Alberta Electric System Operator
3000, 240 4 Avenue SW
Calgary, AB • T2P 4H4
aeso.ca

In the Matter of the Need for the Dobbs 2061S Substation

And in the matter of the *Electric Utilities Act*, S.A. 2003, c. E-5.1, the *Alberta Utilities Commission Act*, S.A. 2007, c. A-37.2, the *Hydro and Electric Energy Act*, R.S.A. 2000, c. H-16, the Regulations made thereunder, *and Alberta Utilities Commission Rule 007*

Application of the Alberta Electric System Operator for Approval of the

Dobbs 2061S Substation

Needs Identification Document

Date: December 2, 2025

Contents

PART A - APPLICATION

1 Introduction

1.1 Application

Pursuant to Section 34(1)(c) of the *Electric Utilities Act* (Act), and in accordance with further provisions set out in legislation,[1] the Alberta Electric System Operator (AESO) applies to the Alberta Utilities Commission (Commission) for approval of the Dobbs 2061S Substation (Application). This application is submitted in accordance with AUC Rule 007, Section 7.1.2, *Abbreviated needs identification document application information requirements*.

1.2 Application Overview

ATCO Electric Ltd., as the legal owner of an electric distribution system (DFO),[2] has requested system access service to serve industrial load in the Grande Prairie area (AESO Planning Area 20, Grande Prairie).

The DFO's request includes a Rate DTS, *Demand Transmission Service*, contract capacity increase of 12.5 MW, from 52.9 MW to 65.4 MW, at the existing Poplar Hill 790S substation and a new Rate DTS contract capacity of 22 MW to be served by a new point-of-delivery substation. ATCO's request can be met by adding a new substation to be designated the Dobbs 2061S substation and one 144 kV circuit to connect the Dobbs 2061S substation and the existing 144 kV transmission line 7L22 using a T-Tap configuration (the "Proposed Transmission Development", as further described in Section 2.2).

The scheduled in-service date for the Proposed Transmission Development is May 25, 2027.

This Application describes the need to respond to the DFO's request for system access service, and the AESO's determination of the manner in which to respond to the request. Having followed the AESO Connection Process,[3] the AESO has determined that the Proposed Transmission Development provides a reasonable opportunity for the DFO to exchange electric energy and ancillary services. The Proposed Transmission Development is consistent with the AESO's long-term plans for the Northwest Planning Region, which includes the Grande Prairie area. The AESO submits this Application to the Commission for approval in accordance with the AESO's responsibility to respond to requests for system access service and having determined that transmission development is required and is in the public interest.[4,5]

1.3 AESO Directions to the TFO

During the AESO Connection Process, the AESO issued various directions to the legal owner of the transmission facility (TFO), in this case ATCO Electric Ltd., including a direction to submit, for Commission

[1] The *Alberta Utilities Commission Act*, S.A. 2007, c. A-37.2, the *Hydro and Electric Energy Act*, R.S.A. 2000, c. H-16, the Regulations made thereunder, and Alberta Utilities Commission Rule 007 (AUC Rule 007).

[2] In this Application, ATCO Electric Ltd. acts as both the legal owner of the electric distribution system (DFO) and the legal owner of transmission facilities (TFO) as applicable to its specific business functions.

[3] For information purposes, refer to note iv of Part C of this Application for more information on the AESO Connection Process.

[4] For information purposes, some of the legislative provisions relating to the AESO's planning duties and duty to provide system access service are referenced in notes i and ii of Part C of this Application.

[5] Note v of Part C of this Application describes the Application scope in more detail.

approval under the HEEA, a Facility Proposal for the Proposed Transmission Development, as defined in Section 2.2.[6].

2 Need Overview and Proposed Transmission Development

2.1 Duty to Provide Transmission System Access Service

The AESO, pursuant to its responsibilities under Section 29 of the Act, must provide system access service on the transmission system in a manner that gives all market participants (in this case, the DFO) a reasonable opportunity to exchange electric energy and ancillary services.

The AESO, in consultation with the DFO and the TFO, has determined that the Proposed Transmission Development is the preferred option to provide the DFO with a reasonable opportunity to exchange electric energy and ancillary services. The DFO in executing its duties as defined under Section 105(1)(b) of the Act, has determined that the Proposed Transmission Development will meet its distribution planning criteria and will serve the new demand for electricity in the Grande Prairie area. Additionally, in accordance with Section 34 of the Act, the AESO has determined that the Proposed Transmission Development will result in an expansion or enhancement of the capability of the transmission system thereby establishing the need for this Application. The DFO has made the appropriate applications to the AESO to obtain transmission system access service.[7]

Through the AESO Connection Process, the AESO, in consultation with the DFO and TFO, has determined the Proposed Transmission Development and has assessed the impacts that the Proposed Transmission Development and the associated load would have on the Alberta interconnected electric system.

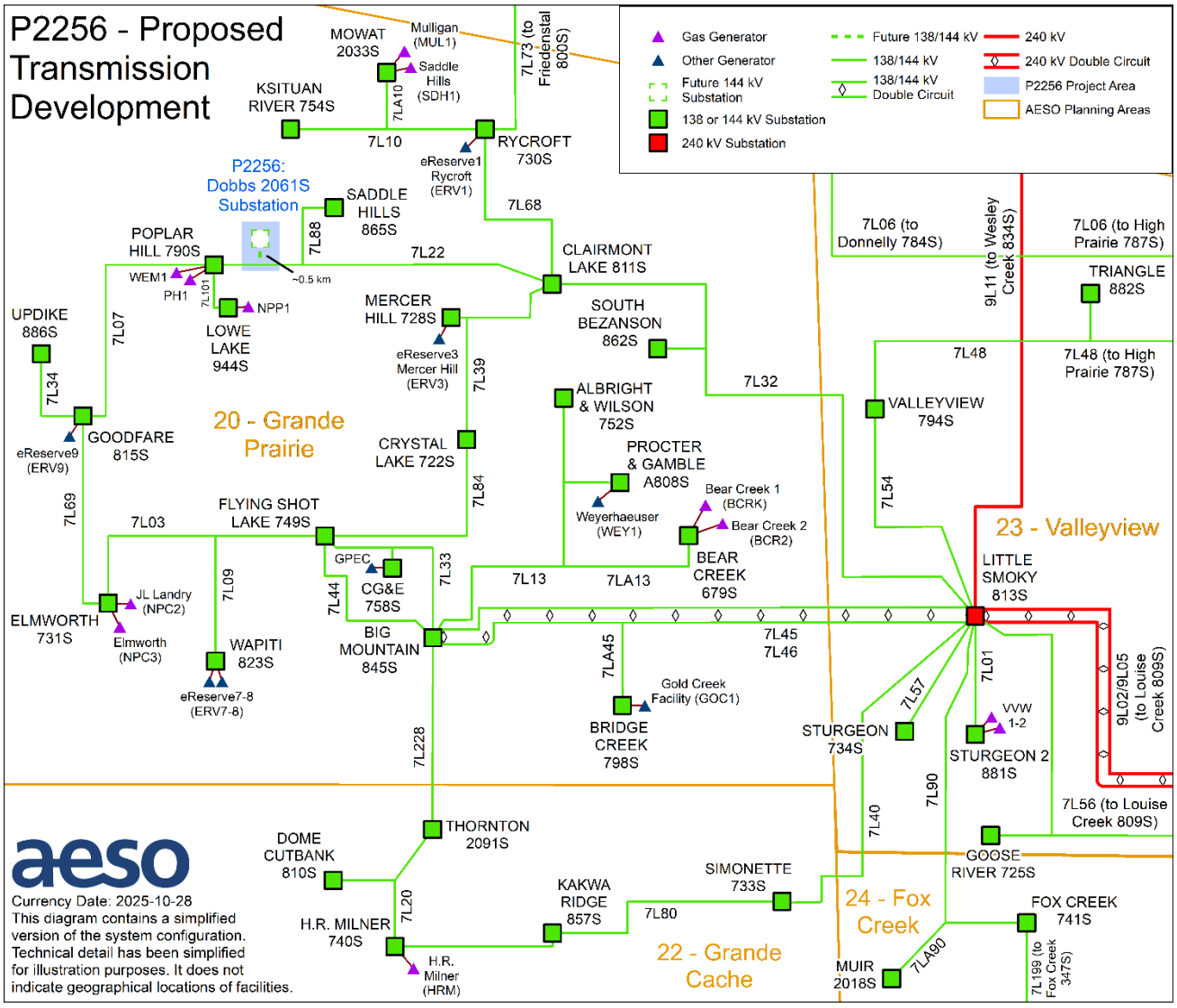
2.2 Proposed Transmission Development

The Proposed Transmission Development, as shown in Figure 2-1, involves the following elements:[8]

- Add a new 144/25 kV Point of Delivery (POD) substation, designated as Dobbs 2061S, including one 144/25 kV transformer with a minimum capacity of 30 MVA, two 15 MVAR 144 kV capacitor banks, two 144 kV circuit breakers and two 240 kV circuit breakers;
- Add one 144 kV circuit, approximately 0.5 kilometers (km)[9] in length, with a minimum capacity no less than the existing 144 kV transmission line 7L22, to connect the proposed Dobbs 2061S substation and 7L22 using a T-tap configuration;
- Modify, alter, add or remove equipment, including switchgear, and any operational, protection, control and telecommunication devices required to undertake the work as planned and ensure proper integration with the transmission system.

[6] The directions are described in more detail in the following sections of this Application and in Part C, note vi.
[7] For information purposes, some of the duties of the DFO are described in note vii of Part C of this Application.
[8] Details and configuration of equipment required for the Proposed Transmission Development, including substation single-line diagrams, are more specifically described in the AESO's Functional Specification included in the TFO's Facility Proposal. Also, further details will be determined as detailed engineering progresses and DFO operating requirements are finalized. Routing and/or siting of transmission facilities do not form part of this Application and are addressed in the TFO's Facility Proposal. The 144 kV circuit is currently estimated to have a length of approximately 0.5 km. This is subject to change as routing and/or siting is finalized by the TFO. Line numbering and substation names provided here are for ease of reference and are subject to change as engineering and design progresses. Distribution facilities that may subsequently be connected to the Proposed Transmission Development are the responsibility of the DFO and are not included in the Application.
[9] Exact line length to be determined by the TFO.

Figure 2-1: Proposed Transmission Development



2.3 Proposed Transmission Development Cost Estimate

The AESO directed the TFO to prepare a cost estimate for the Proposed Transmission Development described in Section 2.2.

The TFO has estimated the cost of the Proposed Transmission Development to be approximately $35 million.[10] In accordance with the ISO tariff, the AESO has determined approximately $33 million of the costs associated with the Proposed Transmission Development will be classified as participant-related. The remaining $2 million of the costs will be classified as system-related, as these costs are attributed to RAS implementation. In accordance with the ISO tariff, the AESO has determined that the DFO is eligible for approximately $14 million of local investment.

2.4 Transmission Development Alternatives

In addition to the Proposed Transmission Development, the AESO, in consultation with the TFO and the DFO, examined three other transmission development alternatives to respond to the DFO's request for system access service:[11]

1. **POD substation with an in-and-out connection to 144 kV transmission line 7L22** –This alternative involves adding a POD substation, including one 144/25 kV transformer, and three 144 kV circuit breakers. This alternative also requires adding two 144 kV circuits, approximately 0.5 km in length, to connect the proposed substation to the existing 144 kV transmission line 7L22 using an in-and-out configuration.
2. **POD substation with a radial connection to Poplar Hills 790S substation** – This alternative requires adding a POD substation, including one 144/25 kV transformer, two 144 kV circuit breakers, and adding one 144 kV circuit, approximately 5 km in length, to connect the substation to the existing Poplar Hill 790S substation using a radial configuration.
3. **POD substation with a radial connection to Clairmont Lake 811S substation** – This alternative requires adding a POD substation, including one 144/25 kV transformer, two 144 kV circuit breakers, and adding one 144 kV circuit, approximately 40 km in length, to connect the substation to the existing Clairmont Lake 811S substation using a radial configuration.

These alternatives would also require the addition of 144 kV capacitor banks and associated circuit breakers. As such, these alternatives were ruled out as they involve increased transmission development, and hence overall increased cost, compared to the Proposed Transmission Development.

2.5 Connection Assessment

Power flow, voltage stability, and short-circuit studies were conducted to assess the impact that the Proposed Transmission Development and the associated load would have on the transmission system. Power flow, short-circuit and voltage stability studies were conducted prior to and following the connection of the Proposed Transmission Development.[12]

Pre-Connection Assessment Results

No system performance issues were identified under the Category A condition in the pre-connection assessment. Under certain Category B conditions, thermal, voltage range, and voltage stability violations were

[10] The cost is in nominal dollars using a base year of 2025 with escalation considered. Further details of these cost estimates, which have an accuracy level of +20%/-10%, can be found in Appendix B.
[11] The DFO also examined and ruled out distribution system upgrades, as detailed in Section 3 ATCO's Distribution Deficiency Report, which is included as Appendix D.
[12] The connection assessment is included as Appendix A.

observed. Pre-connection violations under Category B system conditions can be managed by dispatching generation under Transmission Must-Run service (TMR).

Post-Connection Assessment Results

The system performance issues identified in the pre-connection assessment were also identified in the post-connection assessment, and additional system performance issues were observed following the connection of the Proposed Transmission Development. Following connection of the Project, new thermal and voltage range violations were observed under Category A conditions, including thermal violations on transmission line 7L22.

The thermal and voltage range and voltage stability criteria violations observed in the pre-connection assessment under Category B conditions were exacerbated in the post-connection assessment, and additional Category B thermal, voltage range, and voltage stability criteria violations were observed.

Post-Connection Mitigation Measures

The voltage range violations observed under Category A conditions can be mitigated by including two 15 MVAr 144 kV capacitor banks and two 240 kV circuit breakers with point-on-wave control at the proposed Dobbs 2061S substation. The remaining Category A thermal reliability criteria violation can be managed by applying Section 302.1 of the ISO rules, *Real-Time Transmission Constraint Management,* to dispatch generation under TMR service until such a time that system developments are in place to alleviate constraints.

Real-time operational practices can be used to mitigate some of the post-connection system performance issues observed under the Category B conditions. The remaining thermal, voltage range, and voltage stability criteria violations can be mitigated by dispatching generation under TMR and adding a new RAS to mitigate overloads and area voltage on the 144 kV transmission line 7L22, which includes tripping the new load at both Poplar Hill 790S and Dobbs 2061S substation in the tripping logic. The new RAS for 7L22 overload and area voltage will remain in service until such a time that system developments are in place to alleviate constraints.

The AESO's 2025 Long-Term Transmission Plan has identified potential transmission solutions, including non-wires solutions or 240 kV transmission reinforcements in the Grande Prairie area.[13]

2.6 Transmission Dependencies

The Proposed Transmission Development does not require the completion of any other AESO plans to expand or enhance the capability of the transmission system prior to connection.

2.7 AESO Participant Involvement Program

The AESO directed the TFO to assist the AESO in conducting the AESO's participant involvement program (PIP)[14].

Between July 2025 and August 2025, the TFO used various methods to notify stakeholders about the need for development and the AESO's preferred option to respond to the system access service request.

No concerns or objections were raised regarding the need for the Proposed Transmission Development or the AESO's preferred option to respond to the system access service request.

[13] AESO 2025 Long-Term Transmission Plan, January 2025.
[14] The PIP Summary is included as Appendix C.

2.8 Environmental and Land Use Effects

The TFO has advised that the Proposed Transmission Development is not expected to result in significant environmental effects.

2.9 Approval is in the Public Interest

Having regard to the following:

- the transmission planning duties of the AESO as described in Sections 29, 33 and 34 of the Act;
- The DFO's request for system access service and the AESO's assessment thereof;
- The DFO's Distribution Deficiency Report;
- the AESO's connection assessment;
- the cost estimate for the Proposed Transmission Development;
- confirmation from the TFO that no significant environmental effects are expected;
- information obtained from AESO PIP activities; and
- the AESO's long-term transmission system plans;

it is the conclusion of the AESO that the Proposed Transmission Development provides a reasonable opportunity for the DFO to exchange electric energy and ancillary services. In consideration of these factors, the AESO submits that approval of this Application is in the public interest.

3 Request to Combine this Application with the Facility Proposal for Consideration in a Single Process

3.1 Facility Proposal

Pursuant to Subsection 35(1) of the Act, the AESO has directed the TFO to prepare a Facility Proposal corresponding with this Application.

The AESO understands that the TFO Facility Proposal will be filed shortly.[15] The AESO requests, and expects the TFO will request that this Application be combined with the Facility Proposal for consideration by the Commission in a single process. This request is consistent with Section 15.4 of the HEAA and Section 7.1 of AUC Rule 007.

3.2 Purpose

While it is believed that this Application and the Facility Proposal will be materially consistent, the AESO respectfully requests that in its consideration of each, the Commission be mindful of the fact that the documents have been prepared separately and for different purposes. The purpose of this Application is to obtain approval of the need to respond to the DFO's request for system access service and provide a preliminary description of the manner proposed to meet that need, having regard for the AESO's determination that the Proposed Transmission Development is required to provide the DFO with a reasonable opportunity to exchange electric energy and ancillary services. In contrast, the Facility Proposal will contain more detailed engineering and designs for the Proposed Transmission Development and seek approval for the construction and operation of specific facilities.

[15] The AESO understands that the TFO intends to file a Facility Proposal relating to this Application to be titled *Dobbs 2061S Substation Transmission Project.*

4 Relief Requested

4.1 Approval is in the Public Interest

The AESO submits that its assessment of the need to meet the DFO's request for system access service is technically complete and that approval is in the public interest.

4.2 Request

For the reasons set out herein, and pursuant to Section 34 of the Act, the AESO requests that the Commission approve this Application, including issuing an approval of the need to respond to the DFO's request for system access service, and to connect the Facility to the transmission system, by means of the following transmission development:

A. Add a substation, designated as Dobbs 2061S, including one 144/25 kV transformer, two 144 kV capacitor banks, two 144 kV circuit breakers and two 240 kV circuit breakers;

B. Add one 144 kV circuit to connect the proposed Dobbs 2061S substation to the existing 144 kV transmission line 7L22 using a T-tap configuration;

C. Modify, alter, add or remove equipment, including switchgear, and any operational, protection, control and telecommunication devices required to undertake the work as planned and ensure proper integration with the transmission system.

All of which is respectfully submitted this 2nd day of December, 2025.

Alberta Electric System Operator

"Electronically Submitted by"

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Pravin Koshti, P.Eng., PMP
Director, Customer Access and Project Engineering

PART B – APPLICATION APPENDICES

The following appended documents support the Application (Part A).

APPENDIX A **Connection Assessment –** Appendix A contains the *AESO Engineering Connection Assessment – Dobbs 2061S Substation,* that assesses the transmission system performance prior to and following the connection of the Proposed Transmission Development. As part of the AESO Connection Process, the AESO defined the study scope, and provided the system models and study assumptions to the DFO who engaged a consultant to conduct the connection assessment studies. The AESO reviewed the results of the connection assessment studies prepared by the consultant, and found the results acceptable for the purposes of assessing the impacts of the Proposed Transmission Development on the transmission system.

APPENDIX B **Capital Cost Estimate –** Appendix B contains a detailed cost estimate corresponding to the Proposed Transmission Development. Appendix B includes an estimate prepared by the TFO, to an accuracy level of +20%/-10%, which exceeds the accuracy required by AUC Rule 007, Section 7.1.2, NID 11.

APPENDIX C **AESO PIP –** Appendix C contains a summary of the PIP activities conducted, in accordance with requirements of NID12 and Appendix A2 of AUC Rule 007, regarding the need to respond to the DFO's request for system access service. Copies of the relevant materials distributed during the PIP are attached for reference.

APPENDIX D **DFO Distribution Deficiency Report –** Appendix D contains the DFO's *Distribution Deficiency Report - ATCO Poplar Hill Area Load New POD* that provides information in support of ATCO's request for system access service, including describing the need for development.

PART C – REFERENCES

i. **AESO Planning Duties and Responsibilities –** Certain aspects of the AESO's duties and responsibilities with respect to planning the transmission system are described in the Act. For example, Section 17, Subsections (g), (h), (i), and (j), describe the general planning duties of the AESO.[16] Section 33 of the Act states that the AESO "must forecast the needs of Alberta and develop plans for the transmission system to provide efficient, reliable, and non-discriminatory system access service and the timely implementation of required transmission system expansions and enhancements." Where, as in this case, the DFO (refer to note ii below) is requesting system access service, and the AESO has determined that the request requires or may require the expansion or enhancement of the capability of the transmission system, the AESO must prepare and submit for Commission approval, as per Section 34(1)(c), a needs identification document that describes the need to respond to requests for system access service, including the assessments undertaken by the AESO regarding the manner proposed to address that need. Other aspects of the AESO's transmission planning duties and responsibilities are set out in Sections 8, 10, 11, and 15 of the *Transmission Regulation*.

ii. **Duty to Provide Transmission System Access –** Section 29 of the Act states that the AESO "must provide system access service on the transmission system in a manner that gives all market participants [the DFO in this case] wishing to exchange electric energy and ancillary services a reasonable opportunity to do so."

iii. **AESO Transmission Planning Criteria –** In accordance with the Act, the AESO is required to plan a transmission system that satisfies applicable reliability standards. Transmission Planning (TPL) standards are included in the Alberta Reliability Standards, and are generally described on the AESO website.

In addition, the AESO's *Transmission Planning Criteria* – Basis and Assumptions is included in Appendix A.

iv. **AESO Connection Process** – For information purposes, the AESO Connection Process, which changes from time to time, is generally described on the AESO website.

v. **Application for Approval of the Need to Respond to a Request for System Access Service –** This Application is directed solely to the question of the need to respond to a request for system access service, as more fully described in the Act and the *Transmission Regulation* and the AESO's determination of the manner in which to respond to the request. This Application does not seek approval of those aspects of transmission development that are managed and executed separately from the needs identification document approval process. Other aspects of the AESO's responsibilities regarding transmission development are managed under the appropriate processes, including the ISO rules, Alberta reliability standards and the ISO tariff, which are also subject to specific regulatory approvals. While the Application or its supporting appendices may refer to other processes or information from time to time, the inclusion of this information is for context and reference only.

Any reference within the Application to market participants or other parties and/or the facilities they may own and operate or may wish to own and operate, does not constitute an application for approval of such facilities. The responsibility for seeking such regulatory or other approval remains the responsibility of the market participants or other parties.

[16] The legislation and regulations refer to the Independent System Operator or ISO. "AESO" and "Alberta Electric System Operator" are the registered trade names of the Independent System Operator.

vi. **Directions to the TFO –** Pursuant to Subsection 35(1) of the Act, the AESO has directed the TFO, in its capacity as a legal owner of transmission facilities, in whose service territories the need is located, to prepare a Facility Proposal to meet the need identified. The Facility Proposal is also submitted to the Commission for approval. The AESO has also directed the TFO, pursuant to Section 39 of the Act and Section 14 of the *Transmission Regulation*, to assist in the preparation of the AESO's Application. The TFO has also been directed by the AESO under Section 39 of the Act to prepare a service proposal to address the need for the Proposed Transmission Development.

vii. **Duties of DFOs** – The duties of DFOs to make decisions about building, upgrading and improving their electric distribution systems are described in Section 105(1)(b) of the Act. The DFO, being responsible for electric distribution system planning, determines its need for transmission system access service based on its own distribution planning guidelines and criteria. While the DFO's plans are considered during the AESO Connection Process, the AESO, in executing its duties to plan the transmission system, does not oversee electric distribution planning or the development of specific DFO planning criteria. The AESO does, however, review the DFO forecasts that are submitted to the AESO, which may be considered in the preparation of the AESO's corporate forecasts.

viii. **Capital Cost Estimate –** The provision of capital cost estimates in the Application is for the purposes of relative comparison and context only. The requirements applicable to cost estimates that are used for transmission system planning purposes are set out in Section 25 of the *Transmission Regulation*, AUC Rule 007, and Section 504.5 of the ISO rules, *Service Proposals and Cost Estimating*.