



Champlain Hudson Power Express Project

Exhibit 9

Cost of Proposed Facility

**EXHIBIT 9
COST OF PROPOSED FACILITY**

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EXHIBIT 9: COST OF PROPOSED FACILITY

Champlain Hudson Power Express, Inc. (CHPEI) Project facilities are being developed on a merchant basis, with no cost recovery from captive utility ratepayers. As a merchant project, and unlike the Congestion Analysis and Resource Integration Study (CARIS) performed by New York Independent System Operator (NYISO) under its Open Access Transmission Tariff to identify potential transmission upgrades to reduce congestion that should be developed under cost-based rates, CHPEI's shareholders bear all of the risks of developing and operating the Project. Accordingly, the cost information presented below is offered solely to assist the New York State Public Service Commission (NYSPSC) in developing a complete record in this Article VII proceeding.

The detailed project costs summarized below represent the costs for the installed equipment in New York State only, and exclude the equipment installed in Canada and in Connecticut.

9.1 DETAILED PROJECT COST

The estimates were developed utilizing engineering feasibility studies to determine the technical and environmentally feasible preferred cable route. These engineering feasibility studies were then provided to the cable and converter station manufacturers in order to develop estimates of Project costs. The estimates for the project costs were determined as follows:

1. The Cable Manufacture and Installation Costs:

The cable manufacture and installation costs were developed by Nexans Norway AS (Nexans) for the cross-linked polyethylene (XLPE) high-voltage direct current (HVDC) cable technology.

2. Converter Station Costs:

The cost of the manufacture and installation of compact HVDC converter station (HVDC Light™) was provided by ABB, Inc. (ABB) based on unit costs for similar systems operating in the United States.

3. System Interconnection Costs:

The system interconnection costs were developed during the NYISO and New England Independent Operating System (ISO-NE) feasibility assessment studies.

Costs for the following items are being finalized and will be provided as part of the supplemental information to be submitted in July 2010. They include: right-of-way, surveys, materials, labor, engineering and inspection, administrative overhead, fees for legal and other services, interest during construction, and contingencies.

9.1.1 Unit Prices

9.1.1.1 HVDC Cables

The Project consists of two 1,000 MW bipole transmission circuits, resulting in a total of four HVDC cables (two per HVDC transmission circuit). The unit costs for the manufacture, supply, installation and burial of the four HVDC cables are shown in Table 9-1 below.

Table 9-1. Unit Cost Estimates for HVDC Cable Systems	
Item	Cost (\$U.S.)
Cable Supply	
Underwater Cables (XLPE) (per meter)	\$700
Underground Cables (XLPE) (per meter)	\$568
Cable Transport and Lay	
Underwater Cable Transport and Lay (in deep water) (per meter)	\$118
Underwater Cable Transport and Lay (in shallow water) (per meter)	\$141
Underground Cable Transport and Lay (per meter)	\$113
Directional Drills (each) (CHPEI Estimate)	\$1,200,000
Joints and Terminations (Equipment Costs)	
Cable Terminations (per unit)	\$27,000
Joints (Splices) (per unit)	\$55,000
Transition Joints (per unit)	\$110,000
Cable Burial (Protection)	
Water Jetting via Capjet (80% of underwater route) (per meter)	\$98
Mechanical Plowing (20% of underwater route) (CHPEI estimate) (per meter)	\$105
Trenching (underground route) (per meter)	\$527
Existing Infrastructure Crossings (per crossing)	\$30,000

9.1.1.2 HVDC Converter Stations

There are a total of four 1,000 MW HVDC converter stations that will be built in connection with the Project. Two of these converter stations will be constructed in Quebec, to be owned and operated by Hydro-Québec (HQ). The other two converter stations will be located at Yonkers, New York, and Bridgeport, Connecticut, and will be owned and operated by CHPEI. The unit cost for the turn-key contract for the manufacture and installation of the 1,000 MW Yonkers HVDC converter station is \$207 Million.

9.1.1.3 HVAC Substation Interconnection Costs

The unit costs for the manufacture and installation of the double-circuit 345 kV AC cable system that will interconnect the HVDC converter station with the 345 kV AC substation in New York City are shown in Table 9-2 below. The installation costs are based on the assumption that the interconnection will utilize underwater cables installed in the Hudson River with relatively short portions of underground cables.

Table 9-2. Unit Cost Estimates for Interconnection to HVAC Substation			
	Cost for two, 3-Phase (\$US/km)		
Voltage	Cable Supply	Cable Install	Total Cable
345kV	\$1,800,000	\$800,000	\$2,600,000

The estimated cost to upgrade the HVAC substations to accept the interconnections from the Project's HVDC converter station are shown in Table 9-3 below.

Table 9-3. HVAC Interconnections & Substation Upgrades				
HVAC Substation Interconnections	HVAC Cables (\$US Millions)	Substation Upgrades (\$US Millions)	System Upgrades (\$US Millions)	Total Costs (\$US Millions)
Yonkers HVAC to Sherman Creek	\$29	\$31	\$403	\$462

9.1.2 Consolidated Project Cost

Table 9-4 below outlines the consolidated project cost by cost category and by quarterly and annual expenditures. It may be noted that, inasmuch as Engineering, Procurement, and Construction (EPC) contracts have yet to be executed in connection with construction of the Project, the figures shown are estimates that will be finalized when the EPC contracts are executed in 2010.

**Table 9-4.
CHPEI Project Costs (For Installed Equipment between the United States/Canadian Border and the New York/Connecticut Border)**

Item	Total Cost \$US millions	2011				2012				2013				2014			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
HVDC Converter Stations	\$207.0			\$2.1		\$18.6	\$20.7	\$20.7	\$20.7	\$41.4	\$20.7	\$41.4					\$20.7
Supply and Installation of Cables	\$2,093.3			\$20.9		\$188.4	\$209.3	\$209.3	\$209.3	\$209.3		\$209.3		\$209.3		\$209.3	\$418.7
HVAC Connections & Substation Upgrades	\$462.4										\$92.5	\$92.5	\$92.5	\$92.5	\$46.2		\$46.2
Engineering Consultants	\$2.0				\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15
Legal on project finance	\$2.0					\$2.0											
Underwriting	\$57.0					\$57.0											
Commitment fee	\$17.4					\$17.4											
Escalation & Contingencies (10%)	\$276.5			\$2.3	\$0.0	\$20.7	\$23.0	\$23.0	\$23.0	\$25.1	\$11.3	\$34.3	\$9.3	\$30.2	\$4.6	\$20.9	\$48.6
Total	\$3,117.6			\$25.3	\$0.2	\$304.3	\$253.2	\$253.2	\$253.2	\$276.0	\$124.7	\$377.7	\$101.9	\$332.2	\$51.0	\$230.4	\$534.3
Interest	\$183.8			\$0.1	\$0.3	\$1.8	\$4.6	\$7.1	\$9.6	\$12.3	\$14.3	\$16.8	\$19.2	\$21.4	\$23.3	\$24.7	\$28.5
TOTAL COST	\$3,301.4			\$25.4	\$0.4	\$306.1	\$257.8	\$260.3	\$262.8	\$288.2	\$139.0	\$394.5	\$121.1	\$353.5	\$74.3	\$255.1	\$562.8

All Costs represent \$US millions