PWU Interrogatory #5

Interrogatory

Reference:

Reference 1: Exhibit D2-1-3, Page 25-26 of 59

Project # 31524 Darlington Roof Replacement Project. The current total project cost is forecast to be $116.9M, which is an increase of $78.6M from the Initiation Phase Class 5 estimated total project cost of $36.3M provided in EB-2016-0152.

Planned final in-service is November 2027, with an in-service amount during the IR term of $66.2M. This project continues to be in the definition phase.

This project is to replace flat roofs on the main powerhouse and other area buildings within the nuclear protected area. The roofs are approaching the end of their service life and need to be replaced to protect various nuclear and conventional systems in the station.

Reference 2: Exhibit D2-1-3, Attachment 1, Tab 5, 31524, Page 1 of 10

Problem Statement/Business Need:
Darlington protected area buildings' flat roofs have reached the end of their 25+ year life. These roofs need to be replaced to prevent leaks, which could lead to safety issues and damages to plant equipment.
Each building roof will be placed in-service when complete. The last building roof is planned for completion by December 2024.

Reference 3: EB-2016-0152, Exhibit D2-1-3, Page 3 of 19, Lines 6-12:
Project #31524 Darlington Station Roofs Replacement: This project is to replace flat roofs on the main powerhouse and other protected area buildings. The roofs are approaching the end of their service lives and need to be replaced. The total project cost is $38.3M with an initial definition phase release of $0.8M. Initial planned final in-service date is December 2018. However, the 2016 capital project portfolio budget is currently oversubscribed (i.e. the number of

approved projects exceeds available funding). As a result, this project has been deferred and a revised in-service date has not yet been determined.

Reference 4: EB-2016-0152, Exhibit D2-1-3, Attachment 1, Tab 19 (#31524), Page 1 of 5

The station's existing roofs have reached the end of their 25-year design life. Currently there are 135+ Station Condition Record's and 60+ work orders associated with roof leaks. There has also been an Aging Management Program Component Condition Assessment (NK38-REP-2000-10003) carried out for Roofing Construction for buildings inside the protected area which concluded that station roofing is in poor condition.

The current condition of the station roofs exposes Darlington to nuclear and conventional safety risks. Most, if not all systems on both the nuclear and conventional side were designed with the assumption that system operations will take place below a leak-proof roof and no precipitation introduced into the systems environment. Introducing leaked water into any system puts the station in an unpredictable condition that is outside the design basis and therefore creates a potentially hazardous situation.

In addition, addressing the problem of the station's roof condition has been added to the Fukushima response actions and as such will receive special attention from the CNSC and the public. At present, there is an opportunity to avoid threats to the station's Power Reactor Operations License.

Reference 5: EB-2016-0152, Exhibit D2-1-3, Attachment 1, Tab 19 (#31524), Page 2 of 5

Base Case: Status Quo – No Project

Water leaks into the station are wide-spread and expected to increase due to continued degradation. If this project is not implemented, roof leaks will continue to occur, increase in overall cost and be disruptive to plant operations.

<u>Questions:</u>

a) Ref (1) indicates that the planned final in-service date for the project is November

2027 whereas Ref (2) states that the last building roof is planned for completion by December 2024. Please explain the discrepancy.

b) Please confirm that the initial planned in-service date for the project as stated in EB-2016-0152 (Ref (3)) was December 2018; and that the project was deferred due to lack of funding.

c) In the current application (Ref 2), OPG states that the Darlington protected area buildings' flat roofs have reached the end of their 25+ year life, which is the same as what OPG stated in EB-2016-0152 (Ref 4), i.e., the station's existing roofs reached the end of their 25-year design life.

i. How old are the roofs?

ii. How long have the roofs been in service beyond their design life?

d) In EB-2016-0152 (Ref 4), OPG stated that at the time there were 135+ Station Condition Record's and 60+ work orders associated with roof leaks. How many station condition records and work orders associated with roof leaks have arisen since EB-2016-0152?

e) Given the kind of safety risks described in EB-2016-0152 (see Ref 4, 5), why is OPG planning for an in-service date of November 2027 (or December 2024, depending on the response to Q#a)? What is OPG's plan to prevent or mitigate the safety risks until the completion of the project?

f) Please confirm if the deferral of the project has increased the cost of the project.

Response

a) The Definition Phase BCS (Reference 2) schedule completion date of December 2024 was estimated prior to completion of the pilot phase and subsequent project execution strategy. Exhibit D2-1-3, pp. 25-26 (Reference 2) reflects an updated completion date of November 2027 based on results of the pilot phase.

b) EB-2016-0152, Ex. D2-1-3, Attachment 1, Tab 5, correctly reflected the initial planned in-service date of December 2018 at the time of the Initiation and Definition BCS. The project was deferred in 2014 to accommodate priorities within the nuclear capital portfolio, as discussed in EB-2016-0152, Ex. D2-1-3, p. 3.

c) Roof service life:

i. The roofs are 30 to 35 years old.

ii. The roofs have been in service 5 to 10 years beyond their design life.

d) Since EB-2016-0152 there have been 66 Station Condition Records and 56 work orders associated with roof leaks.

e) The November 2027 in-service date is based on the pilot phase results. As explained in Ex. L-D2-01-AMPCO-69, OPG is in the process of finalizing the execution phase BCS which will reflect a lower cost and an updated in service date. As a bridging strategy, a surveillance and corrective maintenance program is in place to address urgent repairs to mitigate safety risks pending completion of the roofing project.

f) OPG is unable to determine any cost variances until a full execution BCS is established. Refer to Ex. L-D2-01-AMPCO-069 for additional details.