

**STATE OF ILLINOIS**  
**ILLINOIS COMMERCE COMMISSION**

Application of COMMONWEALTH EDISON	:	
COMPANY, for a Certificate of Public	:	
Convenience and Necessity, pursuant to Section	:	No.
8-406 of the Illinois Public Utilities Act, to	:	
construct, operate and maintain a new 138,000-volt	:	
electric transmission line in DeKalb County,	:	
Illinois.	:	
	:	

Direct Testimony of  
**FRANK A. LUEDTKE, P.E.**  
Capacity Planning Manager  
Distribution Capacity Planning Department  
Commonwealth Edison Company

1 Introduction and Background

2 Q. Please state your name and business address.

3 A. Frank A. Luedtke, Three Lincoln Center, Oakbrook Terrace, Illinois.

4 Q. By whom are you employed?

5 A. Commonwealth Edison Company.

6 Q. What is your title?

7 A. I hold the title Capacity Planning Manager in ComEd's Distribution Capacity Planning  
8 Department.

9 Q. How long have you held that position?

10 A. I have had this specific title just a short time. This is my new title following a recent  
11 reorganization of the department.

12 Q. What are your duties as a Capacity Planning Manager?

13 A. I am responsible for supervising the day-to-day activities along with providing technical  
14 support and direction to a group of professional engineers and planners who are  
15 responsible for the evaluation and planning of modifications, reinforcements, upgrades,  
16 and expansions to ComEd's distribution network and to the portions of ComEd's  
17 transmission system which supply it. This process includes the analysis of reported and  
18 forecast loads on various portions of ComEd's system including both transmission  
19 substations and the transmission-distribution centers and distribution centers that supply  
20 electricity to the lower-voltage distribution system in order to assess whether there is, or  
21 will be, a need to add to or change the system in order to better serve our customers.

22 Q. Before your title change, what was your most recent position at ComEd?

23 A. My title was Consulting Engineer. I held that title since 2001.

24 Q. What were your duties as a Consulting Engineer?

25 A. Initially, I was assigned to major projects or initiatives, to manage and lead the engineers  
26 involved in planning enhancements to ComEd's system for increased capacity and  
27 reliability. In 2003 I became acting Planning Manager for our Southern Region  
28 Distribution Planning group. From 2004 through 2006 I was the acting Capacity  
29 Planning Manager for our Chicago group.

30 Q. What was your position before becoming a Consulting Engineer?

31 A. I was Substation Planning Manager.

32 Q. What were your duties as Substation Planning Manager?

33 A. From 1998, I was supervising and managing the planning of substation projects. That  
34 meant managing the professional engineers and planners responsible for the evaluation  
35 and planning of modifications, reinforcements, upgrades, and expansions to ComEd's  
36 distribution network and to the portions of ComEd's transmission system which supply it,  
37 system-wide. That process included the analysis of reported and forecast loads on  
38 various portions of ComEd's system including both transmission substations and the  
39 transmission-distribution centers and distribution centers that supply electricity to the  
40 lower-voltage distribution system in order to assess whether there is, or will be, a need to  
41 add to or change the system in order to better serve our customers.

42 Q. What positions have you held prior to that?

43 A. During my 24-year career at ComEd, I have been a Regional Planning Supervisor for  
44 four of ComEd's regions. I also held positions as a substation planner, an area engineer,  
45 a district engineer, a distribution feeder planner, and a field engineer. To summarize, all  
46 of my work has been in the transmission and distribution area, mostly in planning and  
47 design engineering. Altogether, I have approximately 18 years of experience in the  
48 planning of transmission and distribution facilities.

49 Q. What experience do you have with the design and construction of electrical transmission,  
50 distribution, and transformation systems?

51 A. For a number of years, I have been involved on a day-to-day basis with the evaluation,  
52 planning, design, and construction of many components of ComEd's system, including  
53 numerous 138 kV lines. I have analyzed many actual and proposed 138 kV systems,  
54 including lines and substations, and have designed and planned many of ComEd's  
55 138 kV lines now in operation. I have also been involved with, and supervised, the  
56 planning, design, and construction of a wide variety of distribution lines and systems.

57 Q. Are you a Licensed Professional Engineer?

58 A. Yes, I have been licensed in Illinois since 1988.

59 Q. Do you participate in any electric power engineering groups?

60 A. Yes, I am a member of the Power Engineering Society of the Institute of Electrical and  
61 Electronics Engineers.

62 Q. What education do you have in engineering?

63 A. I have a Bachelor's Degree in Electrical Engineering from the Massachusetts Institute of  
64 Technology, and a Master's Degree in Electrical Engineering from the University of  
65 Illinois at Urbana-Champaign.

66 Q. What is the purpose of your testimony?

67 A. I will briefly describe the new compressor station under development by Guardian  
68 Pipeline L.L.C., and discuss why the proposed transmission line is necessary to provide  
69 adequate, reliable and efficient service to this facility.

70 The Guardian Facility and Its Electrical Needs

71 Q. What is the Guardian facility?

72 A. The Guardian facility will be a compressor station on its existing natural gas pipeline.

73 Q. What is Guardian Pipeline L.L.C.?

74 A. Guardian Pipeline L.L.C is an interstate pipeline company, currently owning one major  
75 pipeline. Guardian's existing pipeline runs from the Chicago Hub, near Joliet, Illinois to  
76 Ixonia, Wisconsin. Guardian is primarily regulated by the Federal Energy Regulatory  
77 Commission, or FERC.

78 Q. How have you become familiar with the project?

79 A. The Capacity Planning Department, of which I am a part, was tasked to evaluate the  
80 options for serving this new customer's facility, and to help develop a plan that would be  
81 least cost.

82 Q. What is Guardian proposing to build?

83 A. Guardian is adding a new mid-line compressor station to increase the capacity of its  
84 pipeline. From ComEd's perspective the key element of the station is a large, 45,000  
85 horsepower motor that runs the compressor.

86 Q. What are the expected electrical needs of the Guardian facility?

87 A. Based on data provided by Guardian, it is estimated that the compressor station will have  
88 a peak demand of about 36 MW. Guardian does not expect to run the compressor motor  
89 continuously, so ComEd's system needs to be able to start the Guardian motor, and do so  
90 without negatively impacting other customers. Guardian plans to start its motor no more  
91 than once a day under normal operations, no more than three times per day for abnormal  
92 operations, and no more than once per hour while troubleshooting. In addition, in  
93 working with Guardian to develop the least-cost plan of service that meets Guardian's  
94 needs, Guardian has told ComEd that it is able to tolerate the fact that a single circuit line  
95 may occasionally be out of service for up to a week during maintenance activities, and  
96 perhaps even longer if severe weather damaged the line.

97 Q. Where is Guardian proposing to build its compressor station?

98 A. The compressor station will be located along Guardian's existing line, in Sycamore  
99 Township in DeKalb County, Illinois.

100 Q. What other approvals is Guardian obtaining for its facility?

101 A. Guardian is seeking approval from its primary regulator, the Federal Energy Regulatory  
102 Commission. I understand that the application was filed October 13, 2006, and is  
103 currently under review.

104 Q. When will the Guardian facility require power?

105 A. Guardian has indicated that it needs full power by May 1, 2008.

106 Q. What is an appropriate voltage for connecting and powering the Guardian facility?

107 A. The facility must be connected at 138 kV or above. We propose to connect Guardian to  
108 our 138 kV system, as service from the 138 kV system is the least cost plan that meets  
109 Guardian's needs and provides adequate, efficient, reliable and environmentally safe  
110 service.

111 Q. Why would a connection at a lower voltage not be appropriate?

112 A. The next lowest standard voltage on the ComEd system in this area is 34 kV. (ComEd  
113 has some 69 kV lines, but they are not in this area.) Our capacity planning department  
114 analyzed the possibility of using a 34 kV connection, based on data from Guardian on the  
115 properties of its compressor motor. The analysis is attached to my testimony as  
116 Exhibit 1.1. In brief, the existing 34 kV system could not start Guardian's 45,000  
117 horsepower motor. Moreover, if it were added to the existing 34 kV system, Guardian's  
118 steady-state load would result in a voltage of 0.84 p.u., which is below the Commission's  
119 regulatory limits.

120 Q. Did ComEd consider reinforcing the 34 kV system?

121 A. Yes we did. We studied building a new 138 kV to 34 kV substation adjacent to our  
122 existing 138 kV transmission line and then extending 34 kV to the proposed Guardian  
123 facility. We determined that by extending three 34 kV lines to the Guardian facility and  
124 operating them in parallel, we would be able to serve the load and would be able to start  
125 the 45,000 hp motor. The cost of this method of service would be approximately 3.5  
126 times the cost of our proposed 138 kV project.

127 Q. Did ComEd consider extending higher voltage lines to serve Guardian?

128 A. Yes, but that would not be least cost. The next highest standard voltage above 138 kV  
129 would be 345 kV. These lines are more costly to build than 138 kV lines, and require  
130 additional protection, in the form of a ring bus at the connection point. Additionally, the  
131 nearest 345 kV line is approximately ten miles away. All these factors would make the  
132 construction of a 345 kV line much more expensive than the proposed 138 kV solution.

133 Proposed Construction on Two-Circuit Poles

134 Q. What type of poles will support the proposed line?

135 A. The poles are described in detail in the Direct Testimony of Mr. Kaup (ComEd Ex. 2.0),  
136 and are depicted on Exhibit A to ComEd's Petition in this docket. Although the poles  
137 will initially support a single three-phase circuit and two static wires, they will be  
138 sufficiently heavy-duty to be able to support a future 138 kV circuit using a second set of  
139 arms that will be installed when the second circuit is needed.

140 Q. Why will the second circuit eventually be needed?

141 A. The second circuit would be needed to provide additional reinforcement to the 138 kV  
142 bulk power system.

143 Q. When does ComEd project that it will need to install the second circuit.

144 A. We currently project that will be in the year 2010.

145 Q. What is the extra cost of using heavy-duty poles capable of supporting a second circuit?

146 A. \$210,000.

147 Q. Is the use of these heavier poles least cost?

148 Q. Yes. We compared the cost of two options. First, we could install single-circuit poles  
149 now, and in the year 2010, remove those poles and construct two-circuit poles. Second,  
150 we could install two-circuit poles now, and use those poles to support the second circuit  
151 in 2010.

152 We compared these two alternatives based on the net present value of our  
153 expenditures in today's dollars. Based on this analysis, which is shown on ComEd  
154 Ex. 1.2 attached to my testimony, our proposal (heavier two-circuit poles initially) is least  
155 cost.

156 Q. Is ComEd seeking a certificate authorizing construction of the second circuit?

157 A. No, not at this time. We will seek a certificate when the need for the second circuit can  
158 be more conclusively justified.

159 Funding the Proposed Construction

160 Q. What is the expected cost of the transmission project as proposed?

161 A. \$4,500,000.

162 Q. Is the proposed interconnection considered standard service to Guardian's facility?

163 A. Yes.

164 Q. Where will the funds come from to pay for the construction?

165 A. The funds for construction will come from ComEd's construction budget. The line will  
166 be placed into ComEd's rate base as distribution plant. The cost of the line will be  
167 recorded on ComEd's books as distribution plant when the line is placed into service.  
168 The funds for purchase of the additional right-of-way needed to construct the proposed  
169 line came from Guardian, in accordance with our tariffs.

170 Q. What protection does ComEd have against Guardian's facility not operating as expected  
171 in the future?

172 A. Our line to Guardian is standard service, so it is covered by ComEd's Rider DE –  
173 Distribution System Extensions. In accordance with that rider, Guardian is required to  
174 pay a deposit to ComEd in the approximate amount of ComEd's investment. Guardian's  
175 deposit may be refunded to Guardian in whole or in part based on the actual distribution  
176 revenue that ComEd receives from Guardian over a period of up to 10 years. In other  
177 words, Guardian has the opportunity for a full or partial refund of its deposit depending  
178 on how the facility operates and contributes to ComEd's revenues.

179 Q. Is ComEd capable of financing the proposed construction without significant adverse  
180 financial consequences?

181 A. Yes. The cost of the project represents a small fraction of ComEd's construction budget.  
182 Also, ComEd has Guardian's deposit as protection to ensure that other ComEd customers  
183 will not inappropriately bear the cost of this project if Guardian does not operate as  
184 expected..

185 Q. Does this complete your direct testimony?

186 A. Yes.