ELECTRIC POWER EXPANSION- HORIZON CENTER
Developed by and recommendation made by the City of Oak Ridge Electric Department
Revised 3-28-2022

Existing Conditions

- Horizon Center was constructed with a single 10 MW electric power source
- Power is distributed throughout the park via underground cables with no redundant feed
- Of the 10 MW available today:
  - o 80% committed to existing customers with needs of other privately held parcels totaling more than the power that is available
  - o 350 acres of land owned by IDB are available for development but have no power reservation

Proposed 69kV Power Line

- Will provide sufficient power for anticipated needs
  - o 45 MW for Project Liberty (69-kV sub-transmission)
- Recommended distribution line on same poles will provide 24 MW for future users and backup for most customers in area (13-kV distribution under-build)

CORED/City's Recommended Route

A. Option 1 A - Delivery from SUB 900

North side of Horizon Center with Overhead Line to Lot 6 (Approx. 1.1 miles)
- o Existing 50' easement located on DOE and IDB properties
- o Line remains south of existing gas line along North Boundary trail
- o Approximately 12 acres will need to be cleared
- o Easement NOT located inside the BORCE

Other Routes Considered for 45MW Delivery

A. Option 1 B - Delivery from SUB 900

North side of Horizon Center with Overhead/Underground Line to Lot 6 (Approx. 1.1 miles)
- o Existing 50' easement located on DOE and IDB properties
- o Overhead Line crosses railroad, gravel access road and Poplar Creek
- o Once lines crosses Poplar Creek, line transitions to Underground to lot 6
- o Easement NOT located inside the BORCE

B. Option 2 - Delivery from SUB 900

Overhead Line Along Highways 327, 58 and 95 (Approx. 3.8 miles)
- o Requires new easements
- o Interferes with proposed Airport glide slope
- o Requires 26A permit (I-year timeframe)
- o Crosses (3) 500-kV TVA Lines
- o Crosses (10) 161-kV TVA Lines

- o Requires clearing approximately 25 acres
- o Potential issues: clearance, constructions issues, schedule delay due to permitting, etc.

C. Option 3 - Delivery from SUB 900

Overhead Line Parallel to TVA Transmission Lines: (Approx. 2.7 miles)

- o Requires new easements from DOE
- o Requires permission from TVA to build lines on the edge of their ROW
- o Requires 26A permit (1 -year timeframe)
- o Requires clearing approximately 20 acres into the BORCE
- o Terrain would adversely impact constructability and maintenance

D. Option 4 - Delivery from SUB 100/600

Overhead Line Along Highway 95: (Approx. 5.S miles)

- o Construction Line from Bermuda to Horizon Center
- o Crosses (1) 161-kV TVA Lines
- o Potential clearance issues under TVA Lines
- o Distribution capacity from SUB 100 would be greatly reduced
- o Would significantly and negatively impact reliability and capacity in central Oak Ridge

E. Option 5 - New Delivery Point Across 1 Horizon Center (*New Option*)

Overhead Line Along Highway 95, and Novus Drive to Lot 6: (Approx. 0.9 mile)

- o Addition of a new TVA delivery substation
- o Land acquisition from DOE (Approx. 36 months)
- o Requires clearing 5.5 acres of land
- o Requires 26A permit (I -year timeframe)

Response to some questions from meeting dated March 1, 2022

I. Does the existing substation require upgrades?

Yes

2. What is the cost for required upgrades inside substation 900 to meet load demands?

Approximately S4,142,000.00

3. What is the cost of the Overhead Transmission Line with Double Circuit Under-build?

It will depend on the option selected. (See attached table)

4. How close can Transmission Poles be to the 8' High Pressured Gas Line?

Ideally 5 feet

5. What are the assumptions that went into the 26A permitting?

Source was from TVA

Date: March 28, 2022

Constructability and Schedule

	Total Project Cost	Cost of Substation/ Substation Upgrades	Cost of Transmission Lines	Estimated Engineering Phase Duration (Months)	Estimated Overall Project Duration	Estimated Easement/Land Required in (acres)	Required Clearing into the BORCE
Option 1A	$ 7,429,000	$ 4,142,000	$ 3,287,000	5	2yr 7mo	12.0	0.0
Option 1B	$ 9,768,000	$ 4,142,000	$ 5,626,000	5	1yr 11mo	5.0	0.0
Option 2	$ 12,479,000	$ 4,142,000	$ 8,337,000	11	5yr 0mo	25.0	4.6
Option 3	$ 10,516,000	$ 4,142,000	$ 6,374,000	6	3yr 9mo	20.0	8.9
Option 4*	$ 15,060,000	$ 3,400,000	$ 11,660,000	17	5yr 10mo	UNK	0.0
Option 5	$ 8,835,000	$ 6,585,000	$ 2,250,000	5	4yr 6mo	5.5	0.0

Option 1A Recommended

* Not Recommended due to negative impact on central Oak Ridge system.

	Estimated Lead Times
Transmission Line Material	
Steel Poles	25 - 30 weeks
Polymer Insulators	28 - 30 weeks
Conductor and Shield wires	20 - 30 weeks
Substation Material	
Transformer	50 -150 weeks
Other Equipment	<50 weeks

Sub 190
TVA 161kV
4
BORCE
Horizon Center
TN 95
TVA 161kV
5
Proposed Sub
1B
1A
3
2
TN 95
TVA 500kV
Blair Rd
Sub 900
TVA Sub