

Continuing Evolution of MV Underground Cable Construction & Usage

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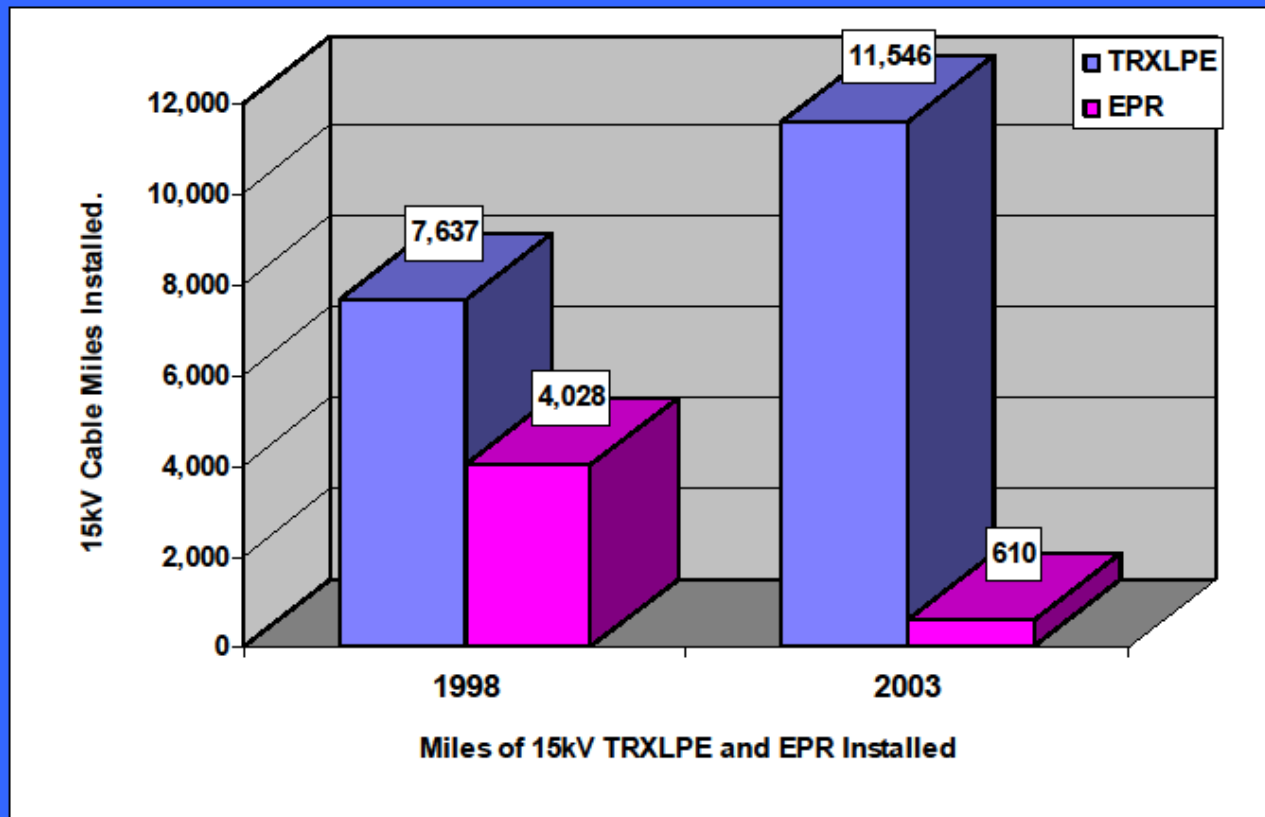
Background

- Several surveys looking at Utility Specifications and Practices were performed by Joe Dudas with support from AEIC & NRECA (1993 – 2003).
- These surveys detailed industry trends in MV cable usage; it included:
 - Cable insulation materials
 - Conductor size and type
 - System voltage and lengths
 - Installation practices, etc.
- Results have been very useful to utilities and manufacturers in understanding current trends.
- Last survey was conducted in 2003

We will be conducting a survey for 2014 to bring the information up to date

2003 Survey Results

48 of Largest IOU's - Five Year History

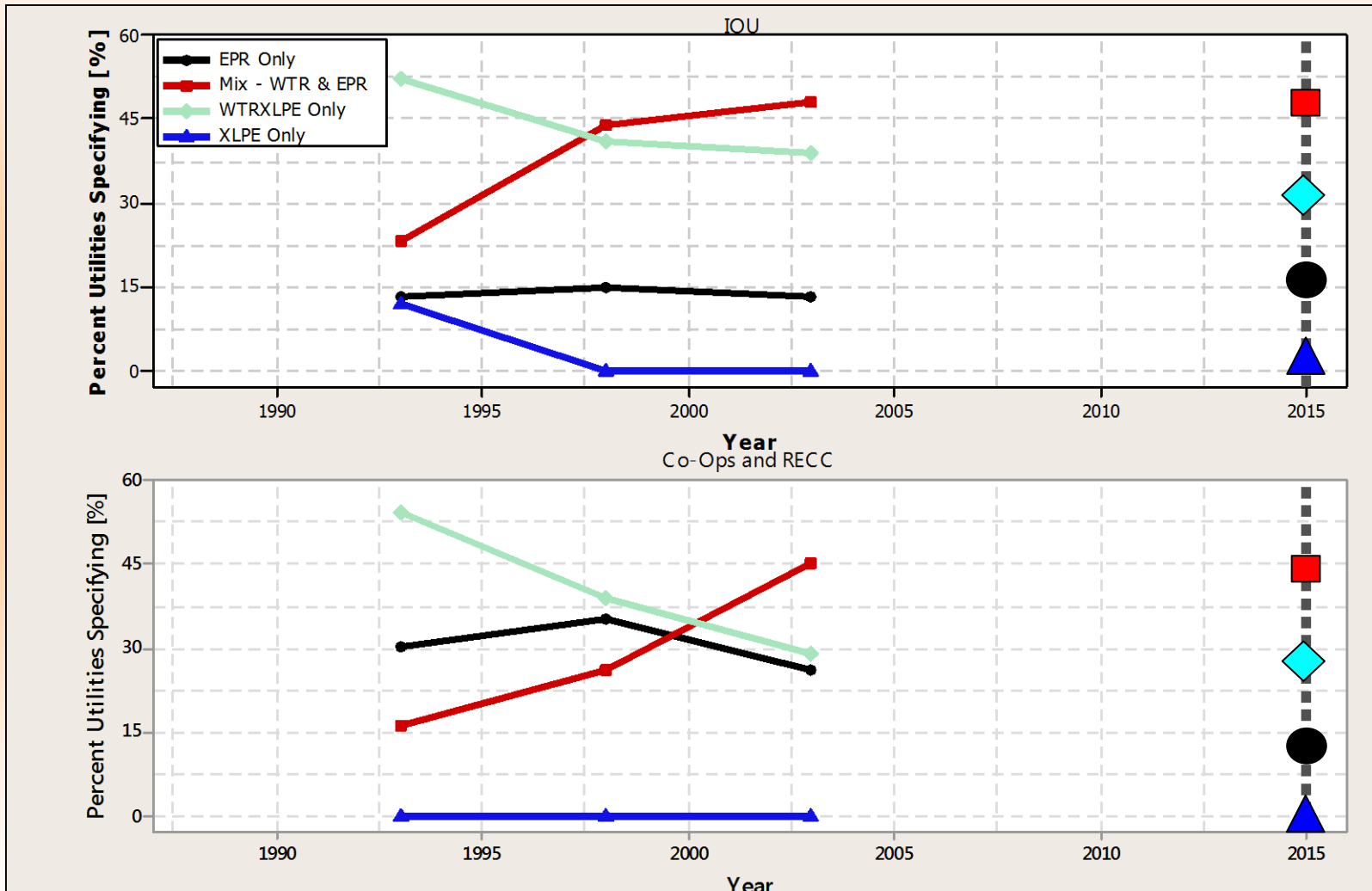


2003 Survey Results

Summary of Answers From 31 Utilities

- Cable replacement percentages varied from <1% to 42%
- Cables replaced were 15Kv -175 and 220 mil and 25Kv - 260mil, bare neutral and no jacket
- Ages and insulation materials replaced were:
 - ☑1960's to early 1980's HMWPE cables
 - ☑1960's to mid 1980's XLPE cables
 - ☑1980's EPR cables
 - ☑ Old PILC back to early 1900's

Information from Previous Studies – Specifying Insulation



Why are we interested now?

- Recent survey (2003) results are probably no longer accurate
 - Utilities have merged and developed new / combined standards
 - Replacement / maintenance strategies have evolved
- IOU's and REC's asked common questions – analyzed separately
- Utility practices, which this study informs, help guide needed changes / updates to industry standards (AEIC, ICEA, etc.)

Approach

1. Determine the issues that are of greatest interest to folks
2. Develop surveys for wide distribution - Utility & Manufacturer
 - Practices
 - Influencing Factors
 - Lengths
3. Engage all interested
4. Solicit specifications
5. Compile specification & survey data and analyze
6. If possible combine / contrast IOU, COOP, PUD etc data
7. Dissemination - presentation to ICC etc

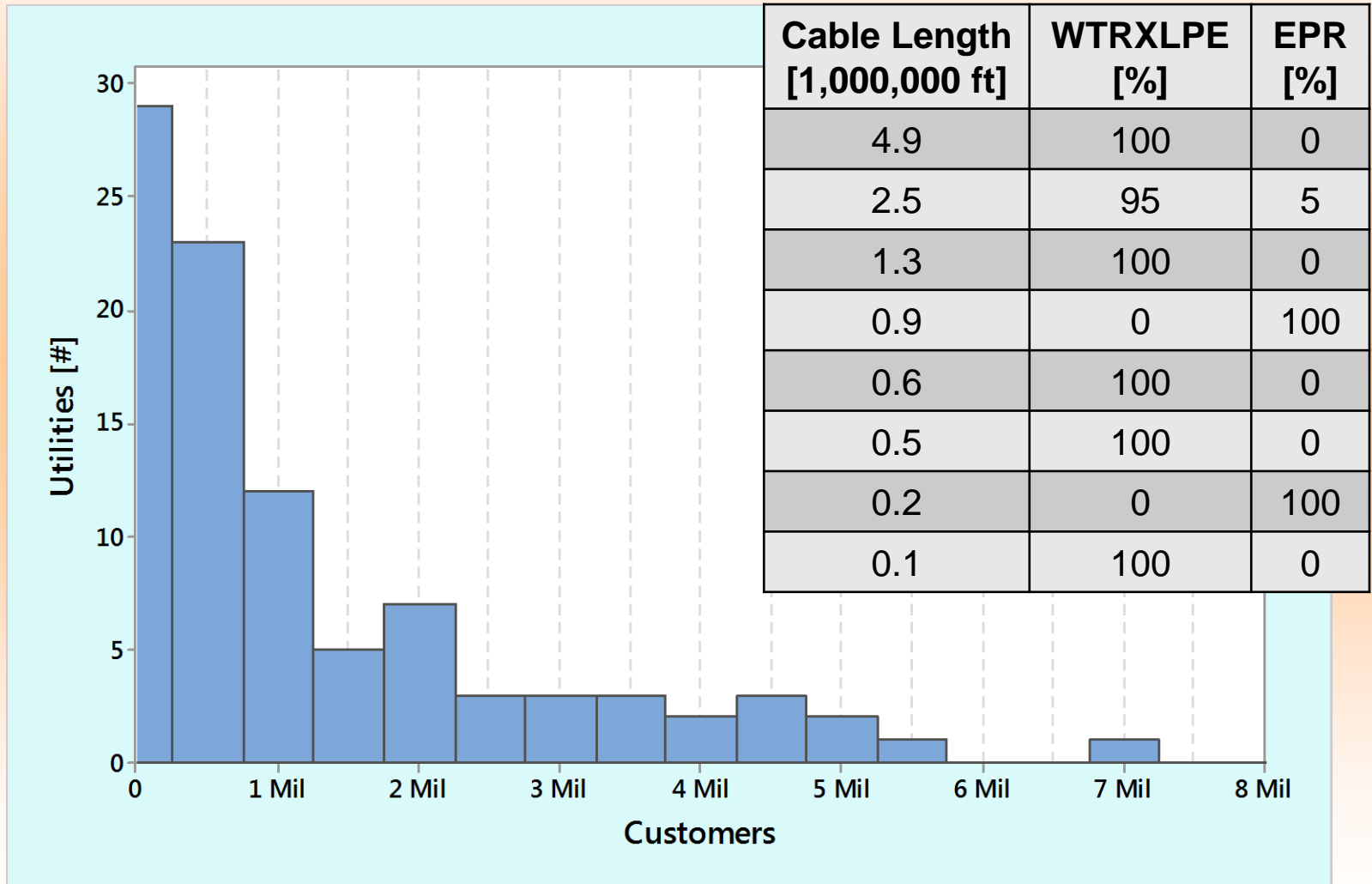
BENEFITS

Provides the 2014-2015 benchmark on utility cable and accessory practice

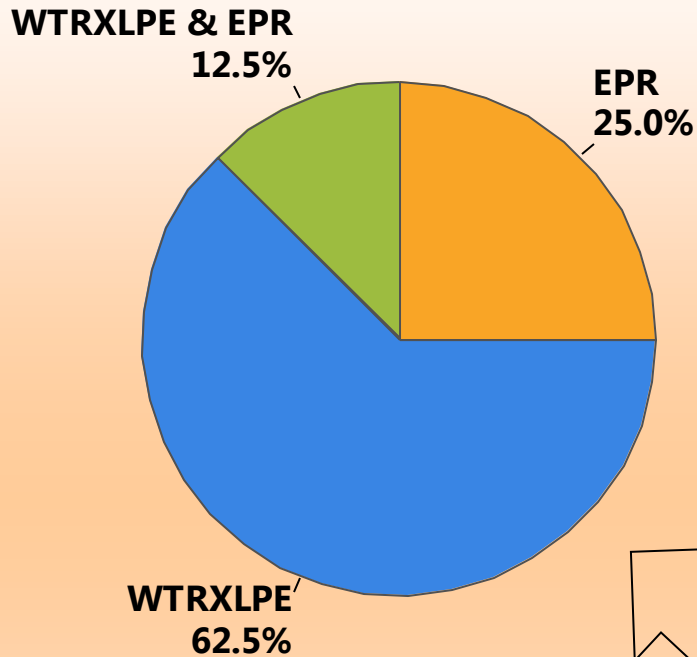
Updates current practices / trends in cable replacement and rejuvenation

Helps collate experiences / new issues with aging cable system population

How big is the Opportunity / Challenge?



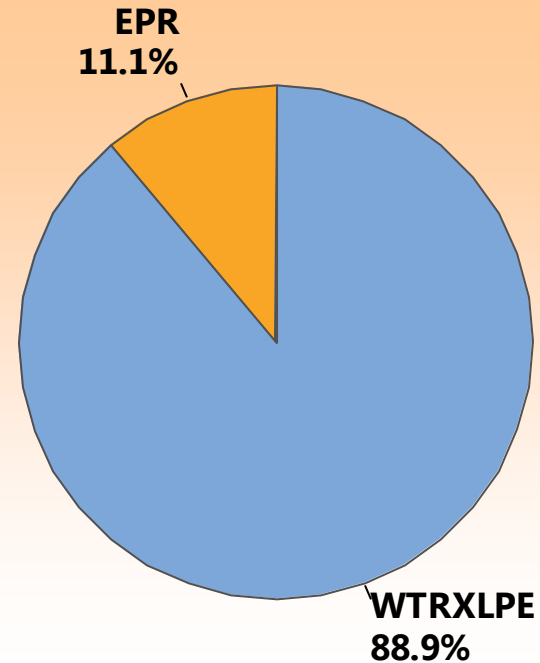
Expand the Information Available



Utility Entity Approach

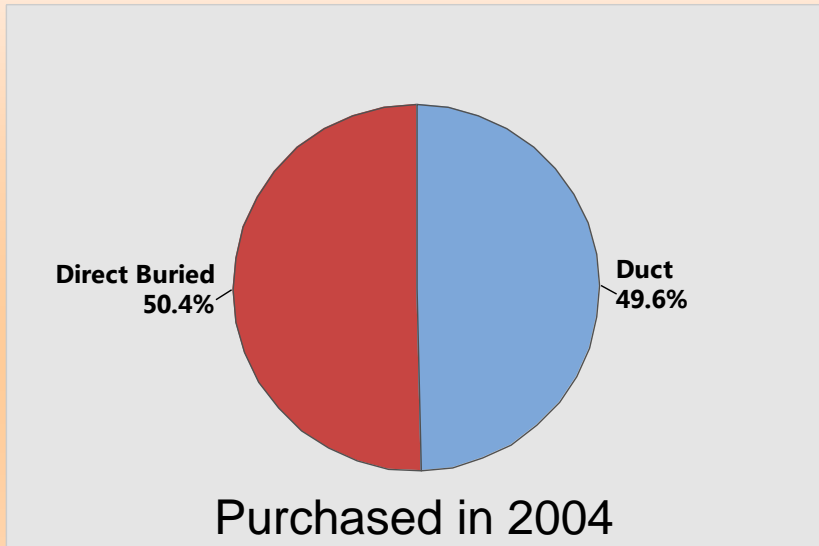
Used by Joe Dudas

Length Approach

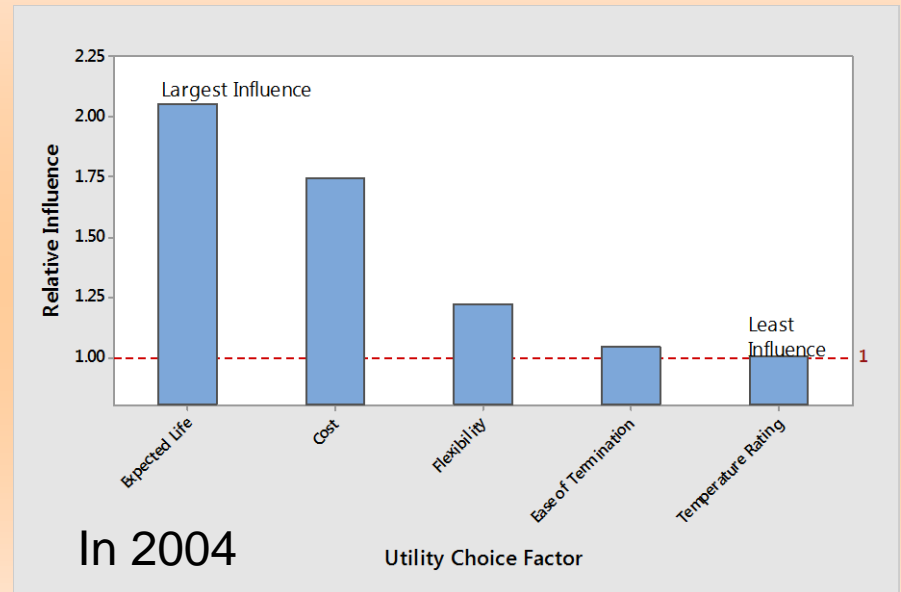


Possible Expansions of Information

- Duct vs Direct Buried



- Factors Influencing Choice



Do other factors influence choice today?

In Conclusion

- We are revisiting this work
- Building on the foundations of Joe Dudas, Chris Fletcher, John Rodgers, Bill Cochran and others
- Continue the approach of anonymity used by Joe Dudas
- Expand into areas of interest today
 - Accessories
 - Refurbishment
- If you would like to participate
 - Leave your card
 - Talk to me at this ICC Meeting