



City of Grand Island

Tuesday, January 08, 2008

Council Session

Item C1

Presentation of Electric Transmission Study by Advantage Engineering

Staff Contact: Gary R. Mader; Wesley Nespor

Council Agenda Memo

From: Gary R. Mader, Utilities Director

Meeting: January 8, 2008

Subject: Presentation of Transmission Line and Substation Engineering Study

Item #'s: C-1

Presenter(s): Gary R. Mader, Utilities Director

Background

The Electric Department has electric distribution substations connected at various distances along a 115 kV transmission loop. The loop generally runs along the outer edge of the urban area, providing power to the substations and providing power supply redundancy by use of the looped configuration. A map of the transmission system is attached for reference. Substations reduce voltage from the 115,000 volt level to 13,800 volts for distribution to individual customers across the City. Substations "E," located north of Swift on the east side of the loop, and "F," located north of Menards on the west side of the loop, are the newest substations. They were placed in initial service in 2001, and completed in 2007. The City and its electric demand continue to grow.

Power Generation and regional interconnections to NPPD are concentrated on the south side of the transmission system loop. The northern portion of the transmission loop has no interconnections. And while it can sustain a single line segment loss contingency any additional failure could result in loss of several major substations, resulting in power loss to major portions of the City. With power plant and regional grid interconnections, the southern portion of the transmission loop has more redundancy.

Recognizing that the City is continuing to grow, that future transmission line construction will occur and that reliability improvement is always important, Substations "E" and "F" were constructed with provisions to accept additional 115 kV transmission interconnections. In the long range plan of the Electric Department, these substations are designed for new transmission interconnections as future load growth may require.

Discussion

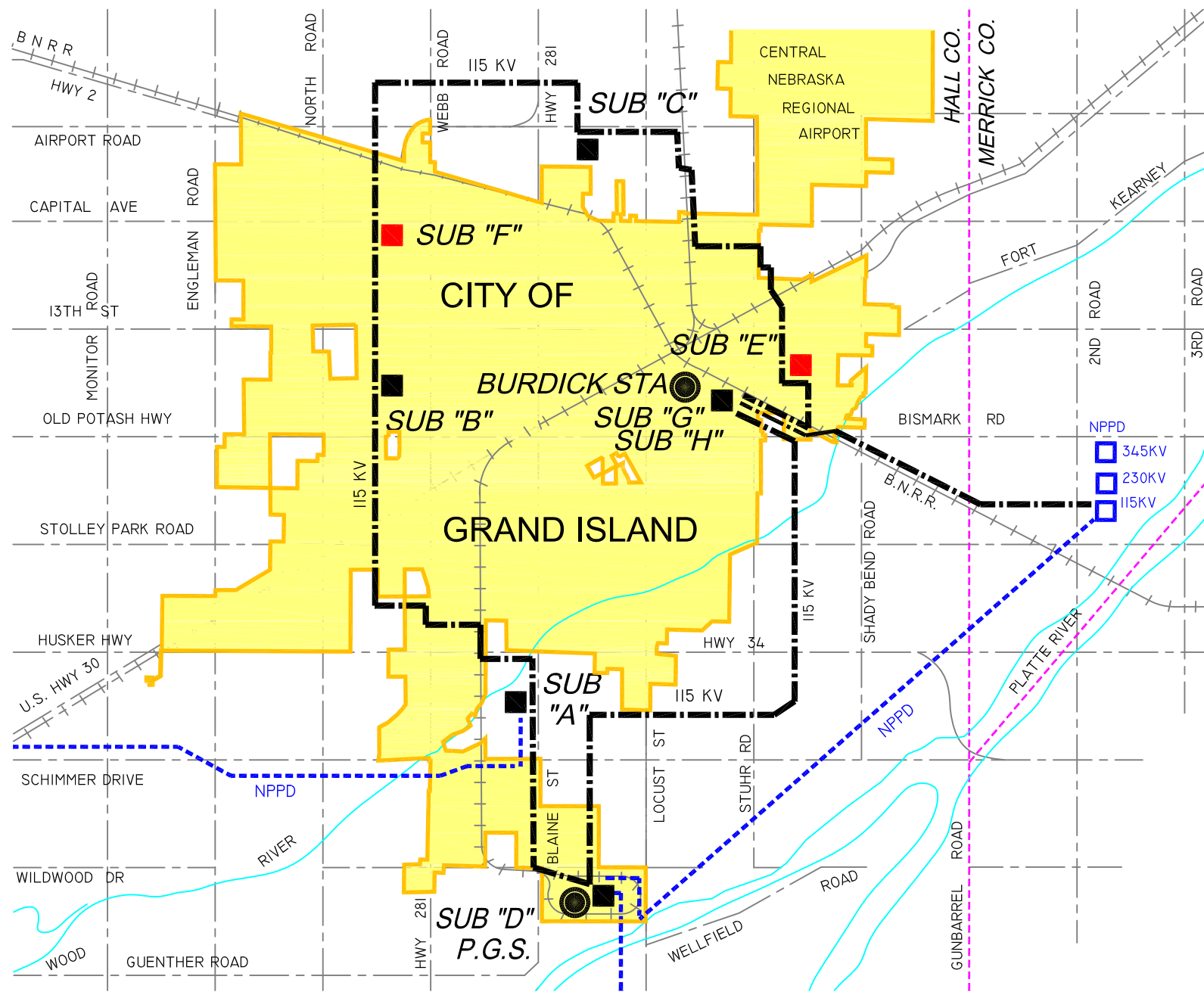
Transmission system improvements and substation additions are crucial, interrelated elements of the electric system. It is advantageous to combine future growth planning, line routing, right-of-way acquisition, financing, engineering and construction of these major components in a coordinated long-term plan, recognizing that it might take ten years, or more, for completion. The Electric Department is not staffed for engineering design undertakings of this magnitude.

Therefore, in February of 2006, Requests for Proposals to provide Transmission Line and Substation Engineering Services was issued. The engineering services contract was awarded to Advantage Engineering, Inc.






Since early 2006, that firm has been engaged in the analysis of the City's electric system, evaluating methods to meet continued City growth in a coordinated manner over time, with focus on improving overall system reliability as improvements are required.

Presentation

Advantage Engineering has completed the Transmission and Substation System Study. That study is presented to Council at this meeting.



LEGEND

-  EXISTING CITY POWER PLANTS
-  EXISTING CITY 115KV SUBSTATION
-  EXISTING CITY 115KV TRANSMISSION LINE
-  EXISTING NPPD 115KV SUBSTATION
-  EXISTING NPPD 115KV TRANSMISSION LINE

