Using a Stick Model to Convert Downtown Electric Data at MLGW

Rick Wery,
Computer Software Specialist IV
RPQ Engineering, MLGW

MLGW

Overview

- Traditional conversion
- Evaluating current process
- Keeping the end result in mind
- Pilot testing
- Is there another way?

Traditional vs Another Way

- Traditional process
  - Read multiple paper docs, add features
  - Generate Geometric Network
  - QC by reading map data, multiple paper docs
- Another Way
  - T2000 network model has established relationships
  - Eval method to use this data to good effect

MLGW

Engineering Model to GIS

- T2000 Engineering model relates nodes/lines
- T2000 has no GIS attributes loaded (no geometry)
- Engineers use same source docs to keep up to date
- Blessed with a good CAD cablepath overview (thank you Ernest and company!)
- Good naming conventions in model (From MH to MH and CktNbr)

Non-graphic Model to GIS

- Verify existence of manhole and vault locations for every referenced name
- Establish centroid point with standardized name for each manhole and vault (Bus nodes)
- Parse line data to establish from/to associations
- Generate exploded clockface unique bus point locations
- Render lines from/to unique bus points (Sticks)

MLGW

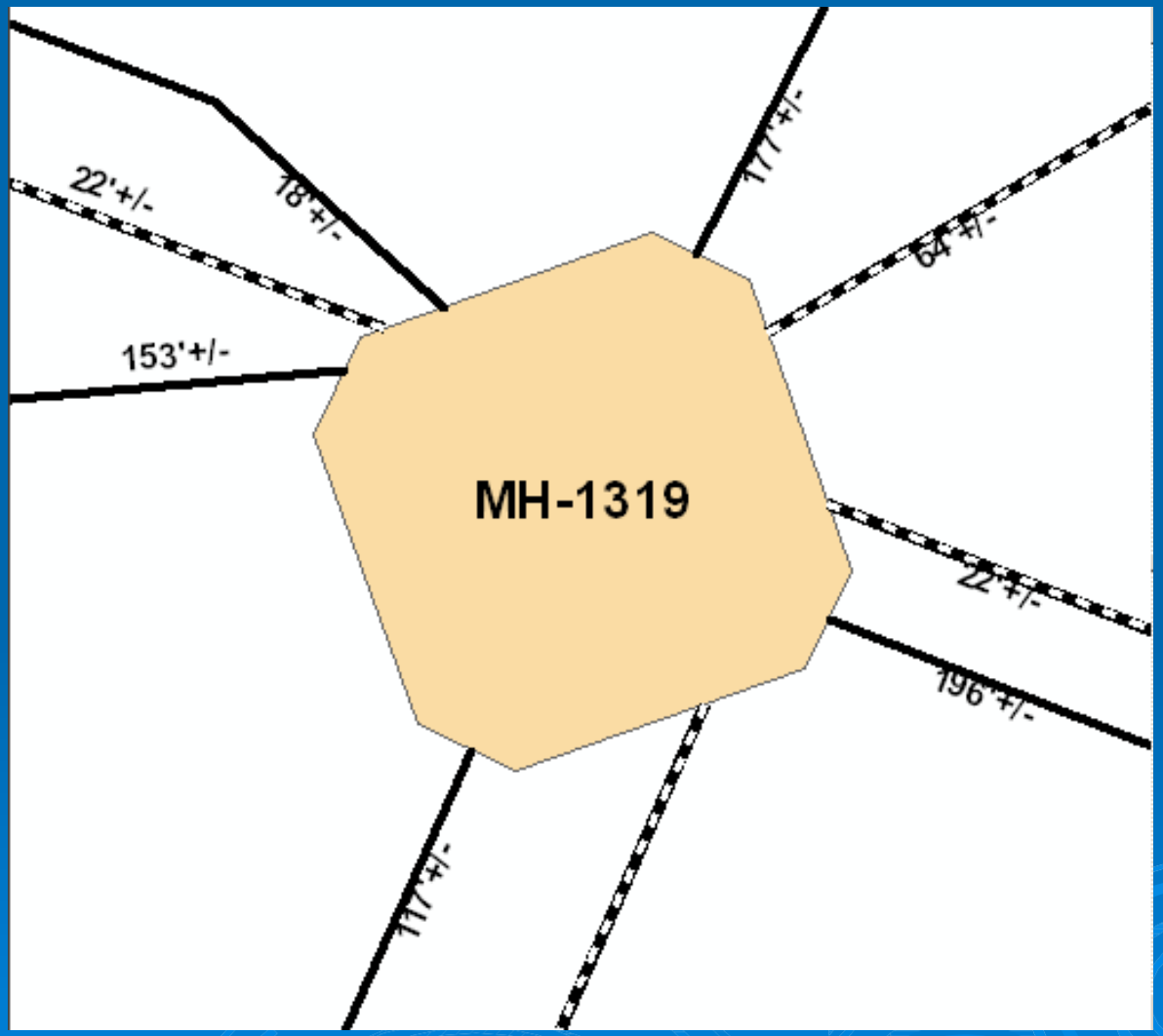
Collaborated Requirements

Here are a few requirements that I have regarding the lines and nodes that you send:

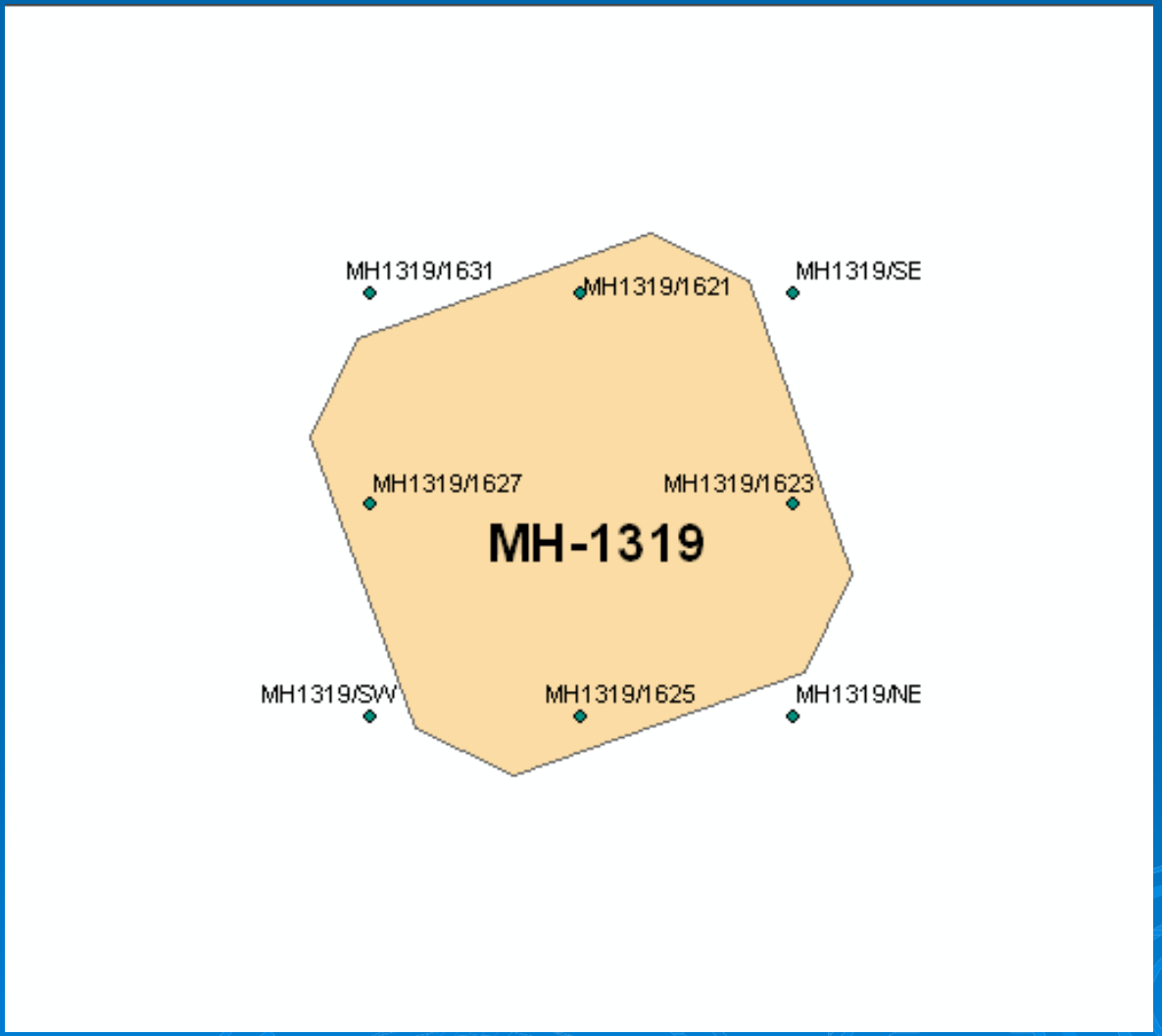
1. I need the span lengths that Doug is working on to be attributes of the lines you send.
2. I need the LineID values from the load-flow model to be attributes of the lines you send.
3. I need the FromNodeID and ToNodeID values from the load-flow data to be attributes of the lines you send.
4. I need the NodeID values from the load-flow data to be attributes of the points (nodes) you send.
5. I need the points you send to be offset from the MH and TV polygon centroids, in unique locations, and non-coincident, as we discussed in our meetings last month.
6. I need the ends of all lines to be at the same locations as the node points that you generate for the beginning and ending of the lines.
7. I need there to be a 1:1 relationship between load-flow line records and spatial lines you send.
8. I need there to be a 1:1 relationship between load-flow node records and spatial points you send.
9. Since I am going to have to break the lines and points that you send out into the different FCs of the output data model, I need an attribute in both the lines and the points that you send that indicates what type of line (i.e. eiPrimaryUG, eiService, etc.), or point (i.e. eiTransformerStation, eiSecIsolationSwitch, eiCableSplice, etc.) it is. I am happy to help with this and of course, I will provide documentation of how I break the lines and points into different FCs.
10. Any other load-flow fields that you guys want to be carried as attributes should be included as attributes of the points or lines. If you have additional load-flow attributes that need to be carried, but you don't have data worked out for them yet, I will accept additional tables that have line or point records with a 1:1 relationship and reference the LineID or NodeID values that are in the points and lines you send. I can then add the attribute fields and query in the attributes. At some point during production, I am going to have to quit accepting late changes though.

MLGW

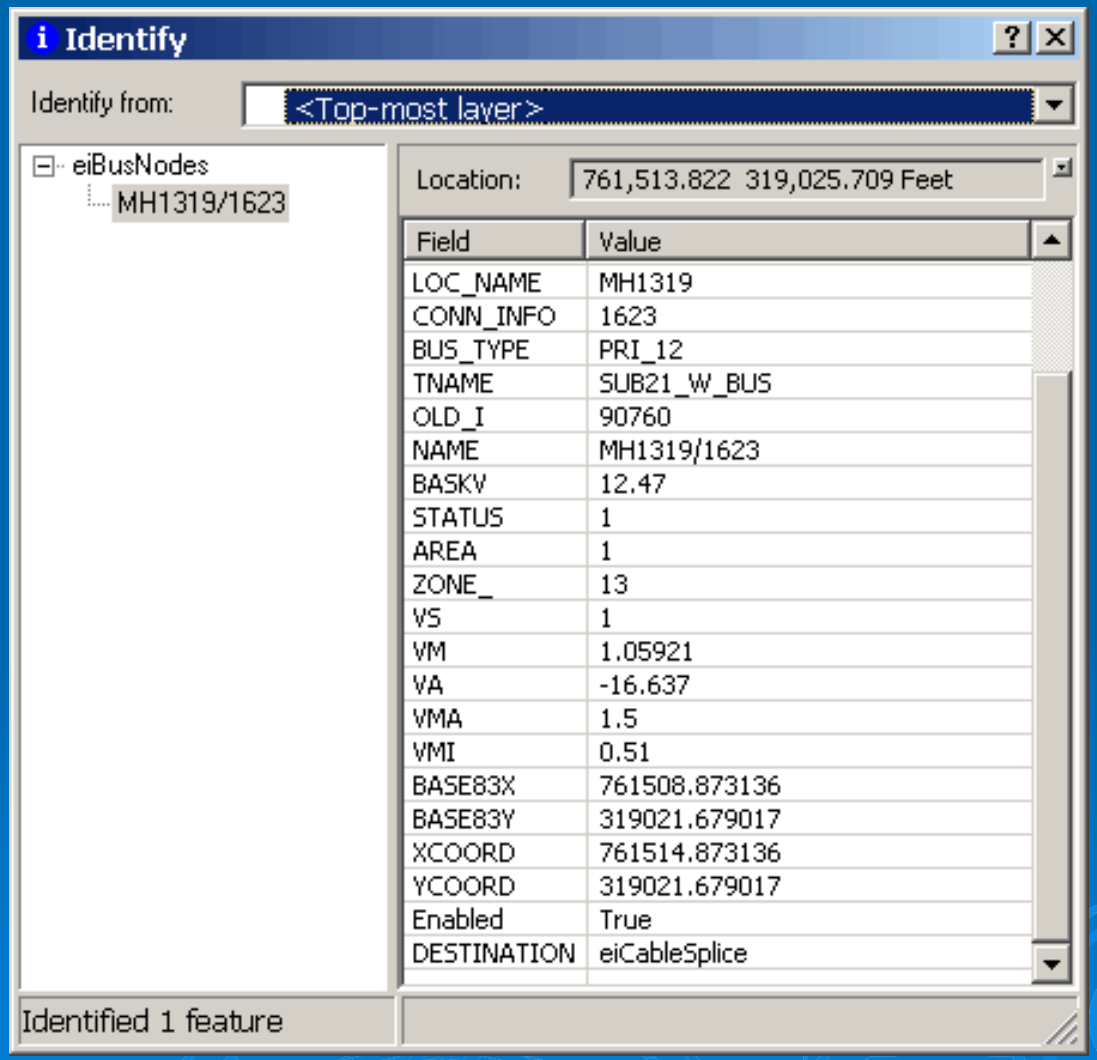
Converted Manhole and Duct



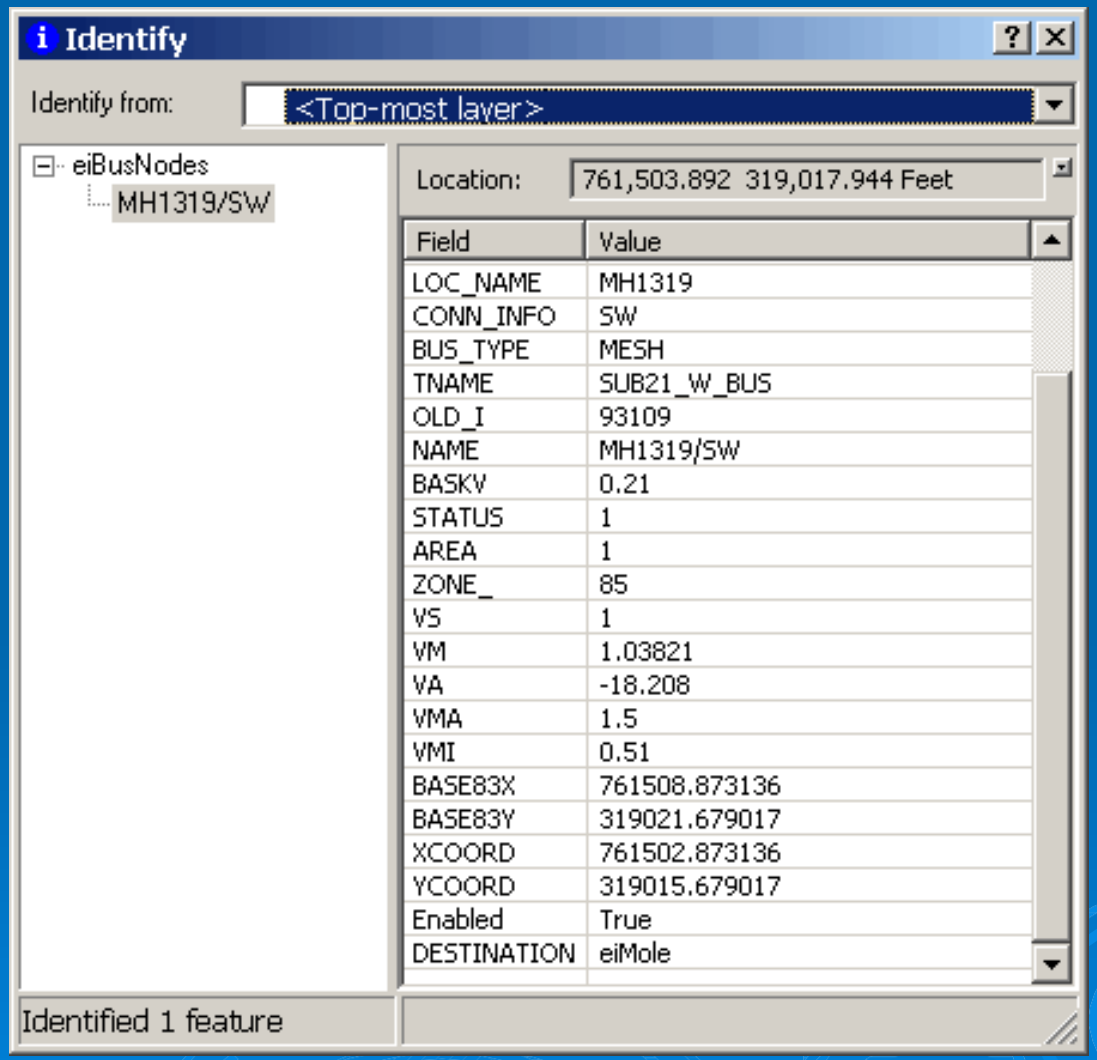
Bus Node Expansion



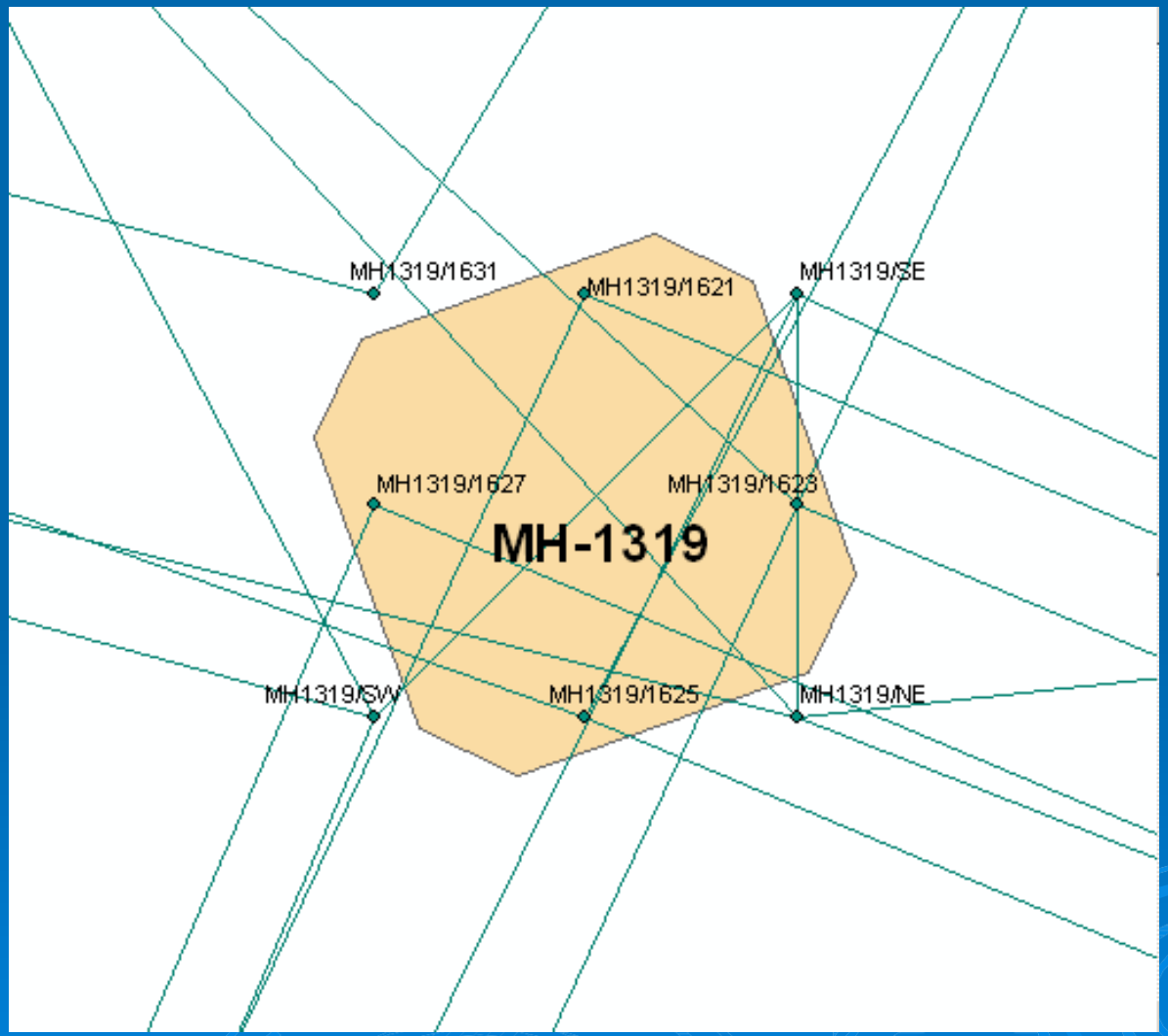
Bus Node – Cable Splice



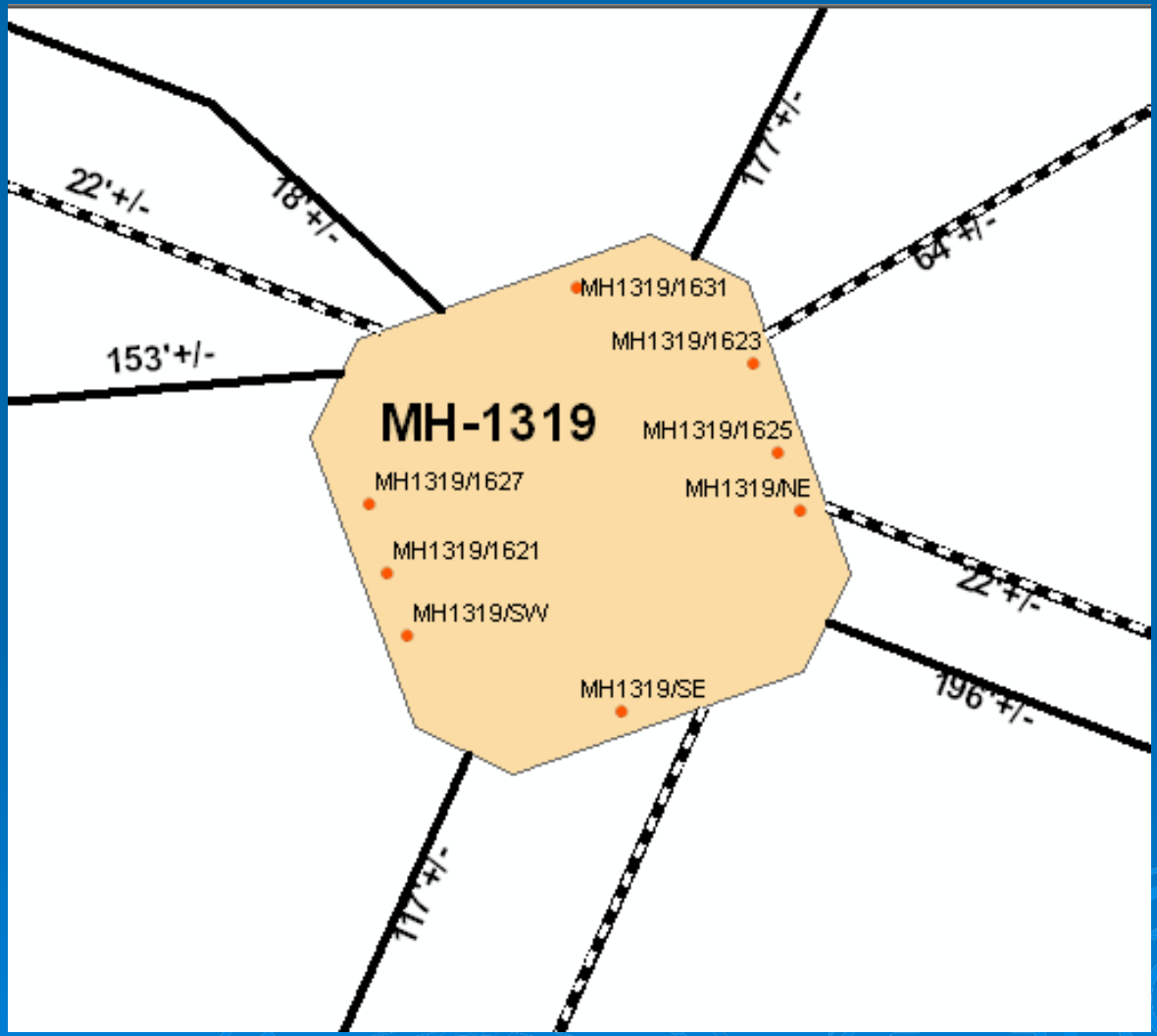
Bus Node – Mole (Secondary)



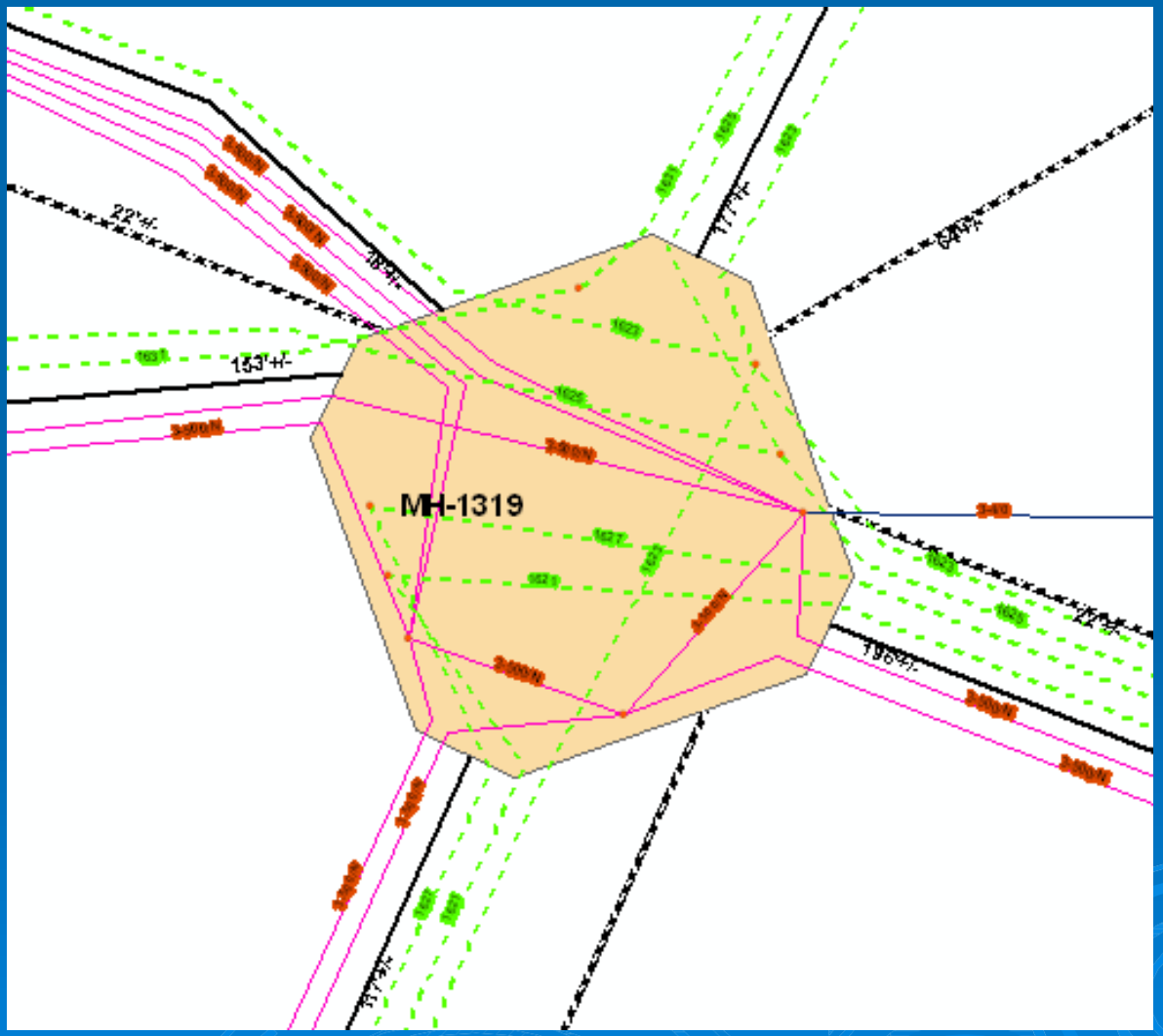
Sticks and Stones



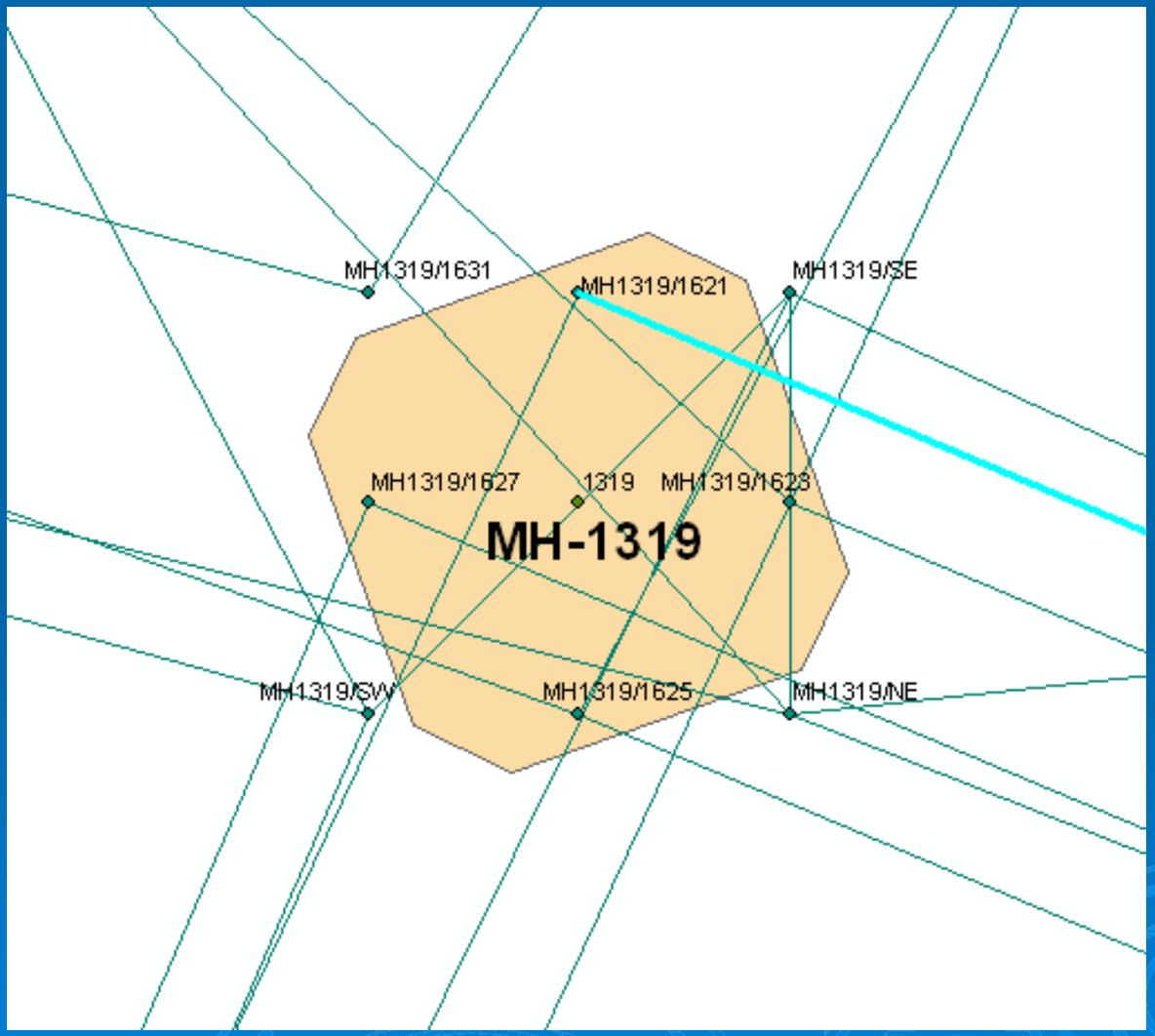
Repositioned Nodes



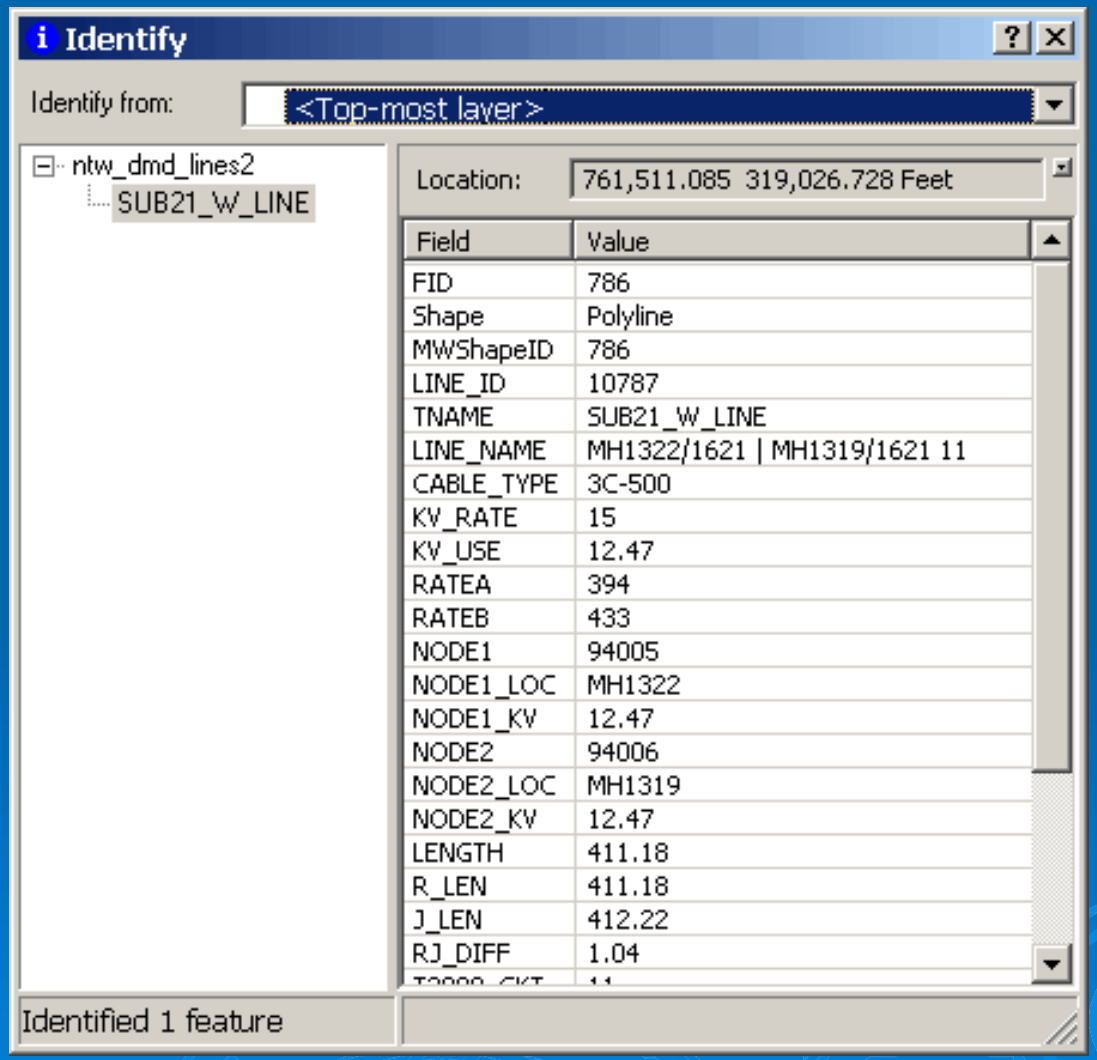
Delivered Data Test



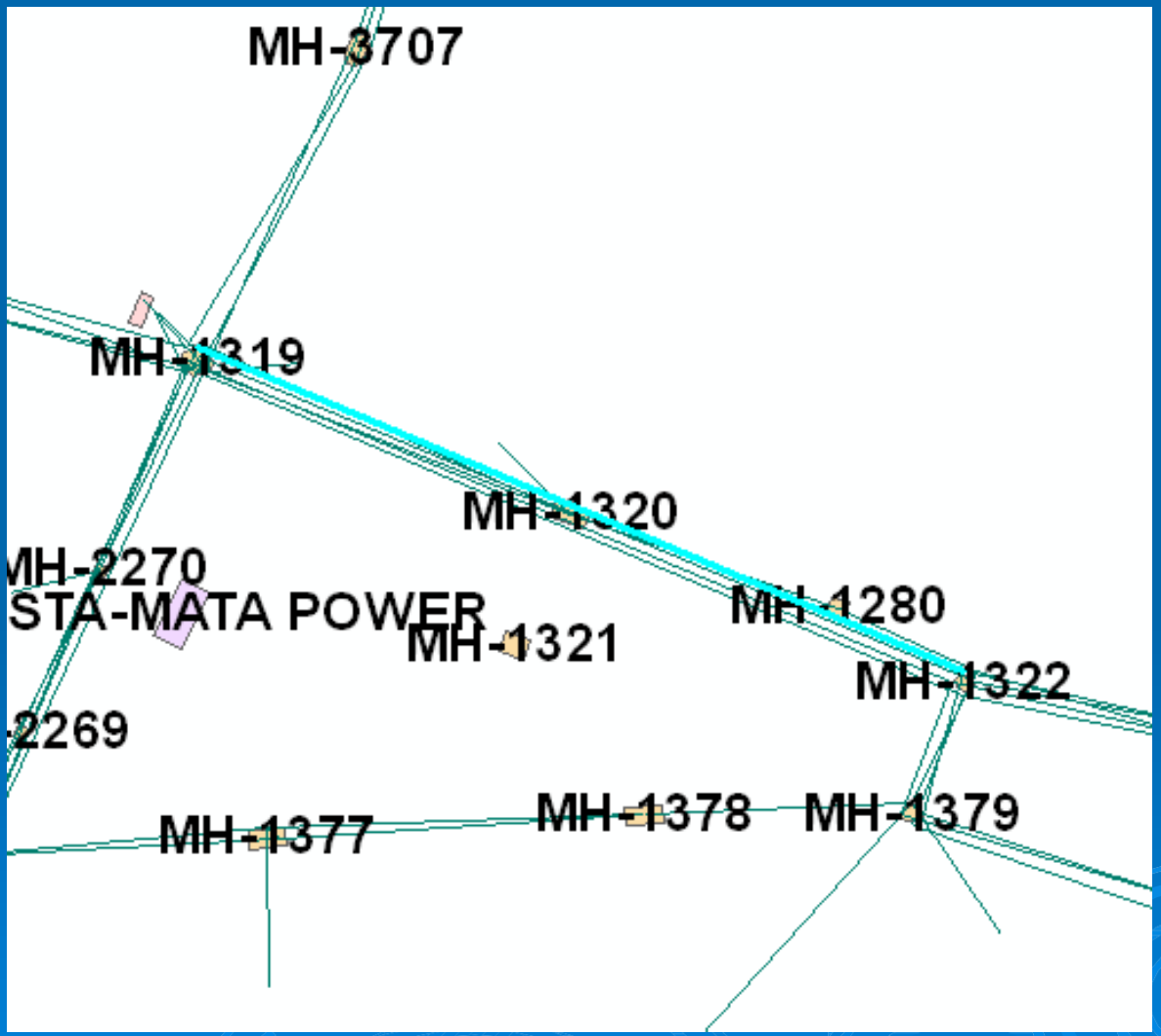
Selected Line



Selected Line Attribs



Selected Line Run



Evaluate Data Usability

- Validate existence of all referenced lines/bus points
- Verify no duplicates
- Establish Geometric Network and test overall connectivity
- Add needed attributes to GIS model for data loading and comparison
- Deliver data to vendor for use in conversion

MLGW

Results

- Vendor was able to utilize 100% of the data
- Allowed vendor to focus on map standards
- Quickly evaluate source documents for verification
- Maintained geometric network relationships
- Automated QC to validate model delivered
- Vendor was able to produce a better product in the time alloted

MLGW