FORTIS ALBERTA

DER INTERCONNECTION GUIDE

Brooks, Alberta

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Disclaimer

LIMITATION OF LIABILITY AND DISCLAIMER This document is not a replacement for electrical codes or other applicable standards. This document is not intended or provided as a design specification or as an instruction manual. The DER owner, employees or agents recognize that they are, at all times, solely responsible for the generator plant design, construction and operation. FortisAlberta Inc. (FAI), and any person employed on its behalf, makes no warranties or representations of any kind with respect to the DER requirements contained in this document, including, without limitation, its quality, accuracy, completeness or fitness for any particular purpose, and FAI will not be liable for any loss or damage arising from the use of this document, any conclusions a user derives from the information in this document or any reliance by the user on the information it contains. FAI reserves the right to amend any of the requirements at any time. Any person wishing to make a decision based on the content of this document should consult with FAI prior to making any such decision.

Overview

This guide outlines the Distributed Energy Resources (DER) interconnection with FortisAlberta and explains the phases for DER projects, including Distributed Generation (DG). Each phase includes these components:

- Purpose
- Key Matters
  - The information contained in these sections is intended to capture the important, fundamental considerations for the project development to be reviewed. The lists are intended as general conversation starters at the beginning stages of each phase that will lead into more comprehensive discussions as the project progresses.
  - The Key Matters are not exclusive to the specific project phase in which they are listed. Each topic listed can be utilized in conversations for other phases. The Key Matters listed do not represent all the requirements for a project. Detailed Requirements are captured in subsequent sections.
- Milestones
- Customer Requirements
  - The technical requirements to be met for each phase.
- FortisAlberta Roles and Responsibilities
- Queue
  - This section of each phase outlines the practices FortisAlberta has implemented to administer the Substation Feeder Capacity Queue (the DER Queue). The objectives of the DER Queue Management Practices are as follows:
    - Ensure fair and non-discriminatory treatment of DER projects.
    - Ensure efficient progression of DER projects through the interconnection process.
    - Clarify key queuing milestones in the interconnection process.
  - FortisAlberta's DER Queue phases and timelines are applicable to every customer's project, regardless of the number of projects waiting to connect at a substation feeder.
  - To remain in the DER Queue, customers must complete all the requirements in each interconnection phase within the time frames outlined.
  - If the DER Queue Management Practice requirements are not met, the project will be cancelled and removed from the DER Queue. Cancelled projects result in contingent projects moving up the queue for consideration.
  - Any change negatively impacting the approved scope of a project will result in the project being cancelled and the need for the project to be re-started resulting in the loss of the project's position in the DER Queue.
  - FortisAlberta cannot guarantee entrance into any specific AESO cluster. FortisAlberta will process projects on a first come, first served basis. It is DER customer's responsibility to determine appropriate timing of an application required to guarantee specific cluster entrance if desired.
  - Management of the AESO cluster practices is the responsibility of the AESO. If a project is cancelled by the AESO for any reason, it will be cancelled by FortisAlberta resulting in the loss of project's position in the DER Queue.

NOTE: Milestones along with Roles and Responsibilities have visual flowcharts in Annex A and B respectively.

Phase 1 Pre-Application Consultation

Purpose

To assist customers who are new to DER to understand the overall connection process and investigate hosting capacity at their sites of interest prior to entering the DER Queue. This is an information gathering and project scoping phase to help customers select a feasible location. A Hosting Capacity map is also available along with a project list by feeder, Hosting Capacity (fortisalberta.com).

Key Matters

(conversation starters)

1. Overall process – DER Interconnection Guide overview
2. Distributed Generation | FortisAlberta and Distributed Generation Library | FortisAlberta
3. Hosting Capacity Map & Distribution Generation Project List Hosting Capacity (fortisalberta.com)
   - 3.1 Capacities of feeders and substations / Existing Connected Generators/Impact of “zero” load
   - 3.2 Location of substation and project location
4. A DER High Level Study (HLS) application is required to initiate a project
5. Customer proposed generator type and capacity
6. Fees for studies and different phases
7. An authenticated DER owner Single Line Diagram (SLD) will be required for the Detailed Level Study (DLS)
8. Option M is an option that is currently available but is being gradually phased out with total elimination at the end of 2025

Milestones

1. This is an optional step, however, it is recommended to help new customers understand the DER Interconnection process, who is involved, typical timelines, and most importantly, where to find a location to successfully connect the project.
2. FAI consultation fees start at $500 to review up to five project locations. A fee of $250 will be added for each additional location. Customers may submit a Pre-Application Request to generation@fortisalberta.com.

Customer Requirements

1. Review the Hosting Capacity Map.
2. Review the DER-02 FortisAlberta Interconnection Requirements and other technical documents in the Distributed Generation Library | FortisAlberta

FortisAlberta Roles and Responsibilities

1. All communication, deliverables, and invoicing are completed within the Customer Connections group.
2. Stakeholder Relations Manager (SRM) to discuss and provide high level assessment of potential customer sites.

Queue

A project does not enter the DER Queue during this phase.

Phase 2 High Level Study (HLS): Application and Study

Purpose

For the customer to formally initiate the connection process, secure a spot in the distribution capacity queue, and receive a high level assessment of generation interconnection requirements and a ballpark cost estimate for interconnection. See phases 2.1 and 2.2 for Key Matters, Milestones, Requirements, Roles and Responsibilities, and Queue.

Phase 2.1 Application for High Level Study

Purpose

To submit a HLS application and fees to formally initiate a HLS and secure a spot in the distribution capacity queue.

Key Matters

(conversation starters)

1. Submission Package
   - 1.1 DER HLS complete application
   - 1.2 Site Location
   - 1.3 Application Fee
2. Technical Requirements to initiate study
3. Queue entry and basic queue process
4. If a DER customer has a preference of any feeder, it should be mentioned in the DER HLS application
5. If a feeder is not selected by the DER customer, FortisAlberta will select a feeder in attempt to satisfy stated DER export capacity
6. Distribution only (Transmission is optional)
7. Review cut-off dates for submission into AESO cluster
8. Review impacts of missing target cluster cut-off date

Milestones

The DER queue is entered once the HLS fee is paid. The HLS fee is $5,500 (+ GST) per site to complete the distribution high level study. The optional transmission high level study fee is $4,000 (+ GST), per site, subject to change by AltaLink at their sole discretion.

Customer Requirements

1. Review hosting capacity limits provided within the hosting capacity map and project list. FortisAlberta Hosting Capacity
2. Submit the High Level Study Application DER Application Template (fortisalberta.com) to generation@fortisalberta.com.
3. Ensure the application has all the customer information required, including technical, to ensure the study can proceed.

FortisAlberta Roles and Responsibilities

SRM presents the customer an option for a kickoff meeting and schedules it with DER Planning if requested. FortisAlberta in cooperation with Customer determines AESO cluster that this project will proceed under. By default, FortisAlberta will target ongoing cluster intake as the intended cluster target. FortisAlberta will retain the right to, at its sole discretion, identify the AESO cluster the project will proceed to.

Queue

FortisAlberta will issue an invoice for the HLS fee after your application is received. Once the HLS fee is paid and the required technical information is provided to complete the study, the project enters the DER Queue. If the invoice is not paid by the due date of 30 calendar days or if the appropriate technical information is not provided, the project will be cancelled.

NOTE: Change of Scope: If a scope change is made by the customer (e.g., change of feeder, change of location, increase of capacity, changes to the generator type), the project will be cancelled, and a new HLS will be required along with applicable fees.

Phase 2.2 High Level Study

Purpose

To provide the customer a high-level assessment of the interconnection requirements at a specific site and a ballpark cost for interconnection, including high level upgrade options.

Key Matters

(Conversation starters)

1. High Level Study Report results:
   - 1.1 Impact of “zero” load and how it affects export while operating
   - 1.2 Export capacity, feeder minimum load, and power factor – explanation of variations
   - 1.3 Distribution system voltage regulation impacts on a project
   - 1.4 CSA standard voltage limits
   - 1.5 Outages – DERs export on primary feeder studied, not for alternate feeders for load restoration
   - 1.6 A Ballpark quote is done without a site check, Protection & Control, underground construction or transmission requirements and is meant only to serve as a comparative value between alternative sites.
   - 1.7 Other considerations – fault contribution limits, equipment loading limits, Supply Transmission Service (STS)
   - 1.8 Energy Storage System (ESS) implications
2. Detailed Level Study Information package – contents, need for application, etc.
3. Deadline for queue

Milestones

High Level Study phase is complete when the customer signs and returns the HLS letter.

Customer Requirements

1. Review DER-02 FortisAlberta Interconnection Requirements
2. Customer returns HLS letter, signed with accepted HLS option indicated. A separate HLS is required for each site requested. Customer must return accepted HLS letter within 30 days of receipt, or the project will be cancelled.

FortisAlberta Roles and Responsibilities

1. DER Planning completes HLS based on HLS application form and optional customer meeting.
2. SRM reviews HLS study results and asks if the customer would like a review meeting for the results and schedules one with DER Planning if required.
3. Optional transmission HLS: SRM asks if one is desired, and if so, coordinates a scope document to be created and sent to the transmission facility owner (TFO). SRM sends request and customer collected payment to the TFO.
4. Energy Storage Systems (ESS)
   a) An ESS must be registered as a DG. An ESS may not be registered as Small Scale Renewable as an ESS is not considered a renewable source. This is of particular importance for sites adding ESS to existing renewable generation that is registered Small Scale Renewable.
   b) If the ESS is intended to charge from the distribution system, a load assessment shall be completed as part of the HLS. An invoice for load connection upgrades and connection fees will be supplied to the customer as part of an Electric System Access (ESA) agreement. The customer must sign and return the agreement along with payment in order to reserve capacity on the distribution system. The ESA may be completed and submitted with the DLS application if the customer wants capacity certainty. Alternatively, the customer may return the ESA and payment as late as the acceptance of the Interconnection Proposal. The risk of delaying the submission of the ESA and payment is that subsequent projects may reserve capacity on the same circuit. The newly reserved capacity will require a restudy of the system and may result in the customer incurring additional charges to modify the system or the rejection of the project if no additional capacity can be added.
   c) Study Requirements
      a. A HLS study shall be required if an ESS is added to an existing site where the ESS output is proposed to be larger than the existing studied generation output or where original generator is solar.
      b. If an ESS addition is proposed for an in-flight project after the site check date, the ESS addition shall be considered a new project.

Queue

1. After the HLS is completed, FortisAlberta will send the HLS proposal for a review period of 30 calendar days. FortisAlberta must receive the signed HLS acceptance letter for the location and/ option specified in

the HLS within 30 calendar days or the project will be cancelled. Once FortisAlberta receives the signed HLS acceptance letter, an invoice will be sent for the Detailed Distribution Study and Transmission System Interconnection Study fees.

2. All cancelled projects are required to begin the interconnection process again by applying for a new HLS with all applicable fees.

Phase 3 Detailed Level Study (DLS): Applications and Design

Purpose

To initiate and complete detailed studies and design related to the distribution and transmission systems. To initiate the Alberta Electric System Operator (AESO) Behind the Fence connection process, if required. The distribution and transmission studies happen in parallel. See phases 3.1, 3.2, 3.3, and 3.4 for Key Matters, Milestones, Requirements, Roles and Responsibilities.

Phase 3.1 Application for Distribution Detailed Level Study

Purpose

Submit the Detailed Level Study application and fees to initiate the DLS activities and hold position in the distribution queue. All customer documentation is required before the SASR will be submitted or DLS started.

Key Matters

(conversation starters)

1. DLS Application including all required information
2. Application Fees – FortisAlberta, TFO (protection study and power flow study security), AESO BTF process
3. Technical Requirements to initiate study
4. PDUP 0 requirements for the SASR submission
5. See DER-02 FortisAlberta Interconnection Requirements

Milestones

Once a Detailed Level Study complete application and payment are received, the detailed level study will commence. The detailed level study fee is $15,000 (+ GST) for projects that do not require an AESO Behind the Fence (BTF) project, and an additional $15,000 (+ GST) when there is an AESO Behind the Fence (BTF) project involved. If EES project is planning to participate in AESO bulk services such as Fast Frequency Response (FFR), additional feel of $7,000 (+ GST) payable to FortisAlberta will be required.

If project is required to participate in the AESO BTF process, customer will pay all applicable AESO BTF process fees, including cancellation fees. For a breakdown of AESO cluster fees applicable to BTF projects, see current AESO cluster process documentation. To avoid delays and cancellation risks, customer will pay cluster intake and Stage 1 fees at the same time as DLS fees. In addition, customer will pay AltaLink AESO cluster Stage 1 & 2 support fee of a minimum $15,000 (+ GST). AltaLink fees are based on cost recovery basis, any support above and beyond the funding amount will require additional funding based on an assessment and estimate provided by AltaLink at that time. Conversely, any funds that are not used by AltaLink will be refunded to the customer. AESO established deadlines for AESO cluster fees payments – prompt payment of fees is required to maintain position in the DER queue. If project is cancelled by the AESO due to any reason, it will be cancelled by FortisAlberta and position in the DER queue will be lost.

Customer Requirements

1. Customer to provide a **completed** DLS Application including site plan with proposed point of interconnection location, estimated generator and transformer impedance details, and details for all supplemental grounding devices required. The application may be delayed if the form is not filled out completely.

   Note: Where FortisAlberta system data is required for engineering studies, sections may be excluded for the initial submission.

2. Customer to provide a detailed SLD, authenticated by a professional engineer accredited with APEGA.
3. Customer to pay all invoices and fees identified for the project.

FortisAlberta Roles and Responsibilities

FortisAlberta sends the DLS, AESO and AltaLink invoices to the Customer.

Queue

FortisAlberta will advance the project to the Detail Distribution Study and Transmission System Interconnection Study phase upon full payment of the applicable fees and submission of the Detailed Level Study application. The DLS study application and fees payment must be received within 30 calendar days of the issuance of the DLS invoice or the project will be cancelled.

Phase 3.2 Distribution Detailed Level Study and Design

Purpose

To complete detailed studies and design related to the distribution system.

Key Matters

(conversation starters)

1. Technical Requirements to complete Proposal
   - 1.1 Short Circuit Study
   - 1.2 Effective Grounding Study
   - 1.3 Self-Excitation Study (If Applicable)
   - 1.4 Transformer Inrush Study
   - 1.5 Field check

Milestones

FortisAlberta will provide a distribution interconnection cost to review.

Customer Requirements

1. Within 30 days of the DLS payment the Customer shall provide an updated SLD which has been authenticated by a Professional Engineer registered with APEGA.

FortisAlberta Roles and Responsibilities

1. SRM schedules and chairs a meeting with the customer, DER Planning, Protection & Control, and Operations Planning to verify technical requirements of the project and hand off the project to Operations Planning for the AESO BTF process (if required).
2. DER Planning and Protection & Control complete all detailed distribution studies, Fortis' SLD and Interconnection Scope Form.
3. SRM engages the construction Project Manager.
4. Customer Connections provides the distribution detailed study results and cost as an information package.

Queue

The customer can decide to withdraw the project based on the distribution cost; in which case the project will be cancelled. If the information required from the customer to complete the DLS is not received within 30 days of the receipt of payment for the DLS study the project will be cancelled.

Phase 3.3 SASR and PDUP0 Submission

Purpose

To prepare SASR submission to the AESO (if required). On behalf of the Customer, FortisAlberta will submit SASR application, PDUP 0 data, and fee payments to the AESO to initiate a Behind the Fence (BTF) process.

Key Matters

(conversation starters)

1. Ensure clearly defined requirements for a System Access Service Request (SASR), Supply Transmission Service (STS), In-service Date (ISD) and annual MW/h generation
2. PDUP 0 PSS/E Input Data Files shall be completed by the customer or transmission study consultant hired by the customer. This service can be provided by the TFO (AltaLink) at an optional additional fee of $2,000 (+ GST)
3. Overview of the AESO BTF and cluster process
4. Overview of AESO, AltaLink and FortisAlberta fees to complete the cluster process. Note that AltaLink will require $15,000 (+ GST) to support the project during AESO Stage 1 and 2 cluster process
5. Ensure AESO cluster intake, MARP, and preliminary assessment fees have been paid to FortisAlberta
6. Decision point at the end of Stage 1 of the AESO cluster process and timelines
7. Minor changes may be allowed by the AESO and FortisAlberta at the end of the Stage 1. The decision to allow changes will be up to the AESO and FortisAlberta's discretion

Milestones

GFO to provide PDUP 0 PSS/E Input Data Files to FortisAlberta.

GFO to provide conceptual and Stage 0 PDUP SLDs

FortisAlberta submits SASR form and PDUP 0 data to AESO to initiate BTF process.

FortisAlberta submits AESO and AltaLink fees for Stage 0 and 1 of the AESO BTF cluster process on customer's behalf.

Customer Requirements

GFO will provide PDUP 0 PSS/E Input Data Files to FortisAlberta in a timely manner.

GFO will provide timely decision to proceed or not to proceed with the AESO cluster at the end of the Stage 1.

GFO will provide both the conceptual and Stage 0 PDUP SLDs to FortisAlberta in a timely manner.

FortisAlberta Roles and Responsibilities

FortisAlberta prepares SASR form and required information from the GFO.

FortisAlberta will provide Fortis' SLD to GFO or it's consultant for preparing the Stage 0 PDUP.

FortisAlberta submits SASR form and PDUP 0 PSS/E Input Data Files to the AESO to enter the AESO BTF cluster process.

Queue

If PDUP 0 information required to submit SASR request is not received within 30 days of the completion of the DLS, the project will be cancelled and removed from the queue. The distribution queue position is maintained once the project is accepted by the AESO and entered the cluster.

Phase 3.4 Transmission Detailed Study and Design

Purpose

To complete the detailed studies and transmission system related design at Stage 2, 3 and 4 of the AESO interconnection process. On behalf of the customer, FortisAlberta will submit the customer's application and technical scope with fees to the TFO.

Key Matters

(conversation starters)

1. Ensure clearly defined requirements for a System Access Service Request (SASR), Supply Transmission Service (STS), In-service Date (ISD) and annual MW/h generation
2. AESO Stage 2 discussion, including cancellation fees
3. TFO scope document requirements
4. Clearly defined requirements for transfer trip, protection (reclose block, anti-islanding), load shed, TFO – transmission Anti-Islanding Screen or Study

   Note: FortisAlberta studies shall be provided in the 110-day package
5. TFO Protection & Control Study is done by the customer or consultant hired by the customer

6. Generator Unit Owner's Contributions (GUOC) payment
7. System Access Service Agreement (SASA) for STS
8. Requirements from different entities (AESO/TFO/DFO)

Milestones

Pay the transmission study fee, AESO detailed study fee, and GUOC. Prepay AESO cancellation fee – refundable if the project proceeds through AESO cluster process. The transmission study fee cost varies based on project location and scope and starts at $30,000 (+ GST) for a typical project, subject to change by AltaLink at their sole discretion.

Customer Requirements

Complete AESO / Transmission related studies requirements (if required) for Anti-Islanding.

FortisAlberta Roles and Responsibilities

1. Customer and FortisAlberta finalize the AltaLink scope document
2. Operations Planning coordinates with the customer, TFO, and the AESO to complete all deliverables of the AESO BTF Process.
3. Customer Connections coordinates invoicing of the customer and payment to the TFO.
4. Transmission scope of work and estimate are generated at the end of the AESO BTF Stage 3/4.

Queue

1. The Transmission Detailed Study invoice must be paid within 30 calendar days of receipt, or the project will be cancelled
2. GUOC must be paid within 30 calendar days of receipt, or the project will be cancelled.
3. AESO Detailed Study Fee must be paid within 30 calendar days of receipt, or the project will be cancelled.
4. AESO cancellation fees must be prepaid at least 10 business days prior to deadline to proceed with Stage 2 of the AESO cluster study, or the project will be cancelled.

Phase 4 Interconnection Proposal

Purpose

To provide the customer with a complete interconnection proposal, including all distribution and transmission costs and construction requirements for their consideration.

Key Matters

(conversation starters)

1. Explanation of Proposal contents:
   - 1.1 Detailed Level Study Report
   - 1.2 Construction scope
   - 1.3 Fees to move to Construction
   - 1.4 TFO proposal
2. Changes from DER Owner would mean a new DLS and possibly a new HLS or cancellation.

Milestones

1. Distribution Detailed Level Study and Transmission System Interconnection Study are complete.
2. FortisAlberta will provide the customer with a Final Interconnection Proposal that outlines the final cost for distribution and transmission infrastructure upgrades that are required to interconnect the project (detailed distribution interconnection cost, pre-paid Operating and Maintenance (O&M) cost and Transmission Facility Owner (TFO) Proposal to Provide Service (PPS) costs). The proposal will also specify the final technical requirements.
3. Construction is initiated upon customer acceptance and payment of all costs.

Customer Requirements

Review Interconnection Proposal and accept proposal.

FortisAlberta Roles and Responsibilities

Customer Connections compiles distribution scope & estimate, transmission scope & estimate, and virtual load service estimate into a complete interconnection proposal.

Queue

1. FortisAlberta must receive the signed Interconnection Proposal Quote Letter within 30 calendar days or the project will be cancelled.
2. Once the signed Quote Letter is received, FortisAlberta will send the construction invoices for the full construction cost, Transmission, Distribution, O&M, and the administration fee.
3. FortisAlberta must receive the payment within 60 calendar days to advance the project to the construction stage. If the full payment is not received within 60 calendar days, the interest charges detailed on the invoice will begin to accrue. If the full payment is not received within 60 calendar days, the project will be cancelled. The DER owner is responsible for ensuring payments have been made on time. FortisAlberta will not provide reminders to the DER owner.

Phase 5 Construction

Purpose

To initiate and complete all construction and commissioning required for the interconnection. See phases 5.1, 5.2, 5.3 for Milestones, Requirements, Roles and Responsibilities.

Key Matters

(conversation starters)

110-day, 30-day, and commissioning checklists

Queue

Queue position maintained once the construction invoices are paid.

Phase 5.1 Pre-Construction

Purpose

To schedule and initiate construction and commissioning activities and draft formal agreements.

Key Matters

(conversation starters)

1. The Customer shall have Engineering studies approved and ready to share prior to the submission of the 110-day package. All studies shall have been reviewed by FAI P&C and have comments incorporated. Studies that are being submitted for the first time will not be reviewed in the time to meet the 110 day package requirement.
2. Project Manager assigned to provide construction schedule & Project coordination.
3. FortisAlberta Detailed study validation – communicate recalculation of power factor (p.f.) for full generator size, and maximum generation export at unity (100% p.f.) for DER operations
4. Agreements/documents shared with the customer:
    a. Interconnection Agreement
    b. Operating Procedure
    c. Remote Trip Agreement (RTA)
    d. AESO energization Package deliverables Energization-Package-Requirements-v6.pdf (aeso.ca)
    e. FortisAlberta DER Interconnection Checklist
    f. DER-02 FortisAlberta Interconnection Requirements
    g. Connection authorization form
5. Identify risks that may delay the project interconnection

6. Supervisory Control and Data Acquisition (SCADA) process – Install SCADA Junction Box (pick up from area office with installation directions), DNP3 map points list location supplied for approval, concentrator bench test report suppplied, protection device and SCADA commissioning
7. Discuss overhead construction and impacts of substandard overhead facilities on feeder reliability. Discuss requirement to construct overhead facilities substantially comparable to FortisAlberta standards.

Milestones

110-day checklist completion.

Customer Requirements

1. Complete the 110-day checklist with FortisAlberta and submit the 110-day package.
2. The Point of Common Coupling (PCC) must be clearly defined at the customer site.

FortisAlberta Roles and Responsibilities

1. Engineering, Project Manager, and Operations shall engage with the customer to define the final requirements for interconnection, construction, and commissioning.
2. Customer Connections coordinates with the TFO to have the required funding in place.
3. Contracts Analyst will work with the customer to finalize the Interconnection Agreement and Operating Agreements.

Queue

1. Queue position is maintained once the construction invoices are paid.
2. FortisAlberta must receive the construction invoice payment within 60 calendar days to advance the project to the construction stage. If the full payment is not received within 60 calendar days, the project will be cancelled.

Phase 5.2 Construction

Purpose

To complete all construction activities and energize customer site load.

Key Matters

(conversation starters)

1. 30-day checklist
2. Energization of site, providing power (not export generation, that is at the in-service date in a later phase)
3. Pre-commissioning

Milestones

30-day checklist completion.

Customer Requirements

1. Customer to complete the 30-day checklist with FortisAlberta and submit the 30-Day package.
2. Customer must install a power quality meter as per the FAI Power Quality department requirements. Power quality data must be collected for a minimum of 7 days prior to energization on the FAI system.

FortisAlberta Roles and Responsibilities

1. FortisAlberta Project Manager completes distribution construction and connection of DER and engages Operations and Field Technical Services for final interconnection in anticipation of commissioning.
2. Operations Planning works with the AESO, TFO and the customer to complete required transmission upgrades and meet all AESO BTF stage 5 requirements. Operational Planning, Protection & Control, and SCADA coordinate with the customer to ensure all required studies are completed and accepted, and commission the DER with Field Technical Services.
3. Contracts Analyst coordinates ESA, Interconnection Agreement, and Operating Procedures sign-off with customer.

Queue

Queue position is maintained once the construction invoices are paid.

Phase 5.3 Commission

Purpose

To complete all commissioning activities required for power export. To complete the execution of formal agreements. To establish relationship and expectations between the customer Operator-in-Charge (OIC), Field Operations, and FortisAlberta Control Centre (FCC).

Key Matters

(conversation starters)

1. Commissioning checklist
   1.1 Protection settings
   1.2 SCADA points list and bench test report completed
2. Post-commissioning checklist

Milestones

Commission checklist completion.

Customer Requirements

1. Customer to complete the commissioning checklist with FortisAlberta
2. Submit Final Commissioning Report to FortisAlberta (IPSC Section 2)

FortisAlberta Roles and Responsibilities

1. Protection and Control to review all requirements.
2. Contracts Analyst to execute agreements.
3. FCC and Field Operations to communicate expectations.

Queue

No queue position, final stages of the project.

Phase 6 Operate

Purpose

To enable the export of power from the customer site. To maintain an effective (active and current) on-going customer relationship. DER's are only allowed to export on the feeder studied.

Key Matters

(conversation starters)

1. Operating procedures and responsibilities confirmed
2. Annual requirements
   - 2.1 Annual maintenance form from the customer
   - 2.2 Operator-in-Charge information kept current

Milestones

1. Post-commission checklist complete.
2. As-built Drawings
3. Ongoing annual maintenance updates from the customer
4. Ongoing Operator-in-Charge (OIC) updates from the customer as required

Customer Requirements

1. Customer to complete the post commissioning checklist with FortisAlberta
2. Submit Power Quality Benchmark Report to FortisAlberta for review and approval.
3. Submit all as-builts
4. Comply with current industry standards.

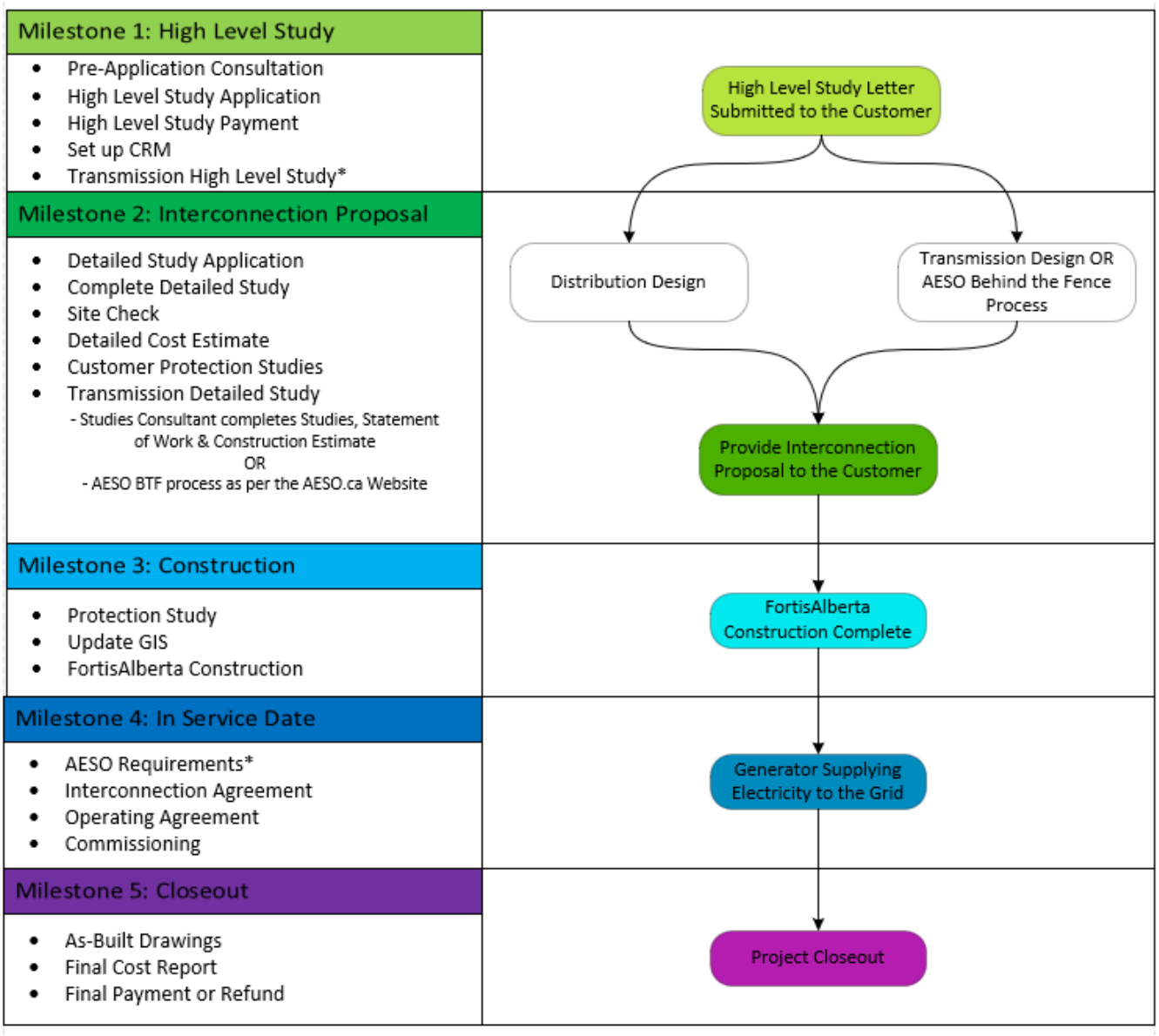
FortisAlberta Roles and Responsibilities

Engineering revises standards with updates in the industry, codes, and external standards.

Queue

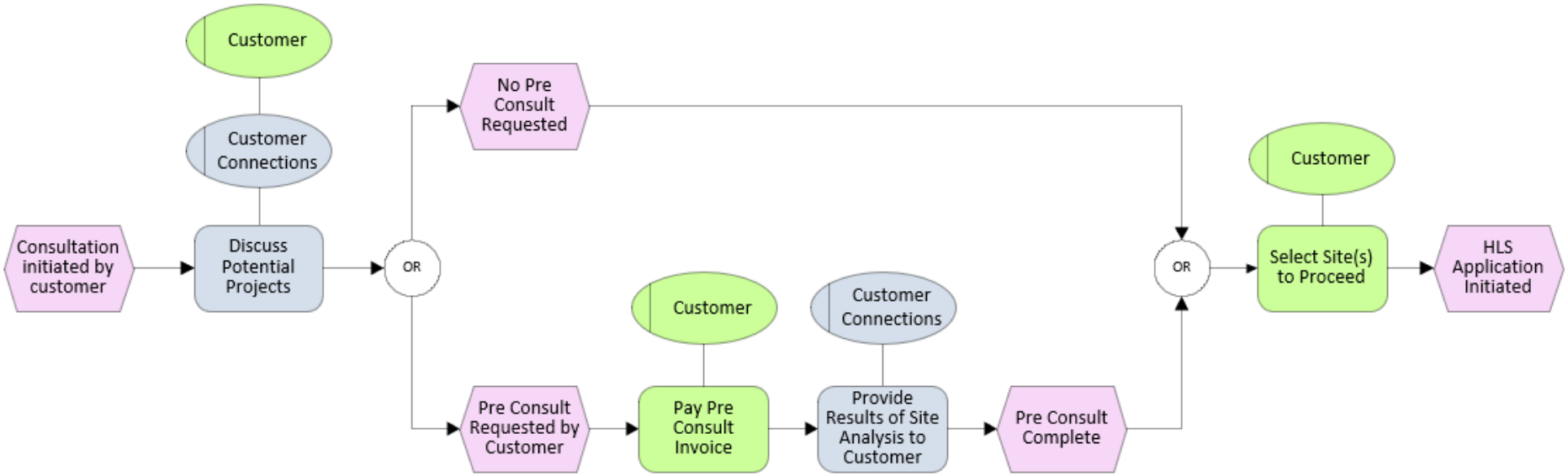
No queue position.

Annex A Milestones Flowchart (Informative)

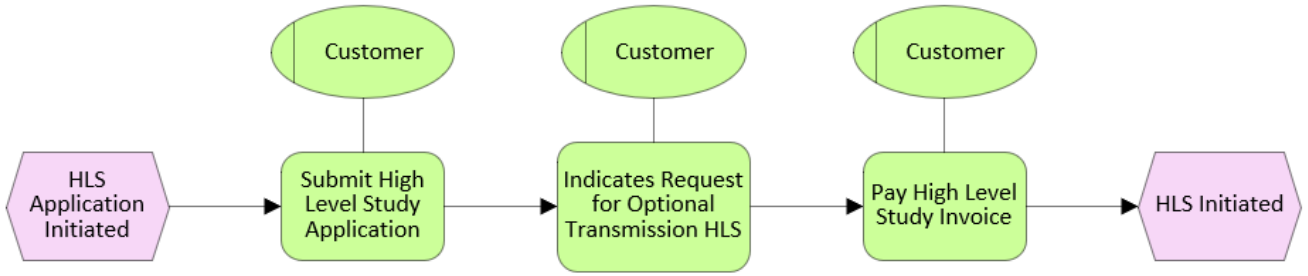


Annex B DER Interconnection Flowchart (Informative)

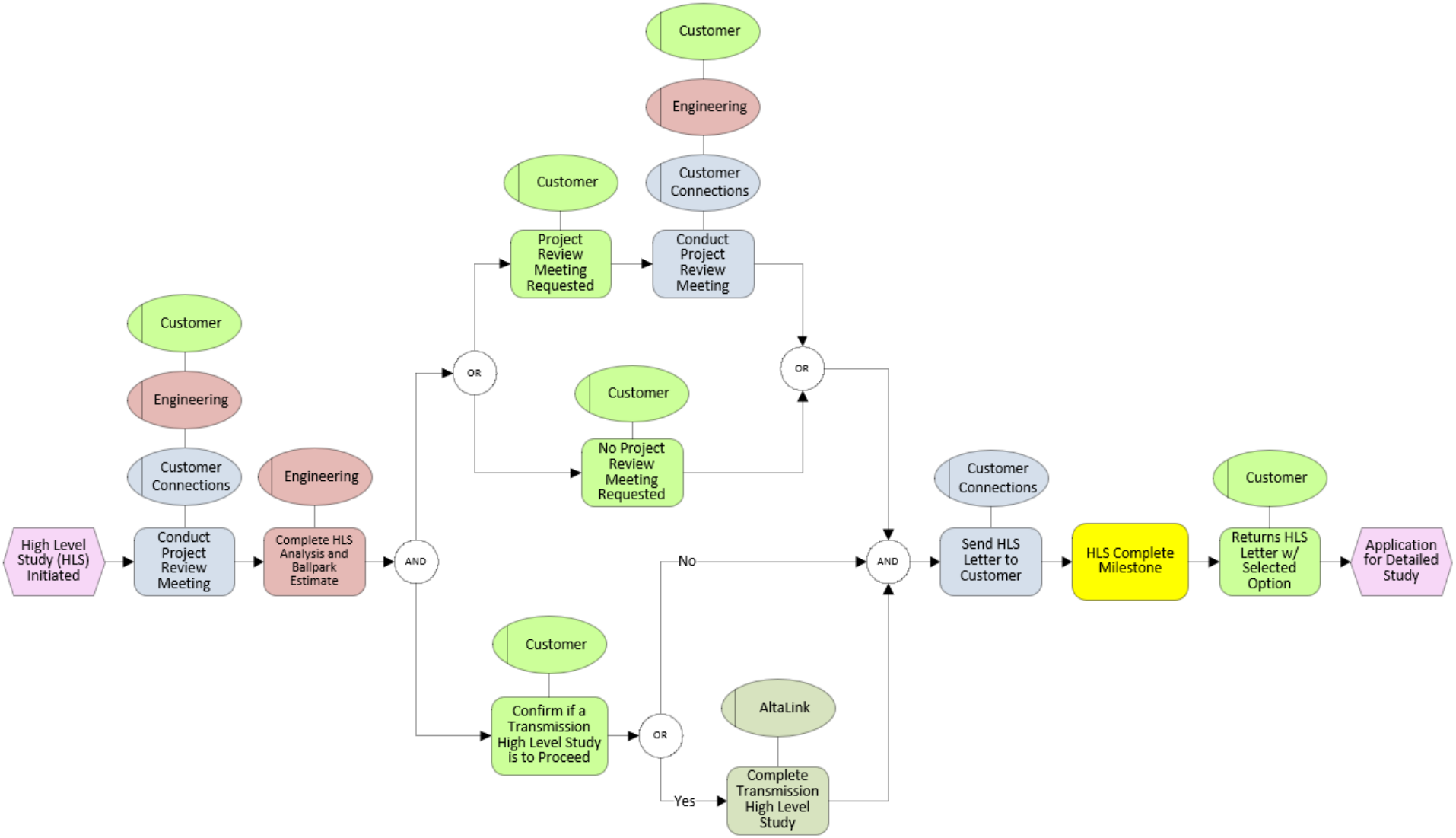
B1. Phase 1 Pre-Application Consultation



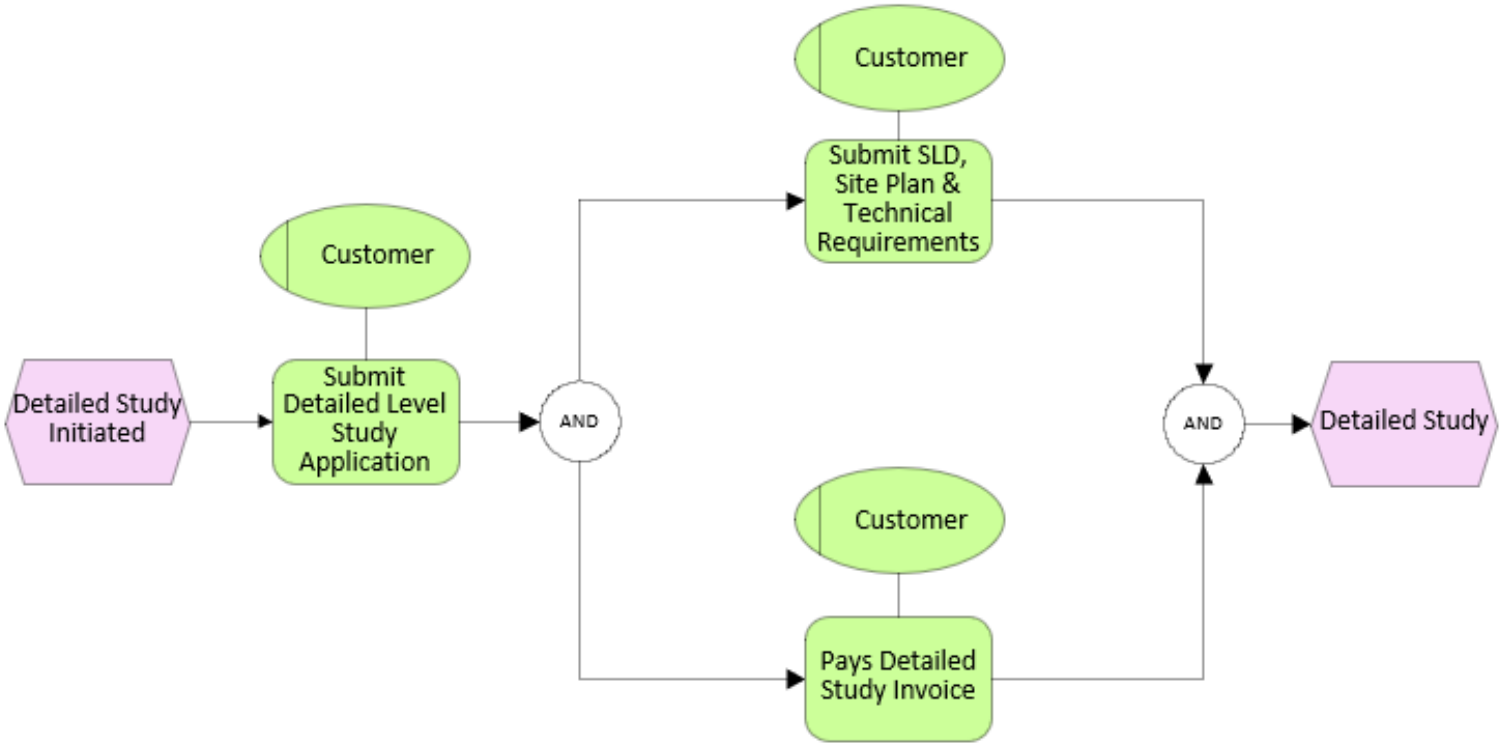
B2. Phase 2.1 Application for High Level Study



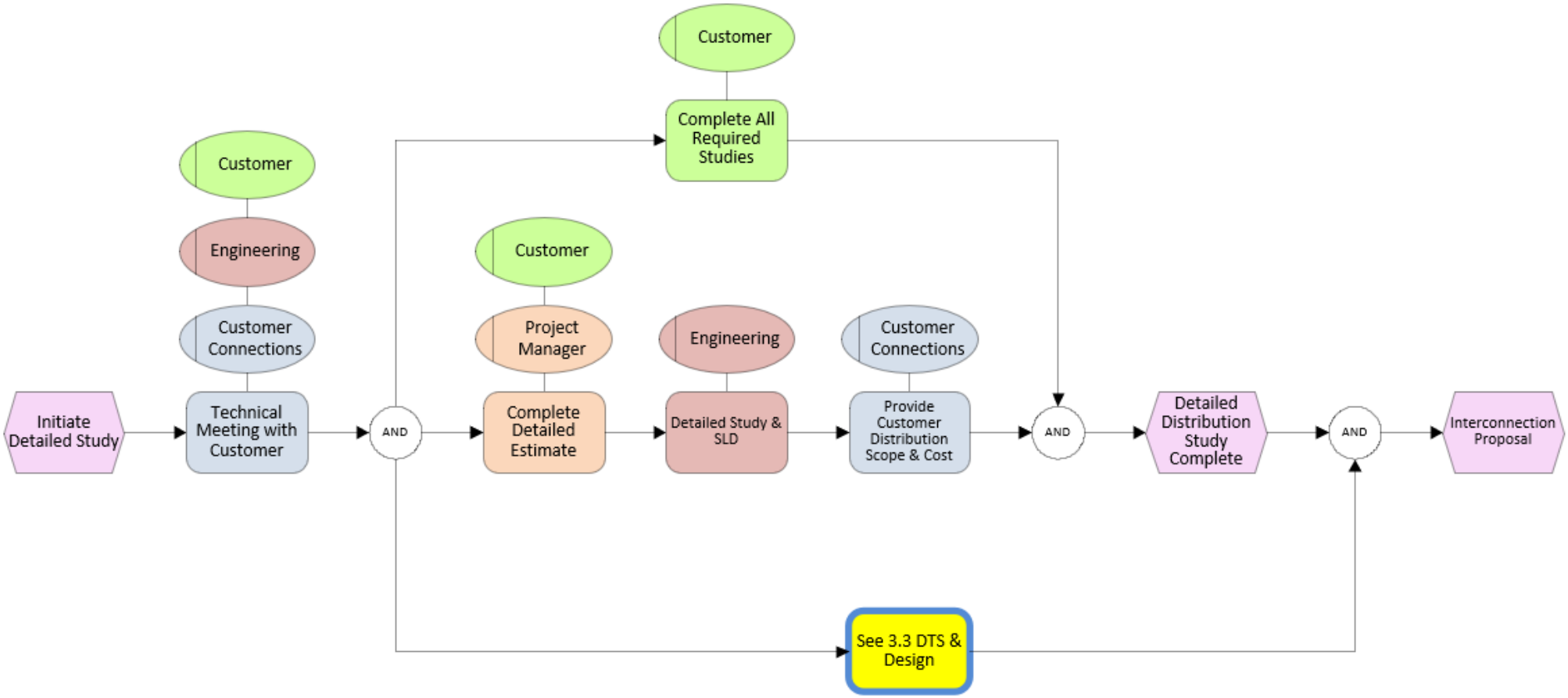
B3. Phase 2.2 High Level Study



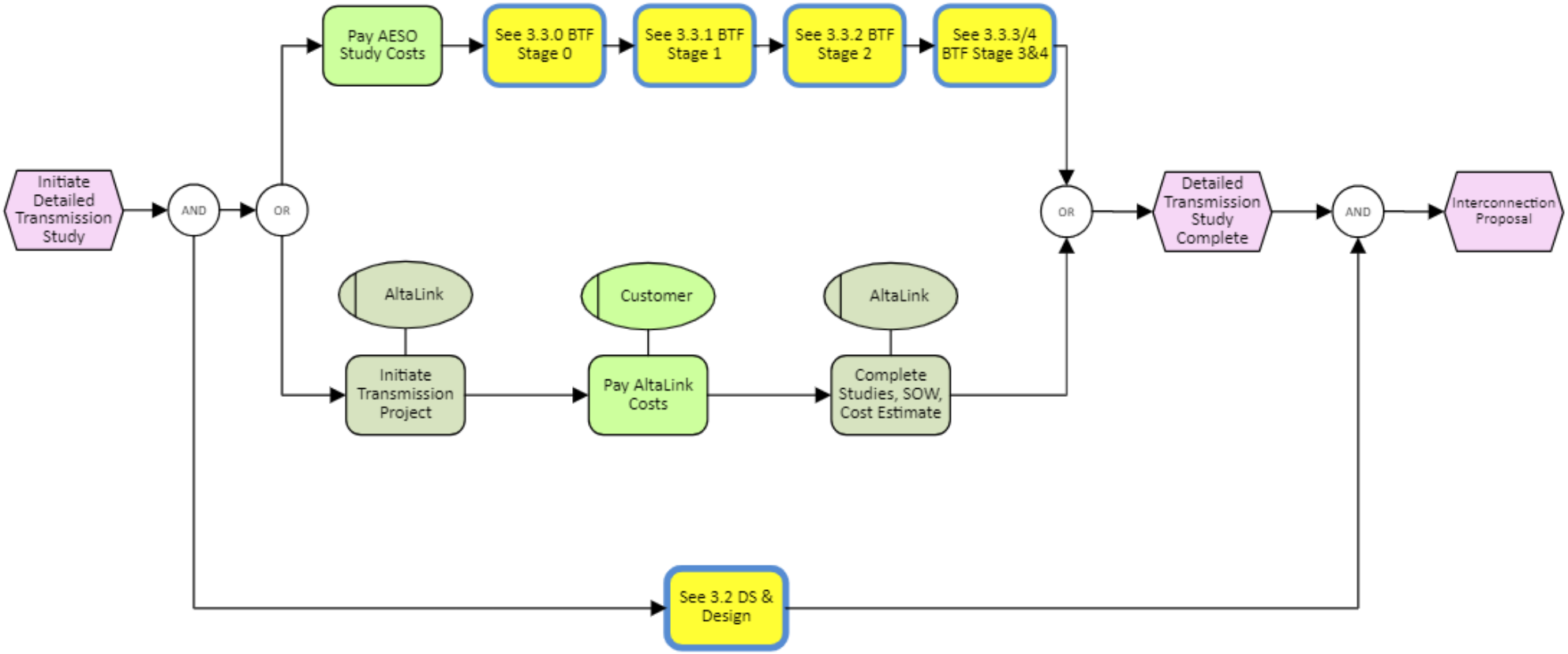
B4. Phase 3.1 Application for Detailed Level Study



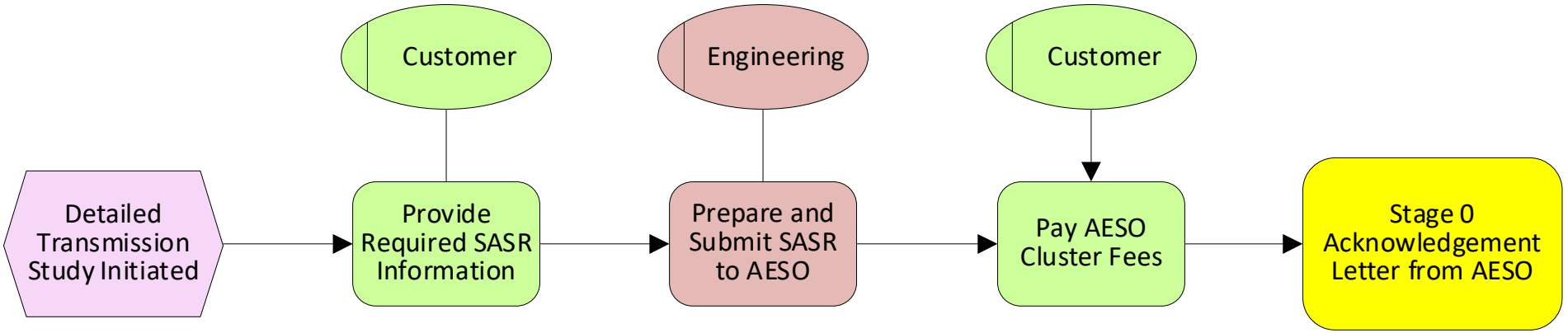
B5. Phase 3.2 Distribution Detailed Level Study and Design



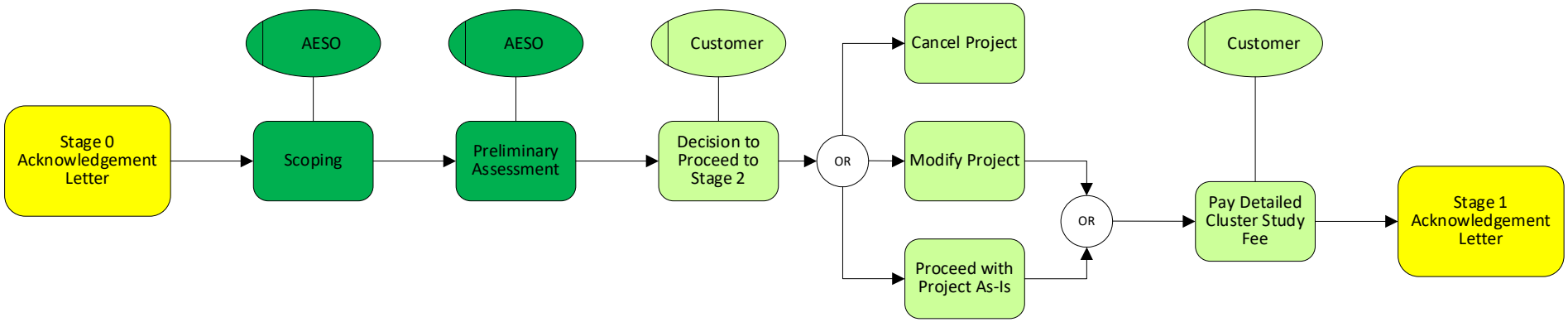
B6. Phase 3.3 Transmission Detailed Study and Design



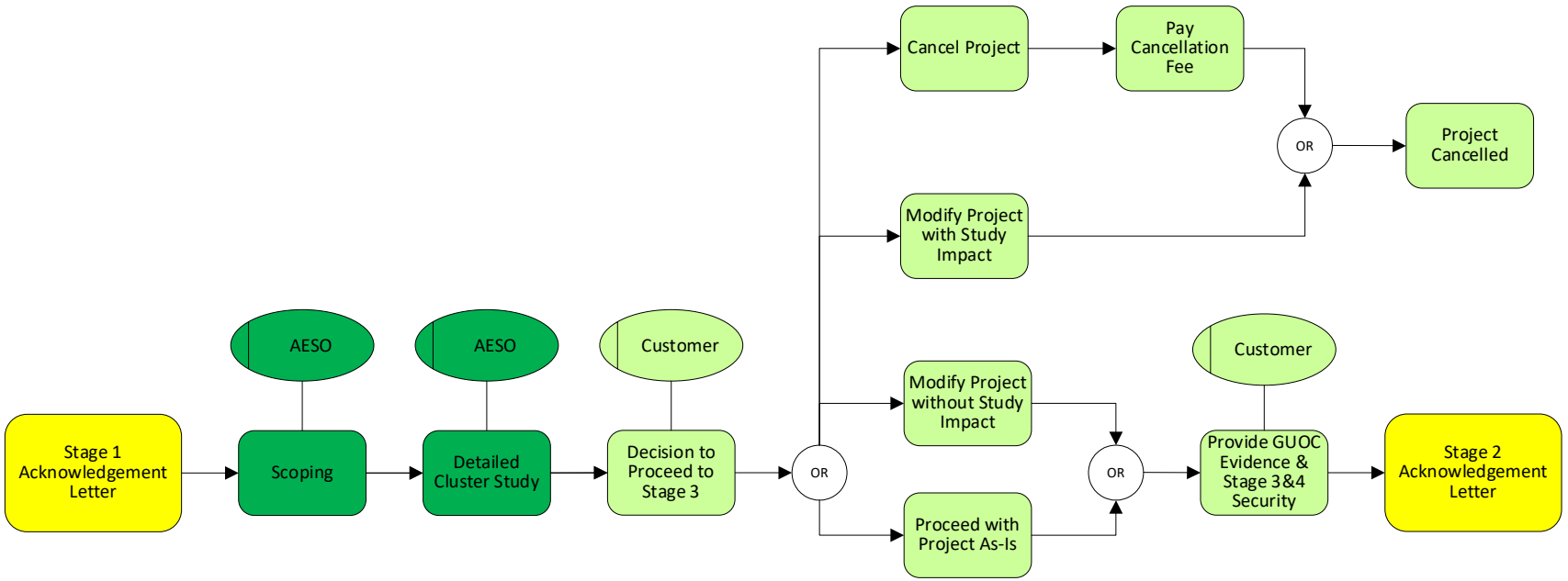
B7. Phase 3.3.0 AESO Behind the Fence Stage 0



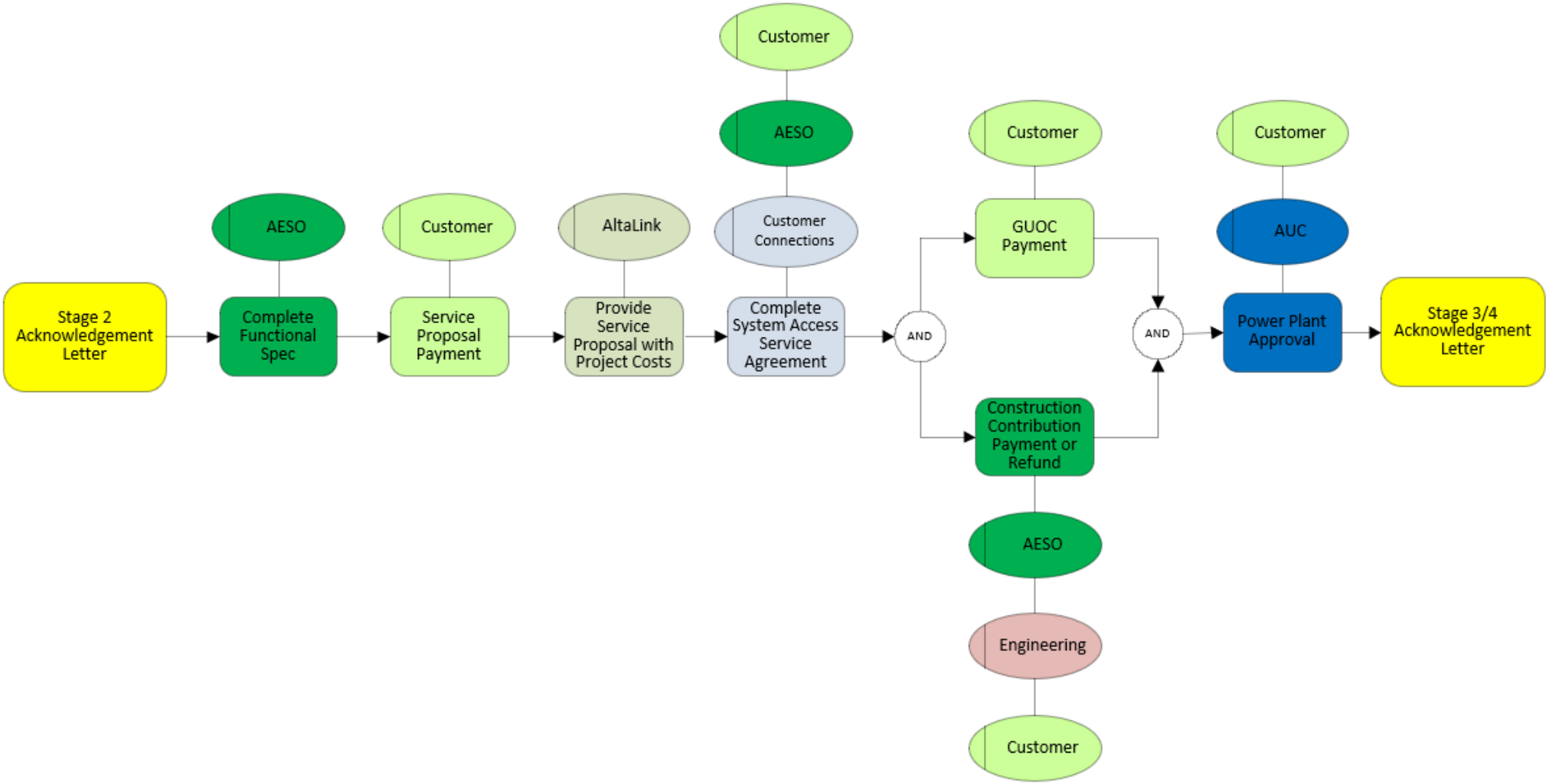
B8. Phase 3.3.1 AESO Behind the Fence Stage 1



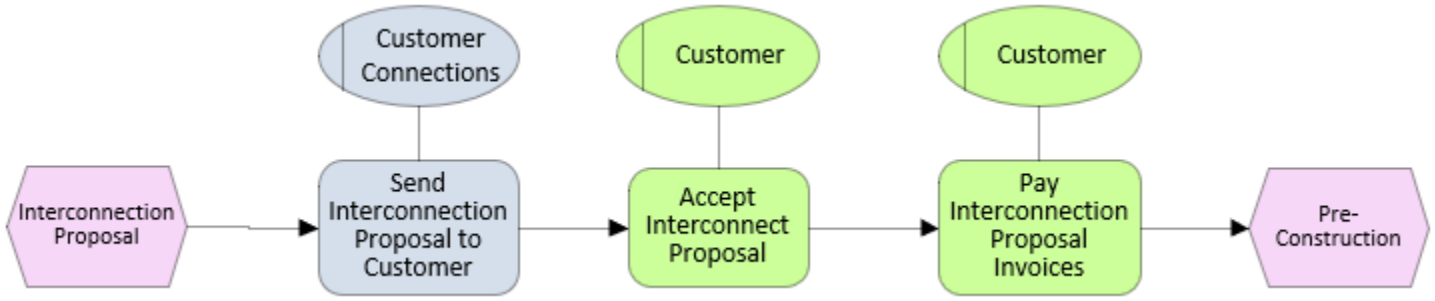
B9. Phase 3.3.2 AESO Behind the Fence Stage 2



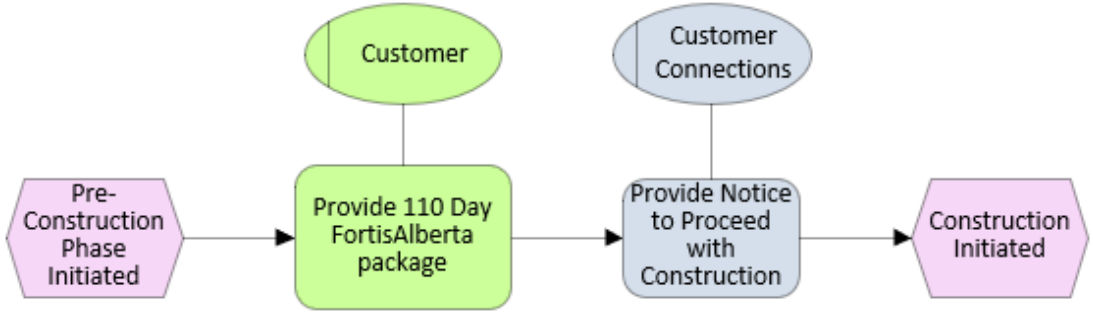
B10. Phase 3.4.3/4 AESO Behind the Fence Stage 3 & 4



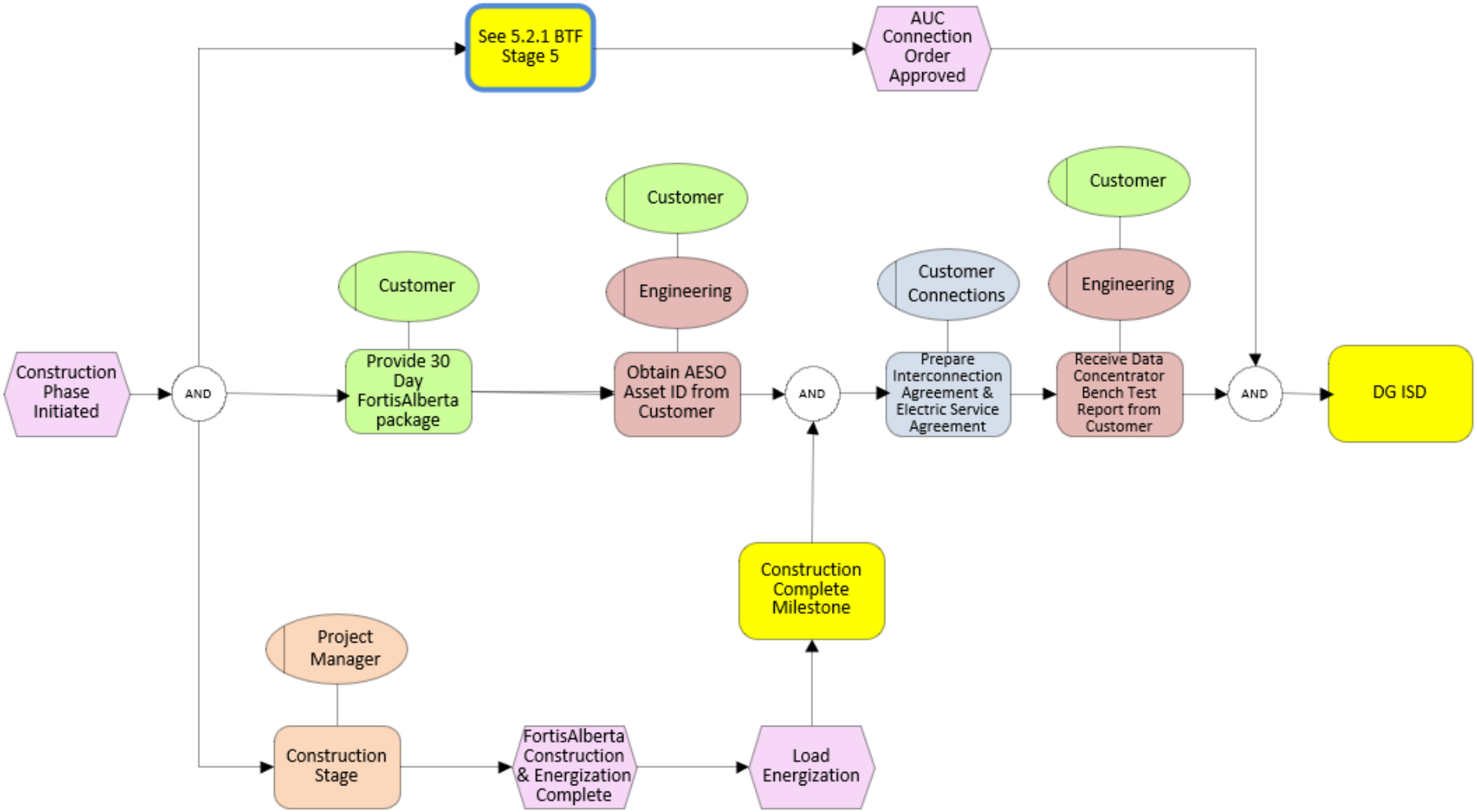
B11. Phase 4 Interconnection Proposal



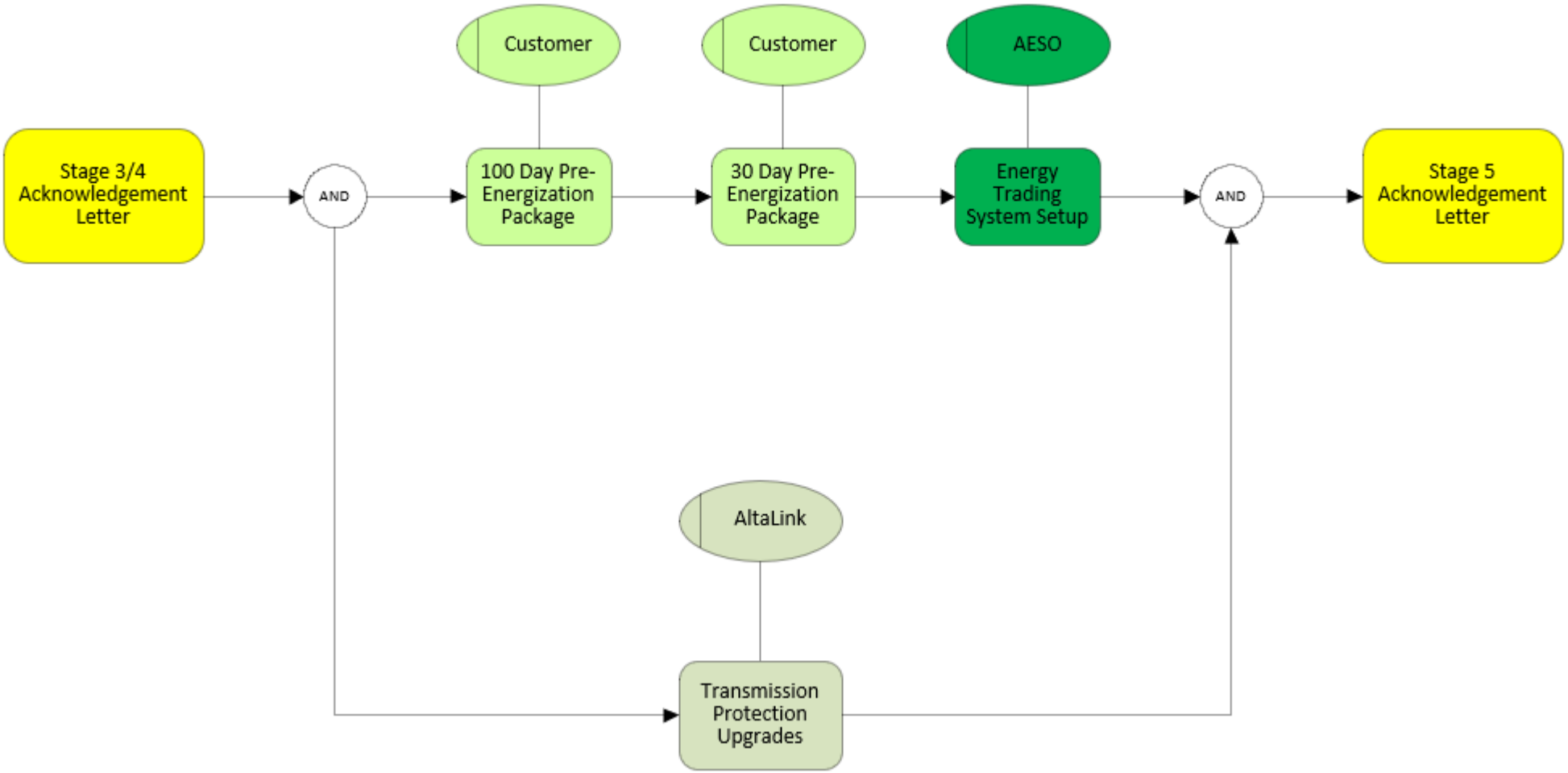
B12. Phase 5.1 Pre-Construction



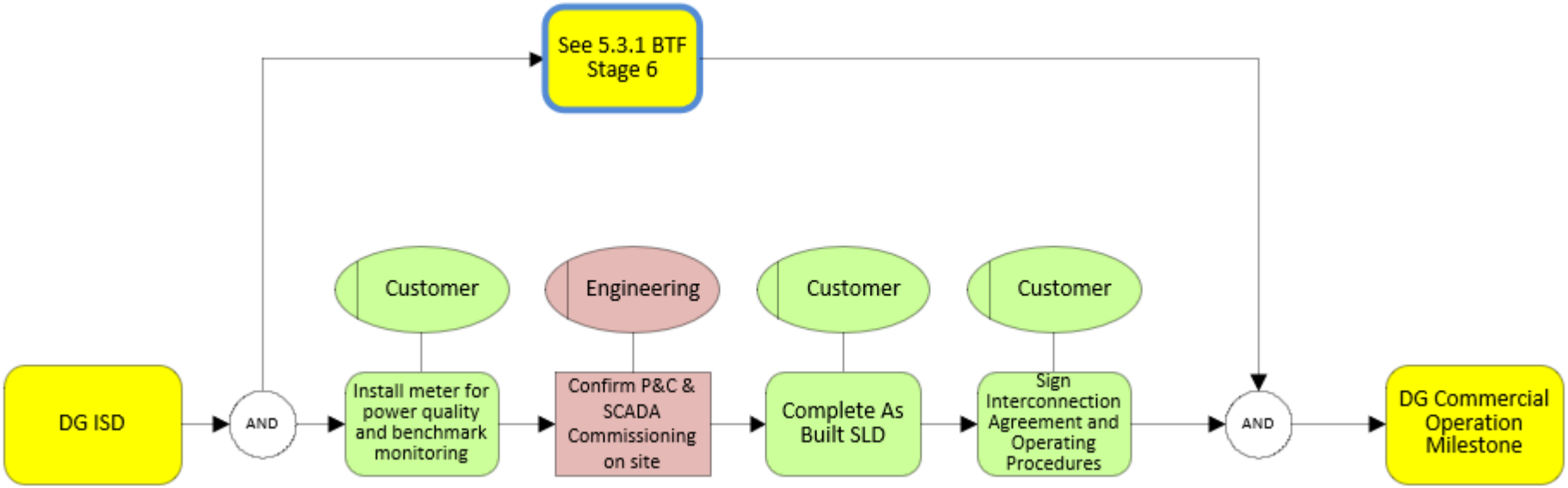
B13. Phase 5.2 Construction



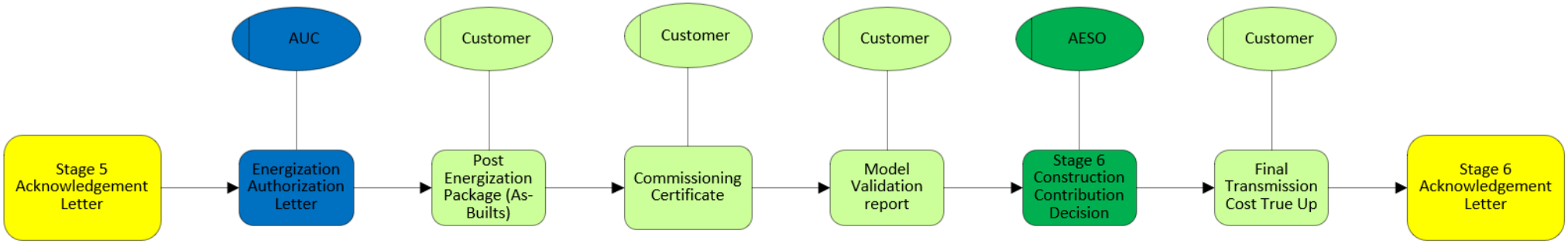
B14. Phase 5.2.1 AESO Behind the Fence Stage 5



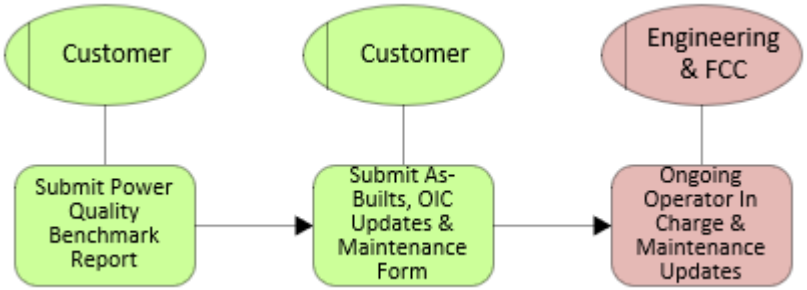
B15. Phase 5.3 Commission



B16. Phase 5.3.1 AESO Behind the Fence Stage 6



B17. Phase 6 Operate



Annex C Documents and Forms (Informative)

Distributed Generation Library | FortisAlberta

FortisAlberta Customer Generator Options

DER Pre-application Form

Third-Party Authorization Distributed Generation

High Level Study Application in Distributed Generation Library | FortisAlberta

Detailed Level Study Application in Distributed Generation Library | FortisAlberta

DER-02 FortisAlberta Interconnection Requirements

DER 02A FortisAlberta Engineering Study Requirements

DER 02B FortisAlberta Effective Grounding Study Requirements

DER Inverter Settings Template

FortisAlberta Interconnection Document Requirements

FortisAlberta DER Interconnection Checklist

Interconnection Protection Settings and Commissioning (IPSC)

Sample – Interconnection Protection Settings and Commissioning (IPSC)

Maintenance Verification Report

Sample – Maintenance Verification Report

Option M – Distributed Generation Charges and Credits

Service and Metering Guide

Power Quality Benchmark Compliance

Alberta Electric System Operator (AESO)

- Connecting to the grid » AESO
- https://www.aeso.ca/assets/DER-Ride-Through-Performance-Recommendations.pdf

Annex D Glossary of Acronyms (Informative)

FortisAlberta

DER:	Distributed Energy Resources (DGs, MGs, etc. connecting to the distribution system)
DG:	Distributed Generation
MG:	Micro-Generation
DLS:	Detailed Level Study
Energize:	power to site
ESA:	Electrical Service Agreement
FCC:	FortisAlberta Control Centre
HLS:	High Level Study
IA:	Interconnection Agreement with Operating Procedures agreement
ISD:	In-Service Date (DER exporting onto FortisAlberta system)
OIC:	Operator-in-Charge
OP:	Operating Procedures
PCC:	Point of Common Coupling
P&C:	Protection and Control
SCADA:	Supervisory Control and Data Acquisition
SRM:	Stakeholder Relations Manager
SSG:	Small Scale Generation
TFO:	Transmission Facility Owner

Alberta Electric System Operator (AESO)

AESO Acronym list: Behind the Fence (BTF) Process » AESO

BTF:	Behind the Fence
EC:	Energization Checklist
ESR:	Engineering Study Report
FS:	Functional Specification
GUOC:	Generator Unit Owner Contribution
MARP:	Maximum Authorized Real Power
PDUP:	Project Data Update Package
SAS:	System Access Service
SASA:	System Access Service Agreement
SASR:	System Access Service Request
STS:	Supply Transmission Service

Transmission Facility Owner (TFO)

PPS:	Proposal to Provide Service (costs for approval)
SOW:	Scope of Work