GTC-EPRI Siting Fact Sheet

*Transmission Line Route Selection:
The Most Sophisticated Way Yet to
Connect the Dots*

Just what exactly is the "siting methodology?" Although the answer takes more than 200 pages to explain in the GTC-EPRI siting report, we try below to explain the two years of work in a few paragraphs.

Here are the significant actions that take place during each major phase of the GTC-EPRI transmission line siting process.

Step 1: Identify the macro corridors

First the planning staff identifies beginning and end points where a new power line is needed. Satellite imagery and data on roads, terrain and existing transmission lines are merged to form one digital map of the study area. This map is comprised of a grid of 100-square-foot cells.

Each cell on the map is ranked (see ranking process page 2). Features such as residential use, agriculture and wetlands are ranked from 1 (most suitable) to 9 (least suitable). Using the cell values, a computer algorithm calculates optimal paths for three types of suitability surfaces:

- locating with existing transmission lines
- locating with existing road rights of way
- crossing less developed areas

The optimal paths are identified as macro corridors. Combined, the outer boundaries of the macro corridors define the study area.


Existing Transmission Line Corridors
Roadside Corridor
Cross-Country Corridors
Cross-Country Corridors
Roadside Corridor

Step 2: Identify alternative corridors

More detailed data (including aerial photography, detailed land use/land cover, buildings, etc.) are collected to identify alternative corridors within the macro corridors. Using suitability maps comprised of 15 square-foot cells, four types of alternative corridors are defined:

- Built environment - protecting human and cultural resource areas

- Natural environment - protecting plants, animals and aquatic resources

- Engineering requirements - access, slope, geology, reliability and engineering conflicts

- Co-location - existing transmission lines, pipelines and roadways

- Simple Average - a composite of the other four

Built Environment
Natural
Engineering
Co-location
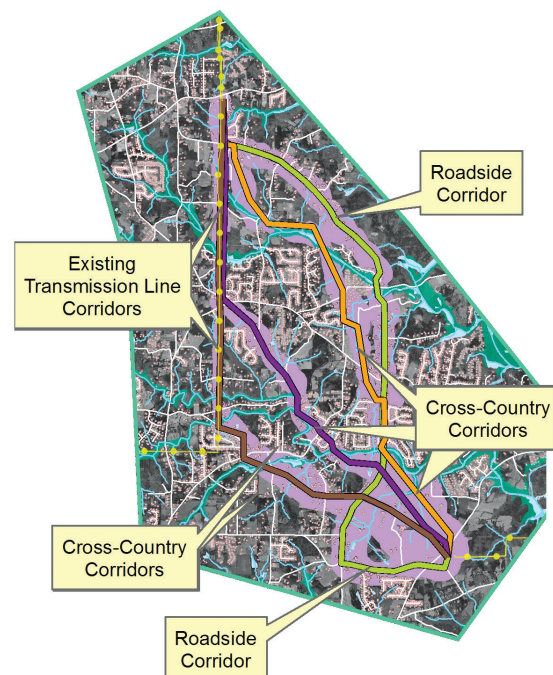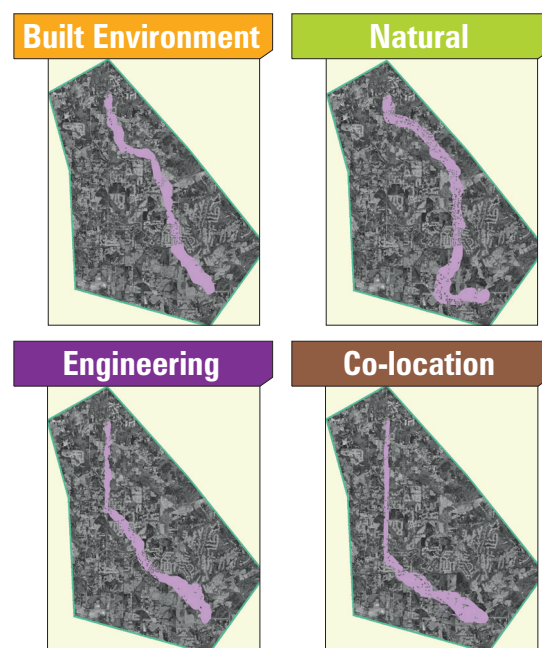
Step 3: Identify alternative routes

Within the alternative corridors, property lines are identified and buildings, which are digitally defined earlier in the process, are classified by type, such as occupied house, commercial building or industrial building.

Collecting detailed data after alternative corridors are identified significantly reduces data acquisition costs.

In this phase, utility professionals use their expert judgment to identify alternative routes within the corridors defined by stakeholders.
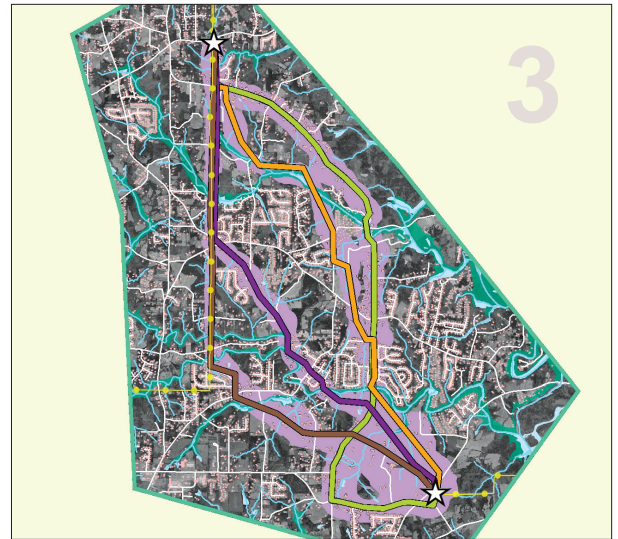
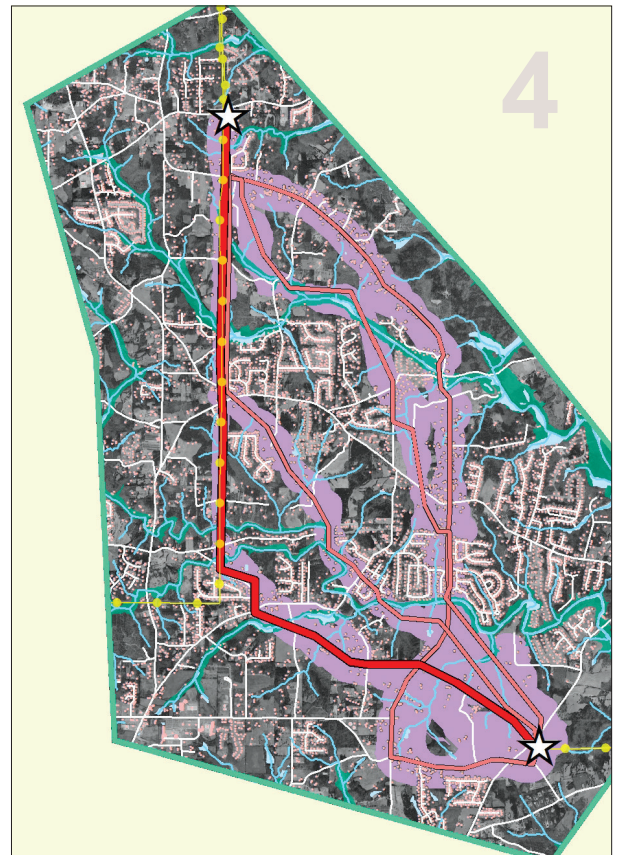## Step 4: Selecting a preferred route

GIS tools automatically calculate a standardized list of metrics for the alternative routes. Examples of data evaluated include cost, number of houses close to the route, acres of forest in a right of way, etc. The alternative route evaluation tool uses data to filter out the top few routes to forward to the expert judgment tool.

Using the expert judgment tool, the utility siting team assigns relative weights to community concerns, visual concerns, special permit issues, scheduling risks and construction and maintenance accessibility. Then the top route alternatives are ranked using expert analysis to identify a preferred route.

Throughout the process, GIS is a productivity tool to aid experts in the decision-making process. It enables siting team members from engineering, land acquisition, environmental and other areas to use map overlays, spreadsheets, reports and graphic illustrations to make more informed, objective and defensible decisions.

Collaborative rankings

The utility team and external stakeholders set evaluation criteria and rank factors, such as housing density, wetlands and land cover. Stakeholders from government and industry and from civic, homeowner, environmental and other interest groups are invited to participate in ranking these factors. External stakeholder calibration can be done on a regional, statewide and local basis.

GeorgiaTransmission