Board Staff Interrogatories on Reply Evidence

Application by the Canadian Distributed Antenna Systems Coalition

EB-2011-0120

October 18, 2011

Interrogatories for Dr. Roger Ware

Ref: Par. 5 of 'Reply Evidence of Dr. Roger Ware' - "Pole networks are a public good and there is a public interest in the sharing of these facilities. Both federal and provincial regulatory agencies have endorsed this view and have mandated access by communications carriers for attachments."

Question 1:

From your experience in competition and regulation, what is or would be the effect of a policy to mandate sharing of facilities, if such sharing is shown to reduce value to the stakeholders for whose benefit the facilities were originally put into place (for example, through reductions in safety or reliability, or increases in costs)? In your view, is it appropriate for a regulator to impose conditions for access that keep the original beneficiaries whole in terms of their interests? Why or why not?

Ref: Par. 5 of 'Reply Evidence of Dr. Roger Ware' - "The success of new entrants in Canadian wireless markets is a stated goal of government policy."

Question 2:

(a) Please define the term "success" for purposes of this statement, or provide a reference to a suitable definition in the policy statements of governments.

(b) Please provide a reference to inclusion of this goal in the mandate of the Ontario Energy Board or any Canadian energy regulator.

Ref: Par. 7 and 8 of 'Reply Evidence of Dr. Roger Ware' - "Certain public goods exhibit both "economies of scale" and "economies of scope." Economies of scale are the reductions in cost (i.e., cost per unit) that occur when the scale of production of a single product is increased. Economies of scope, on the other hand, are the reductions in total cost in respect of two or more products, where the production of such products results in cost efficiencies."

Hydro Pole networks, which require the investment of large sunk costs, exhibit the characteristics of both economies of scale and economies of scope. As for the former, pole networks can, once constructed, accommodate increased electricity loads without the need for further investment in the network. As for the latter, the use of the pole network for

multiple uses (eg. electricity distribution and telecommunications) results in lower costs for both applications. In the result, Hydro pole networks are public goods that should be regulated in the public interest.

Question 3:

When a public good, with a finite production capacity, could be employed safely to produce only one of the two alternative benefits, but not both, should the public good be used:

(a) to produce the benefit with higher economic value? or

(b) to produce the benefit with lower economic value? or

(c) to produce one of the benefits without any regard to the economic value of the benefit?

Question 4:

Under the following assumptions: (a) a finite number of communication attachments can be installed on a power pole, (b) demand for communication attachments exceeds capacity, (c) wireline and wire-less attachments generate equal revenue per pole attachment (d) wireless attachments require significantly greater space than wire line attachments; would it produce greater public benefit (revenue) if the public good (power pole) is employed for wireless attachments or wireline attachments?

Ref: Par. 9 of 'Reply Evidence of Dr. Roger Ware': "Natural monopolies create a classic rationale for regulation. Absent regulation, it can be expected that monopoly control and pricing will be exercised, to the detriment of consumers and efficiency. The regulation of a natural monopoly is often said to create a "regulatory compact" amongst the firm, its investors, and its rate-paying customers, whereby investors receive a reasonable return on their investment and customers pay fair, cost-based rates for service."

Question 5:

Is it Dr. Ware's view that wireless attachers and/or their customers for wireless services would be participants in the "regulatory compact" on an equal basis with electricity customers in their use of electric distribution poles? If not, please explain the relevance of this statement as it applies to the CANDAS application. If it does apply, please confirm that the statement implies that rates for wireless attachments should be cost based and sufficient to provide a reasonable return on investment.

Ref: Par. 12 of 'Reply Evidence of Dr. Roger Ware': "The efficient way to allocate access to the THESL poles is to mandate access at just and reasonable rates – not to discriminate among categories of users as Dr. Yatchew seems to be advocating."

Question 6:

(a) Please clarify whether you agree or disagree that different rates would be just and reasonable, and not discriminatory, if categories of users impose different costs through their use.

(b) In your view, would a requirement to allocate access be met even if the cost-based rate fails to support the business case of a category of user?

Ref: Par. 25 of 'Reply Evidence of Dr. Roger Ware': "For example, Dr. Yatchew points to the activities of American Tower Corporation and Crown Castle USA. However, neither of these companies operates in Canada, nor to my knowledge has any plans to do so."

Question 7:
How does Dr. Ware monitor the business plans of American Tower Corporation and Crown Castle USA?

Board staff requests a response from Dr. Ware to the following interrogatory which is also addressed to Mr. Larsen below.

Ref: Par. 1.2 (ii) 'Reply Evidence of Mr. Tormod Larsen': "While there is no evidence that femtocell, picocell and WiFi wireless access technologies can reasonably be deployed to provide blanket, seamless wireless coverage over wide geographic areas, to the extent that these wireless technologies evolve, the relatively higher density of wireless access nodes and backhaul links that these technologies require, means that in order to efficiently deploy over wide geographic areas, they also will require attachment to a network of uniform, contiguous support structures, of much lower average height, in relative terms, than macrocell sites. Indeed, limited outdoor WiFi deployments, including one in downtown Toronto, are located on utility poles."

Question 8:

(a) Hypothetically speaking, if the Board rules in favor of CANDAS, directing

LDCs to accommodate the requests of wireless communication carriers to allow attachment of antennas and associated equipment on power poles, does the above statement imply that the LDCs can expect requests from several different communication access technology providers asking for space on power poles for attachment of antennas and associated equipment?

(b) If the answer to question 8(a) is yes, how should the finite communication space on power poles be allocated to different vendors? (i) first come first served; or (ii) auctioned off thorough public bidding; or (iii) leased for the highest price a site could fetch through negotiations?

Interrogatories for Mr. Tormod Larsen

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Question 1:

(a) Hypothetically speaking, if the Board rules in favor of CANDAS, directing LDCs to accommodate the requests of wireless communication carriers to allow attachment of antennas and associated equipment on power poles, does the above statement imply that the LDCs can expect requests from several different communication access technology providers asking for space on power poles for attachment of antennas and associated equipment?

(b) If the answer to question 1(a) is yes, how should the finite communication space on power poles be allocated to different vendors? (i) first come first served; or (ii) auctioned off thorough public bidding; or (iii) leased for the highest price a site could fetch through negotiations?

(c) If the answer to question 1(a) is no, are there options other than the power poles available for these alternative technology suppliers to attach their antennas to?

Ref: Par. 1.2 (ii) 'Reply Evidence of Mr. Tormod Larsen': "Each DAS network is a hybrid of wireline and wireless components. DAS networks typically include many kilometres of fiber links that connect centrally located hub equipment facilities to distributed communications nodes with antennae that provide wireless access to end-user mobile devices. A uniform, contiguous network of support structures that permit attachment of the antenna component of DAS networks at uniform heights of between 9-14 metres, is required in order to deploy a DAS network efficiently over wide geographic areas. Wherever utility pole infrastructure exists, it is distinctly preferable to attach both the wireline and wireless components of

a DAS network to utility poles, not only for reasons of economic efficiency, but also for technical and functional reasons."

Question 2:

Hypothetically speaking, if on a certain street there was space on power poles to install either the wireline or wireless components of DAS technology but not both, based on your professional experience which one out of the following three would yield the highest economic value and why?

(a) to install the wireline components on poles and the wireless components on other structures?

(b) to install the wireless components on poles and the wireline components on other structures?

(c) to install both the wireless components and the wireline components on other structures?

Ref: Par. 5.2 'Reply Evidence of Mr. Tormod Larsen':"For purposes of assessing the engineering, mechanical and safety implications of wireless carriers' attachments to electrical utility poles, the relevant considerations are the (i) method of attachment, (ii) dimensions and weight of the attached items and (iii) the configuration of cabling and equipment on poles. In this regard, contrary to what is suggested by Mr. Starkey and Ms Byrne, there are no material differences between wireless and wireline attachments to poles."

Question 3:

(a) What is the average life expectancy of a DAS antenna?

(b) Is the life expectancy indicated in response to 3(a) based on technical obsolescence of the components or some other criteria?

(c) What is the life expectancy of the hardware and brackets with which the antennas are attached to the poles?

Ref: Par. 5.3 'Reply Evidence of Mr. Tormod Larsen': "Set out in Table 3 below is a comparison of the approximate dimensions and weight of remotely placed communications equipment, which is commonly located on utility poles: (i) wireline CATV power supply equipment; (ii) WiFi access point equipment (including antenna unit) and (iii) DAS node equipment

(including antenna unit):"

Question 4:

Hypothetically speaking, if 600 mm is the maximum allowed width of communication space on power poles, is it true that DAS antenna height is greater than 600 mm, which would it make it impossible to fit within the allowed communication space?

Ref: Diagram Titled "Typical Wireless Equipment Attachment Installed on a 35' Common Utility Distribution (LDC) Pole"

Question 5:

(a) Please confirm our understanding of the diagram, that item #12, the antenna, would not fit into Communication Space (B), but would need to be installed in the Separation Space (C). If this is not correct, please explain. Please confirm also that part of the Clearance Space (D) would need to be used to support item #7, and that this would not fit in the Communication Space.

(b) Please refer also to Lemay Evidence dated October 11, 2011, page 15: "Typical outdoor DAS radio units, such as the Delta Node fiber optical DAS remote unit that can be pole mounted, weigh from 12 Kg to 24 Kg, depending on the configuration chosen." Is the "radio unit" referred to by Mr. Lemay the item that is represented as item #12 on the diagram? If not, please indicate which item it would correspond to on the diagram.