

CITY OF GROVE CITY, OHIO
COUNCIL MINUTES

September 25, 2007

Special Meeting

The Special meeting of Council was called to order by President Lester, at 7:00 p.m. in the Council Chambers, City Hall, 4035 Broadway. Roll was called and the following members were present:

Larry Corbin *Rich Lester* *"Ike" Stage* *Ted Berry*

Editor's Note: Ms. Klemack-McGraw arrived at 7:02 p.m.

The Chair thanked everyone for attending and explained that this was to hear a presentation from AEP about underground electric lines. He introduced Ms. Mary Flint, American Electric Power.

1. Ms. Flint thanked President Lester and the Council Members. She explained that she noticed an article in the paper about undergrounding utilities and called to offer any information they may have. She said this presentation is purely a discussion and solely to provide information. She then introduced Mr. Brent Gates, engineer for AEP, who shared a slide show to Council. He reviewed each slide's information and discussed the pros and cons of overhead and underground electric lines.

Mr. Stage clarified that Mr. Gates was with the Distribution side and not the Transmission side of AEP. Mr. Gates said that was correct. He explained that distribution is the power that comes from a plant and runs along the poles in the rights-of-way. Transmission is the power that runs from the boxes in the yards to a home. He said there is very little information in the presentation about transmission. He explained that all fess paid for electricity today is based on overhead construction. Underground construction is usually built for aesthetics. *Ms. Reichard* asked about economic development reasons. Mr. Gates said he perceives that even economic development is for aesthetics. *Ms. Reichard* clarified that she was thinking in terms of a pole being in the way of construction. Mr. Gates said that does come into play a little. *Mr. Corbin* asked if it was for aesthetics or safety. Mr. Gates said safety is a little tricky. While the pole may be gone, there would still be a box in the right-of-way. She showed an outline of the four (4) stations that service our area. Ms. Flint pointed out that some transmission lines include distribution as well. Mr. Gates went on to explain that there is a big assumption that underground is protected from outages. That may be true when it is new, but not after some years. In evaluating outages, they look at two areas - frequency and duration. He said aboveground lines are easier to repair because you can see the problem. Underground lines take longer to repair, as the problem is harder to find. These lines may not go out as much, but they are out for a longer period of time when they do. He also said there is no entirely underground system.

Mr. Berry asked if the underground lines are placed in conduit. Mr. Gates said some are and some aren't. Transmission lines usually are. Other lines are not due to economics and because it degrades the capacity of the cable and degrades the life of the cable.

Mr. Gates explained that underground lines are susceptible to excavation activities. It takes specialized equipment to take care of these lines. Ms. Flint noted that in new residential subdivisions, they usually do place lines underground. Mr. Gates pointed out that underground distribution systems are 5 to 10 times more costly than overhead systems. He said AEP estimates that the cost to replace an existing overhead line to underground is about \$1 million per mile. Mr. Corbin asked how much it was for an overhead line. Mr. Gates said they estimate \$150,000.00 per mile. Ms Reichard asked if the lines were the same. Mr. Gates said no. Overhead lines are bare wire. Underground have a PVC covering and are copper wire. Mr.

Berry suggested that anything that would hit the live wire in the air would cause a short or outage. Mr. Gates said no. Only something grounded, like a tree, would do that. He explained that they have smart breakers to assist with this. Mr. Berry asked how the majority of outages occur. Mr. Gates said that is a trick question, as it depends on where you live. He said overhead lines try to clear themselves three (3) times before a full outage. He noted that Florida looked at the cost of converting all lines to underground against the cost of what they paid for recovering from 10 hurricanes. They found it to be cheaper to maintain the overhead lines and restore the area than to pay for an underground system. He explained that other entities are on AEP's poles. When they go underground, the other entities must also go underground and that cost is passed on to the requestor. *Mr. Berry* asked if lines are ever put under the sidewalk. Mr. Gates said they have done that in some areas, but it is not preferred.

Mr. Gates continued with customer impact. He explained that a home that has an overhead line coming into their home may incur a cost of \$2,000.00 to take the line underground. Once the meter base I changes, it may cause a review of the entire home's electric lines. EEI data indicates that this could result in an increase in electric bills for individuals. Mr. Gates stated that whoever requests the underground line would pay the difference from overhead. He showed a typical switch box and transformer box that are installed for underground lines. *Mr. Lester* asked how many residences each box serves. Mr. Gates said it depends on the load of the home. It may be as many as 5 or 6, or as little as 1 or 2.

2. Mr. David Kandel, AT&T, commented that they usually bury their lines and work together with AEP.
3. Mr. Corbin voiced concern with the larger poles, like those along Hoover Road, and said he was told those lines could not be buried. Mr. Gates said they can be buried, but it is not preferred and AEP won't pay for it. Burying would also take more right-of-way. These lines are oil penetrated cable that must be pressurized. They cause overheating and anything within six feet must be moved out of the way. Mr. Berry commented that the optimal time to do a project of that magnitude would be with a major road expansion. Mr. Gates agreed. However, he said once the lines are in the ground, they really don't like to move them.
4. Mr. Stage showed some pictures where the city paid \$1.5 million to relocate poles. He said new poles have sprung up and wondered what went wrong. He said this is visual pollution. Mr. Gates said it appears that someone bought out the service and there may be a redundant system. Mr. Stage asked if the Developer has control of that. Mr. Gates said yes. Mr. Stage asked how this can be stopped. Mr. Gates said ask them to go underground. Mr. Stage showed another picture with three poles and small aluminum cabinets. Mr. Gates explained that these are not AEP poles. They are customer owned. Mr. Stage said this is an example of the visual pollution that the city does not want. Mr. Berry asked how the city prevents extra poles. Mr. Gates suggested zoning regulations. Mr. Boso, Dev. Dir., stated that the city already has them.
5. Council thanked everyone for coming and looks forward to working with them on future projects.
6. Mr. Berry asked how many lines are underground. Mr. Gates said they don't keep track that way. Mr. Berry asked if they keep track of how many times they work on underground lines. Mr. Gates said they have some information, but it wouldn't be an accurate comparison.
7. Mr. Chuck Boso commented that in perspective to city funds, if we use the \$16 million and bury transmission lines, we couldn't get from City Hall to the city limits. He said it wouldn't have an impact. He said the City Administrator sent a memo that said Dublin and Upper Arlington were

Overhead or Underground Electric Distribution Facilities

*Discussion with Grove City Officials
September 25, 2007*

Agenda

- *Introduction*
- *Grove City electric distribution infrastructure*
- *Costs*
- *Customer impacts*
- *Examples of underground distribution facilities*
- *Questions*

Introduction

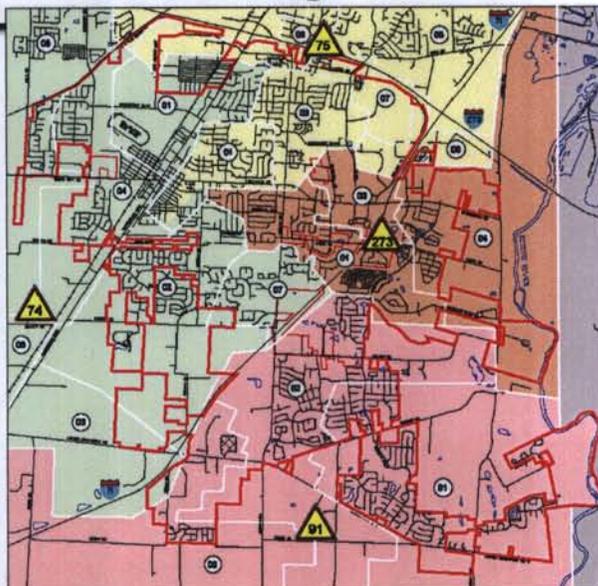
- *Electric facilities – overhead or underground*
- *AEP Ohio rates and tariffs based on overhead facilities*
- *Perception that underground systems are more reliable*
- *Underground systems usually built for aesthetic reasons*
- *Overhead lines have more exposure to the elements*
- *Longer restoration times occur with underground systems*
- *Replacing overhead lines in established communities requires extensive excavation and disruption of landscaping and existing infrastructure (sidewalks, driveways, parking lots, etc.)*

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Distribution Circuits That Serve Grove City

Stations

- McComb – 75*
- Beatty – 74*
- White – 273*
- Zuber – 91*



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Reliability

- *Assumption that underground facilities are protected from power outages caused by storms and that overall reliability will be significantly improved*
- *Accurately measuring reliability is difficult*
- *Focus on two areas:*
 - *Frequency*
 - *Duration*

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Reliability (cont'd.)

- *Reliability of underground lines can still be affected by weather, animal contacts, tree roots and water/moisture*
- *Underground systems are susceptible to excavation activities associated with construction*
- *When an underground outage occurs, specialized equipment and crews are needed to find the problem and make repairs*

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Costs

- ***Underground distribution systems are five to 10 times more costly than overhead construction. Cost depends on cable size, project length, terrain, soil, traffic, presence of bedrock, and streams or road crossings***
- ***AEP estimated cost to place existing overhead facilities underground:***
 - *Distribution - \$1 million/mile*
 - *Transmission - \$2-3 million/mile*
- ***Storm restoration costs incurred over the life of overhead facilities are lower than the cost of converting to an underground system***
- ***Undergrounding strands other utilities, e.g. cable and telephone, which must assume 100 percent of the pole costs. These costs will likely be passed on to cable and telephone customers***

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Customer Impacts

- ***May have to pay additional costs to connect homes to newly installed underground service***
 - *Possibly as much as \$2,000 if household service must be upgraded to meet code*
- ***EI data indicate underground could result in significant increases in electric bills for individual customers***
- ***Incremental cost to underground electric facilities incurred by requesting party***

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Examples – Underground Facilities

PAD MOUNTED EQUIPMENT



Three Phase Pad Mounted Switch
(Yellow yardstick gives a size perspective)
Dimensions facing doors – 5' 7" wide x 4' 9" high x 5' 1" deep
Concrete pad – 7' 6" wide x 7' doors x 6" thick

PAD MOUNTED EQUIPMENT



Three Phase Pad Mounted Transformer
(Yellow yardstick gives a size perspective)
Dimensions facing doors – 6' 1/2" wide x 6' 1 1/2" high x 5' 2 1/2" deep
This is a 750 kva transformer.
Concrete pad and transformer cabinet dimensions vary with the size of the transformer.

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Examples – Underground Facilities

PAD MOUNTED EQUIPMENT



Three Phase Primary Junction Cabinet
(Yellow yardstick gives a size perspective)
Dimensions facing door – 5' 6 1/2" wide x 2' 6" high x 1' 10" deep

PAD MOUNTED EQUIPMENT



Single Phase Pad Mounted Transformer
(Yellow yardstick gives a size perspective)
Dimensions facing door – 2' 9" wide x 2' high x 2' 6" deep

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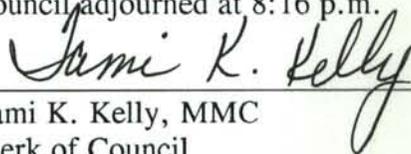
Questions?

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looking at this and found it was cost prohibitive. If a city that brings in \$60 million finds it cost prohibitive, we certainly can't afford it.

8. Ms. Reichard commented that she believes this to be a Capital Improvement. She asked if AEP offers services to do a Master Plan to bury only the worst lines, or a block at a time, or whatever could be afforded. Ms. Flint said yes, they do it all the time. Mr. Berry said if we could come up with a rating system for the poles, then we could have an idea how to proceed. Ms. Reichard said she feels there is a way to take a crucial look and get rid of some of the overhead lines.

Council adjourned at 8:16 p.m.



Tami K. Kelly, MMC
Clerk of Council



Richard D. Lester
President