



Information Bulletin:

Release of Primary Guide Revision 3.1 (2021 Edition)

Revision Note

Revision 1 of this advisory contains minor updates to the changes table, specifically to the rows describing sections 5.2.5 and 5.4

1.0 Items Covered

Requirements for Customer-Owned Primary Services Supplied at 4 kV to 35 kV –
Primary Guide

2.0 Overview

This bulletin presents the latest revisions to the BC Hydro *Requirements for Customer-Owned Primary Services Supplied at 4 kV to 35 kV – Primary Guide* (“Primary Guide”) since the last edition issued in March 2018 (revision 2).

The 2021 edition of the Primary Guide (revision 3.1) contains significant changes and improvements, and new requirements for the construction and installation of customer-owned primary services. The latest changes were made in response to customer requests and changes to primary service equipment, as well as changes to BC Hydro distribution standards, BC Hydro planning, associated work methods, and safety procedures to align with Technical Safety BC (TSBC) documents.

Duplication of TSBC documents has been removed. Refer directly to the TSBC website for these documents. In addition, ES54 standards have been removed. They are available externally from bchydro.com.

Hyperlinks to all documents have been removed. These documents are available publicly and can be found with a web search.

The following table describes the changes in the Primary Guide 2021 edition (revision 3.1) from the previous edition (revision 2).

Page	Section	Changes
8	1 Interpretation	<ul style="list-style-type: none"> no changes
9-11	2 Definitions	<ul style="list-style-type: none"> numerous editorial and abbreviation revisions BC Safety Authority replaced by TSBC as authority having jurisdiction APEGBC replaced by EGBC CSA certified or approved per TSBC Bulletin; “Shunt Trip” definition added
12	3.1 Design and Compliance	<ul style="list-style-type: none"> multiple editorial and abbreviation revisions added new paragraph, for reference only, raising awareness of a future TSBC HV checklist being applicable for all of B.C. (reference copy of the HV checklist is attached in Appendix 2) BC Hydro will accept contractor’s declaration when TSBC waives final inspection
13	3.2 Utility Access	<ul style="list-style-type: none"> revised paragraph contains new BC Hydro requirement for a parking space adjacent to BC Hydro switchgear room
13-14	3.3 Supply Configuration	<ul style="list-style-type: none"> internal BC Hydro links deleted several editorial changes made
14-15	3.4 Point of Connection	<ul style="list-style-type: none"> updated TSBC reference to new documents added new BC Hydro requirement that single-family residential building service be supplied at secondary voltage
15-16	3.5 Revenue Metering	<ul style="list-style-type: none"> minor edits; deleted internal BC Hydro links stating BC Hydro preference for secondary metering as less expensive option primary revenue metering shall be mounted on a separate pole added new warning paragraph which precludes any testing by customer or contractor involving BC Hydro revenue metering transformers connected to the customer’s test apparatus
16-17	3.6 Power Quality	<ul style="list-style-type: none"> numerous editorial and reference documents revisions
17-18	3.7 Customer Service Entrance Equipment	<ul style="list-style-type: none"> several editorial changes clarification on acceptance of utility type recloser per TSBC requirements
18-19	3.9 Customer-Owned Standby Generation	<ul style="list-style-type: none"> minor editorial revisions
19	3.10 Maintenance and Testing	<ul style="list-style-type: none"> minor edits

Page	Section	Changes
20	3.11 Customer Application Process	<ul style="list-style-type: none"> minor edits
20	3.12 Fire Protection	<ul style="list-style-type: none"> new paragraph added in response to city of Victoria fire department requirement introduced new requirement for fire barrier when BC Hydro service cables pass through customer fire rated building wall
21	4 Standards and Regulations	<ul style="list-style-type: none"> several more references added for TSBC directives and other documents available on the internet
22-23	5.1 Preliminary Design	<ul style="list-style-type: none"> substantial editorial changes for clarification and easier reading
23-25	5.2 Formal Application	<ul style="list-style-type: none"> substantial editorial changes for clarification and easier reading
25	5.2.4 Site Plan	<ul style="list-style-type: none"> added BC Hydro requirement for roadway access to first pole and revenue metering pole for overhead services
25	5.2.5 Primary Service Overhead Line Construction Details	<ul style="list-style-type: none"> customer to comply with TSBC B-E3 09312 1 customer to provide revenue metering pole all mounting hardware per CSA C83 standards
26	5.3 Primary Service Fabrication Drawings Acceptance	<ul style="list-style-type: none"> minor edits and document links added
26-27	5.4 HV Commissioning Report and Authorization for Connection	<ul style="list-style-type: none"> BC Hydro will accept TSBC Form 206 if AHJ waives final inspection add operating permit used equipment approval by customer's consultant shall follow TSBC B-E3 071019 3
27	5.6 Dead Front Primary Services	<ul style="list-style-type: none"> moved to new section 9.19 <i>Dead Front Switchgear</i>
28	5.7 Temporary Power as Primary Service	<ul style="list-style-type: none"> minor edits
29-30	6.1 Preliminary Design	<ul style="list-style-type: none"> substantial editorial revisions to the original section section split into four separate sub-sections for easy reference added single phase supply for 7.2 kV and 14.4 kV customer services BC Hydro shall determine the supply voltage for customer service
30-31	6.2 Service Transformers	<ul style="list-style-type: none"> original title "Supply of Service Transformers" changed, and text revised to clarify BC Hydro transformer supply requirement per Electric Tariff

Page	Section	Changes
31	6.2.3 Service Neutral Connections	<ul style="list-style-type: none"> significant revisions made clear that BC Hydro utility supply neutral shall be connected to the customer service ground deleted specific reference for the supply neutral termination pattern as already shown in ES54 S3 standards
31	6.2.5 Maximum Transformer Size and Inrush Current Limitation	<ul style="list-style-type: none"> wording revised and edited
32	7.1 BC Hydro Scope of Supply for Overhead Service Connections	<ul style="list-style-type: none"> minor edits
32-33	7.2 Customer Scope of Supply for Overhead Service Connections	<ul style="list-style-type: none"> added direct links to TSBC directive and BC Hydro documents explained TSBC requirements for customer-owned recloser acceptance added 27 kV rated surge arresters for metering kits on 34.5 kV rural distribution
33-34	7.3 BC Hydro Scope of Supply for Underground Service Connections	<ul style="list-style-type: none"> deleted "Building" from the title added more explicit listing of all items supplied by BC Hydro significant editorial and style changes
34-35	7.4 Customer Scope of Supply for Indoor Primary Service Vaults	<ul style="list-style-type: none"> new section summarizing and listing all requirements and items supplied by the customer based on recent BC Hydro practice over the past five years added reference to CSA22.3 No. 7 <i>Underground Systems</i> included all previous requirements for BC Hydro supply point located outside customer building added 27 kV rated arresters for 34.5 kV supply added remote shunt trip requirement for dead front switchgear deleted previous section 7.4.1 <i>BC Hydro Supply Point Located Outside Customer Building</i>
35	7.4.1 BC Hydro Supply Point Located Inside Customer Building	<ul style="list-style-type: none"> firmed up BC Hydro requirements for switchgear room inside customer building for single radial and dual supply configurations 2.1 m high building access for BC Hydro vehicles minor edits
35-36	7.5 Customer Scope of Supply for Outdoor Primary Service Kiosks	<ul style="list-style-type: none"> minor edits for consistency with previous paragraphs

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36	7.6 Customer Scope of Supply for Primary Revenue Metering Kiosks	<ul style="list-style-type: none"> minor edits for consistency with previous paragraphs and new writing style
37-46	8 Primary Service Construction	<ul style="list-style-type: none"> substantially revised as all requirements for dead front services have been moved to section 9 specific requirements for service cables and ducts substantially enhanced in separate sections specific requirements for indoor service vaults and outdoor primary service kiosks substantially enhanced in two separate larger sections added new section for identification and safety decals
37	8.1 General	<ul style="list-style-type: none"> added a paragraph for 25 kV customer service equipment rating regardless of current supply of 7.2/12.5 kV for the area
37-38	8.1.1 Underground Services	<ul style="list-style-type: none"> new section replacing previous section 8.2 <i>Underground Service Cables and Overhead Service Conductors</i> minor edits
38	8.1.1.1 Cable Protection 8.1.1.2 Cable Terminations 8.1.1.3 Cable Support 8.1.1.4 Padlocks	<ul style="list-style-type: none"> renumbered from previous sections 8.2.1. to 8.2.3 IEEE 48 and 386 standards added to section 8.1.1.2 as BC Hydro requirements for cable terminations added internal direct links added new section 8.1.1.4 <i>Padlocks</i>
38-39	8.1.2 Overhead Services	<ul style="list-style-type: none"> new paragraph on overhead line primary service construction pointing to the future publication of new standards for customer-owned primary services added reference to other applicable sections for the interim period
39-41	8.2 Service Ducts	<ul style="list-style-type: none"> new section extracted from previous section 8.3 <i>Service Ducts, Manholes, Pull Boxes and Pull Pits</i> added internal links and references to TSBC regulations moved duct markers from previous section 5.2.3 <i>Site Plan</i>
40-41	8.2.1 Third Party Cables 8.2.2 Drainage 8.2.3 Primary Service Ducts 8.2.3.1 Concrete Encasement 8.2.3.2 Structural Supports	<ul style="list-style-type: none"> sections renumbered from previous sections 8.3.1 to 8.3.3.2 numerous edits added HILTI firestop sleeve in section 8.2.3 added internal links

Page	Section	Changes
41-44	8.3 Indoor Primary Service Vaults	<ul style="list-style-type: none"> renumbered and expanded previous section 8.4
41-44	8.3.1 Vault Location and Access 8.3.2 Equipment Layout 8.3.3 Cable Pull Pit 8.3.4 Indoor Pull Boxes 8.3.5 Remote Shunt Trip 8.3.6 Height	<ul style="list-style-type: none"> new sections containing more specific BC Hydro requirements contained in previous various sections primary vault location and access specified working space and access clearances clarified indoor cable pull pits moved from previous service ducts section location of indoor shunt trip pushbutton box requirements; minor edits and internal links added
44	8.4 Outdoor Primary Service Kiosks	<ul style="list-style-type: none"> renumbered, edited, and revised added references to internal documents added new section with specific requirements for outdoor pull boxes added remote shunt trip requirements for dead front outdoor primary service kiosk supplied by S&C
44-46	8.5 Equipment Identification and Safety Decals	<ul style="list-style-type: none"> new section containing sections 8.5.1 to 8.5.2.2 introduced wide range of safety and identification decals consistent with BC Hydro work methods, WorkSafeBC, and TSBC regulations provided BC Hydro material number for each decal and guide for BC Hydro crew, how and where to apply new safety decals previous section 8.5.1 <i>Sulphur Hexafluoride – SF6 Filled Equipment</i> moved to new section 9.1.6
47-54	9 Primary Service Switchboard Construction	<ul style="list-style-type: none"> entire section rearranged, renumbered, edited, new sections added, expanded from four to eight pages
47	9.1 General	<ul style="list-style-type: none"> minor edits
47-48	9.1.1 Supply Service Cable Compartment	<ul style="list-style-type: none"> small portion of section 9.1 moved to 9.1.1 and expanded as stand-alone section specific requirements contained in ES54 S3 standards listed
48	9.1.2 Interlocks	<ul style="list-style-type: none"> renumbered from 9.1.4 and edited
48	9.1.3 Dual Radial Primary Services	<ul style="list-style-type: none"> new section explaining operating requirements of legacy dual radial configuration
48	9.1.3.1 Bolted Bus Bar Sections	<ul style="list-style-type: none"> renumbered 9.1.5 and edited
48	9.1.4 Outdoor Primary Service Kiosk Specific Requirements	<ul style="list-style-type: none"> new section presenting specific requirements regarding BC Hydro restricted access into outdoor type utility cable compartment

Page	Section	Changes
48	9.1.5 Indoor Primary Service Requirements	<ul style="list-style-type: none"> new section presenting specific requirements regarding BC Hydro restricted access into indoor type utility cable compartment
49	9.1.6 Sulphur Hexafluoride (SF6) Filled Equipment	<ul style="list-style-type: none"> moved from 8.5.1 and edited
49	9.1.6.1 Viewing Window	<ul style="list-style-type: none"> new section containing specific requirements for viewing window of SF6-filled equipment
49	9.1.7 Additional Safety Requirements for Service Cable Compartments	<ul style="list-style-type: none"> revised section moved from 9.1.1 to 9.1.7 internal links added list of acceptable machined-type ground studs added in Table 9-1
50	9.1.8 Live-Front Switchgear	<ul style="list-style-type: none"> new sections 9.1.8.1 and 9.1.8.2 explaining specific safety and operating requirements for live-front switchgear, including BC Hydro work methods, viewing window, and operating handle
50-53	9.1.9 Dead-Front Switchgear	<ul style="list-style-type: none"> new section based on previous section 5.6, which is substantially expanded and moved to 9.1.9 new Table 9-2 lists acceptable manufacturers and equipment configuration for dead-front switchgear new section 9.1.9.10 explaining specific requirements for viewing window
53	9.1.10 Unacceptable Equipment	<ul style="list-style-type: none"> new section based on previous Note 33 substantially expanded including limitations for customer-owned load break elbows repeating a limited number of the existing outdoor unitized substations containing oil-immersed load break switches
53	9.2 Service Entrance Compartment – Single Radial Supply	<ul style="list-style-type: none"> minor edits and internal references added
53-54	9.3 Service Entrance Compartment – Dual Radial Supply (Legacy Reference)	<ul style="list-style-type: none"> minor edits and internal references added
54	9.4 Service Entrance Compartment – Dual Supply	<ul style="list-style-type: none"> minor edits and internal references added
55-59	10 Primary Service Protection Requirements	<ul style="list-style-type: none"> substantial edits and revisions for clarifying acceptable separation between BC Hydro and customer-owned protective relaying and fuse curves

Page	Section	Changes
55-56	10.1.4 Interrupting Rating and Minimum Time Margins	<ul style="list-style-type: none"> added fuse links to column title in Table 10-1 Table 10-2 minimum time margin for fuse-to-fuse 12-cycle separation replaced with calculated margin starting with 2 cycles minimum based on acceptance by DE for the area added new clarification notes to Table 10-2
56-58	10.2 Protection with Relays and Circuit Breakers	<ul style="list-style-type: none"> minor edits and internal links added
57	10.2.2 Relays	<ul style="list-style-type: none"> added IEEE C37.90 standard as reference for relay testing added a link to a revised protection and coordination drawing PG D1-01.02 in Appendix 1 added Note 41 for BC Hydro right to request the customer to provide updated certified protective relay test report for more than five-year old reports
58-59	10.3 Protection with Fuse and Loadbreak Switch	<ul style="list-style-type: none"> minor edits and internal links added
58	10.3.1 Fuse Size	<ul style="list-style-type: none"> minor edits and links to protection and coordination drawing PG D1 and PG D2 in Appendix 1
59	10.3.2 Loadbreak Switch	<ul style="list-style-type: none"> minor edits and minimum switch fault closing ratings specified
60-71	Appendix 1 List of Primary Guide Standards	<ul style="list-style-type: none"> deleted PG B and PG C series standards PG D1-01.01 R2 standard coordination diagram has been substantially revised to provide a more accurate illustration of protection coordination between the BC Hydro and the customer fuse per revised Table 10-2 sample single line diagram added acceptable time margin for large available fault current portion clearly shown
72-113	Appendix 2 Reference Documents and Distribution Standards	<ul style="list-style-type: none"> numerous edits and text revision deleted and removed TSBC documents available from the web deleted and removed all ES54 standards which are available externally from bchydro.com retained all ES43 applicable standards which are not available on extranet new BC Hydro decals added
114-121	Appendix 3 Photographs	<ul style="list-style-type: none"> new figures A3-13 to A3-22 added and titles revised to clarify installation details of dead-front switchgear

3.0 Action




The effective date for the new 2021 edition of the Primary Guide (revision 3.1) is September 30, 2021. All new applications for primary service connections after September 30, 2021 shall meet the BC Hydro requirements contained in the Primary Guide 2021 edition. New applications prior to September 30, 2021 may choose to comply with the Primary Guide 2021 edition.

For approved projects or pending design and construction of new customer-owned primary service installations already in progress, the customer may comply with the requirements of the Primary Guide 2017 edition (revision 2).

4.0 Distribution Standards Contact

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5.0 Approval

Recommended		Reviewed		Approved	
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Date:	2021-04-28	Date:	2021-04-28	Date:	2021-04-28