refused to place their equipment underground -- CATV still resides on those poles today. The cost of this project was $550 per linear foot ($1.3 million total).

DME continually looks for opportunities based on property owner desires and good engineering practices to convert overhead distribution to, or build new underground systems consistent with its approved budget.

STRATEGIC PLAN RELATIONSHIP

The City of Denton's Strategic Plan is an action-oriented road map that will help the City achieve its vision. The foundation for the plan is the five long-term Key Focus Areas (KFA): Organizational Excellence; Public Infrastructure; Economic Development; Safe, Livable, and Family-Friendly Community; and Sustainability and Environmental Stewardship. While individual items may support multiple KFAs, this specific City Council agenda item contributes most directly to the following KFA and goal:

Related Key Focus Area: **Public Infrastructure**
Related Goal: **2.3 Promote superior utility services and City facilities**

EXHIBITS

n/a

Respectfully submitted:
Brent Heath, P.E.
Executive Manager of Energy Delivery

Prepared by:
Jerry Fielder
Engineering Division Manager