

B O N N E V I L L E
P O W E R A D M I N I S T R A T I O N



**Available Transfer Capability
Implementation Document
(MOD-001-1a)**

**Bonneville Power Administration
Transmission Services**

Effective Date: September 15, 2021

DRAFT

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3 I. Purpose

4 This BPA Available Transfer Capability Implementation Document (ATCID) addresses all of the
5 requirements of North American Electric Reliability Corporation (NERC) Reliability Standard
6 MOD-001-1a Available Transmission System Capability. This ATCID is specifically required by
7 MOD-001-1a, R3 and its sub-requirements. This ATCID also outlines BPA's Postback
8 Methodology as required by North American Energy Standards Board (NAESB) Wholesale
9 Electric Quadrant business practice standards.

10 This ATCID only applies to ATC calculations through month 13.

11 II. Definitions

12 All capitalized terms used in this ATCID are either contained in NERC's Glossary of Terms used
13 in NERC Reliability Standards or, if not in NERC's glossary, are defined in this ATCID.

14 Defined terms specific to BPA include:

- 15 • **Federal Columbia River Power System (FCRPS):** The Transmission System
16 constructed and operated by BPA and the 31 federally-constructed hydroelectric dams¹
17 on the Columbia and Snake Rivers, and the Columbia Generating Station nuclear plant.
18 Each entity is separately managed and financed, but the facilities are operated as an
19 integrated power System.
- 20 • **Federal Columbia River Transmission System (FCRTS):** The FCRTS is comprised of
21 BPA's main grid network Facilities (Network), Interconnections with other
22 Transmission Systems (External Interconnections²), Interties,³ delivery Facilities,
23 subgrid Facilities, and generation Interconnection Facilities within the Pacific
24 Northwest region and with western Canada and California.
- 25 • **Long-Term Reservation:** a confirmed reservation that has duration greater than or
26 equal to 365 days
- 27 • **Short-Term Reservation:** a confirmed reservation that has duration less than 365
28 days

¹ Albeni Falls, Anderson Ranch, Big Cliff, Black Canyon, Boise River Diversion, Bonneville, Chandler, Chief Joseph, Cougar, Detroit, Dexter, Dworshak, Foster, Grand Coulee, Green Peter, Green Springs, Hills Creek, Hungry Horse, Ice Harbor, John Day, Libby, Little Goose, Lookout Point, Lost Creek, Lower Granite, Lower Monumental, McNary, Minidoka, Palisades, Roza and The Dalles

² Northern Intertie, Reno-Alturas Transmission System, West of Hatwai, West of Garrison and LaGrande paths.

³ California-Oregon AC Intertie, Pacific DC Intertie, and Montana Intertie.

29 III. Overview

30 BPA owns and provides Transmission Service over the FCRTS. BPA is registered with NERC as a
31 Transmission Operator (TOP) and Transmission Service Provider (TSP), among other
32 registrations.

33 Methodologies Selected

34 MOD-029-2a

35 BPA has elected to use the Rated System Path Methodology (MOD-029-2a) to calculate ATC
36 for its ATC Paths. The description of how BPA implements this methodology for these
37 paths is included in this ATCID. (MOD-001 R1)

38 MOD-008-1

39 BPA maintains Transmission Reliability Margin (TRM) as described in NERC Standard MOD-
40 008-1 for its Northern Intertie, West of Garrison E>W and Satsop Injection ATC Paths. The
41 description of how BPA implements TRM can be found in BPA's TRM Implementation
42 Document (TRMID), found on BPAs website. BPA does not maintain TRM for any other ATC
43 Paths.

44 Methodologies Not Applicable to BPA

45 BPA does not use the Area Interchange Methodology (MOD-028-2), the Flowgate
46 Methodology (MOD-030-2), or a Capacity Benefit Margin (CBM) (MOD-004-1). Therefore
47 these standards are not applicable to BPA.

48 ATC Calculations

49 ATC Calculation Periods

50 BPA calculates ATC values using the Rated System Path Methodology for the following time
51 periods: (MOD-001 R2)

- 52 • Hourly values for up to 168 hours. The next hour may be calculated in subhourly
53 intervals, with the most limiting subhourly ATC value being the hourly value. (MOD-001
54 R2.1)
- 55 • Daily values for day 3 through day 90. For days 3 to 7 (up to hour 168), the daily ATC
56 value is the most limiting hourly ATC value for that day. (MOD-001 R2.2)
- 57 • Monthly values for month 2 through month 13. For months 2 and 3 (up to day 90), the
58 monthly ATC value is the most limiting daily ATC value for that month. (MOD-001 R2.3)

59 Frequency of ATC Recalculation

60 BPA recalculates ATC on the following frequency, even if the calculated values
61 identified in the ATC equation are unchanged: (MOD-001 R8)

- 62 • Hourly, at least once per hour. (MOD-001 R8.1)
- 63 • Daily, at least once per day. (MOD-001 R8.2)

64 • Monthly, at least once per day. (MOD-001 R8.3)

65 BPA may recalculate ATC values more frequently due to changes in Total Transfer
66 Capability (TTC), Power Transfer Distribution Factors (PTDFs), system issues or as deemed
67 necessary.

68 **Limiting Assumptions**

69 BPA operates the Bulk Electric System within equipment and electric System thermal,
70 voltage, and Stability Limits so that instability, uncontrolled separation, or cascading
71 failures of the System will not occur as a result of a sudden disturbance or unanticipated
72 failure of the System elements. BPA has some paths that are only thermally limited and
73 some paths that move between being thermally limited and stability limited depending on
74 the outage or System conditions. For those paths that move between being stability
75 limited⁴ and thermally limited, the System conditions for such paths determine the type
76 of limitation and which section of this document applies for the duration of the System
77 conditions.

78 **Stability Limited Paths**

79 BPA studies assumptions of various System conditions to develop the System Operating
80 Limits (SOLs) for its planning of operations. Paths are stability limited when the Stability
81 Limit is lower than the thermal limit. When this is the case BPA uses the SOL as the TTC in
82 its ATC calculations. Therefore when determining the TTC, BPA uses studied assumptions
83 that are no more limiting than those used to determine the SOLs in its planning of
84 operations for the corresponding time period, when such planning of operations has been
85 performed for that time period. (MOD-001 R6)

86 When calculating ATC, BPA subtracts its Existing Transmission Commitments (ETC) from
87 the TTC determined from the studied assumptions that BPA uses to develop SOLs for its
88 planning of operations. No additional studies beyond those developed to determine SOLs
89 and used in calculating TTCs are performed to calculate ATC. BPA may use more recent
90 System condition information in its SOL calculations when the studies are updated after
91 the ETC Cases are performed. However, this is not considered a difference in
92 assumptions. Therefore, there are no different assumptions used to calculate ATC to
93 compare to assumptions used in BPA's planning of operations. (MOD-001 R7)

⁴ Stability limited paths may include COI; North of Hanford, N-S; West of Garrison; Northern Intertie; Cross Cascades North; Cross Cascades South.

94 **Thermally Limited Paths**

95 BPA studies assumptions of various system conditions to develop TTCs for thermally
96 limited paths. When determining the path TTC, BPA studies assumptions that are no more
97 limiting than those used in its planning of operations studies for the corresponding time
98 period, when such planning of operations has been performed for that time period. (MOD-
99 001 R6)

100 BPA may use more recent system condition information in its TTC calculations when the
101 studies are updated after the ETC Cases are performed. However, this is not considered a
102 difference in assumptions. Therefore, there are no different assumptions used to
103 calculate ATC to compare to assumptions used in BPA's planning of operations. (MOD-001
104 R7)

105 **IV. Allocation Processes**

106 BPA uses the same methodology to allocate transfer capability among multiple lines or sub-
107 paths within a larger ATC Path as it uses to allocate transfer capability among multiple
108 owners or users of an ATC Path. For Paths where ownership Agreements exists, the
109 methodology is to allocate transfer capabilities according to contractual rights defined in
110 individual Agreements among the various owners. These Agreements define the specific
111 percentages of capacity or MW amounts of rights assigned to each owner for specific time
112 periods. Agreements do not exist for three of BPA's flow-based ATC Paths: South of Allston
113 S>N, Columbia Injection N>S and Wanapum Injection N>S. For South of Allston S>N the same
114 allocation methodology described in the SOA N>S Contract (#06TX-12300) is used. For
115 Columbia Injection N>S and Wanapum Injection N>S, BPA determines its share of Total
116 Transfer Capability based on BPA's owned transmission lines that make up the flow-based ATC
117 Path when all lines are in service. During outage conditions, individual allocations exist for
118 the loss of each transmission line in the flow-based ATC Path. BPA determines its share of
119 Existing Transmission Commitments for Columbia Injection N>S and Wanapum Injection N>S by
120 modeling the full path of BPA's lines only.

121 At this time BPA does not allocate transfer capabilities between TSPs to address forward-
122 looking congestion management and seams coordination. (MOD-001 R3.5)

123 **V. Outages**

124 Outages from all TSPs that are internal or adjacent to BPA's Balancing Authority Area (BAA)
125 can be mapped to the WECC base cases. (MOD-001 R3.6.3)

126 **Outage Planning**

127 Outage plans and the policy are posted to the Outage Plans website at:
128 <http://www.bpa.gov/transmission/Reports/Pages/Proposed-Outages.aspx>.

129 Outage Criteria for TTC Calculations

130 BPA incorporates outages into the TTC calculations after they have been studied by BPA or
131 provided to BPA by another TOP. Generally, BPA studies outages 10 to 16 days prior to the
132 outage start date.

133 The duration of an outage is not a criteria by which BPA determines which outages to
134 incorporate in its daily and monthly TTC calculations. The most conservative hourly TTC
135 calculated for a given outage or combination of outages becomes the governing TTC for the
136 daily calculation period. Likewise, the most conservative daily TTC for a given outage or
137 combination of outages becomes the governing TTC for the monthly calculation period.
138 (MOD-001 R3.6.1) (MOD-001 R.3.6.2)

139 VI. Priorities Used to Set TTC

140 Stability Limited Paths

141 BPA may update assumptions and calculate new SOLs when changes to System conditions will
142 significantly impact those limits and may use those updated assumptions to determine new
143 TTC values for stability limited paths. The following hierarchy of priorities categorizes the
144 SOL values based on the time period being calculated and the reason for the change. This
145 prioritization may then be used to revise the path TTC for a given time period if BPA
146 determines that more recent assumptions to calculate SOL values better reflect updated
147 System information:

- 148 • **Real-time limit (highest priority):** The “Real-time limit” priority governs when BPA
149 updates the assumptions of system conditions to calculate SOLs during the Real-time
150 horizon. A change to the SOL calculation with the Real-time priority governs all other
151 priorities. For example, if BPA receives an update that a scheduled outage will be
152 extended by two hours early in the Real-time day, BPA will update the assumptions for
153 the SOL calculation accordingly for the additional two hours and may use those same
154 updated assumptions to update the TTC. If there are multiple real-time updates to
155 assumptions for SOL calculations, the most recent SOL calculated governs.
- 156 • **Scheduling limit:** The “scheduling limit” priority may be used occasionally when the
157 assumptions for the SOL are not governing or an actual scheduling limit has been
158 imposed. If there is more than one scheduling limit, the lowest scheduling limit
159 governs until a Real-time limit SOL is submitted.
- 160 • **Pre-schedule forecast:** The “pre-schedule forecast” SOL priority may be used for a
161 Path if the assumptions for the SOL calculations are updated for the pre-schedule
162 period. For example, for SOLs calculated for flow-based ATC Paths that are derived
163 using nomograms, if the assumptions are re-evaluated just prior to the pre-schedule
164 day to incorporate updated data inputs, the TTC may be updated. The pre-schedule
165 forecast TTC governs over the ‘studied’ priority.
- 166 • **Studied:** The “studied” priority is used when there are outages where a study report
167 has been issued, including those provided by other TOPs. For example, if a study
168 report is issued evaluating assumptions for line outage system conditions, the SOLs in
169 that report govern over any lower-priority SOLs for the duration of the line outage
170 conditions.

- 171 • **Estimated known limit:** The “estimated known limit” priority is used to establish
172 unstudied TTCs or to define seasonal Path TTCs that govern over “short-term
173 seasonal” or “Path Rating” priorities.
- 174 • **Short-term seasonal:** The “short-term seasonal” priority is used for TTCs issued for
175 seasonal Path Ratings. As these Ratings may be higher at certain times during the
176 year, the short-term seasonal priority governs over the Path Rating priority. For
177 example, if the longer-term Path Rating for a path is 7800 MW, but seasonally this
178 Rating increases to 8000 MW, the short-term seasonal Rating of 8000 MW governs and
179 is used to set the TTC during the season to which it applies.
- 180 • **Path Rating:** The “Path Rating” priority is used to set base TTCs using either the
181 Rating of the Paths, SOLs studied using normal conditions, SOLs calculated for the
182 planning horizon, or all of the above. The lowest value resulting from the above
183 calculations governs for the given time period and is used to set the TTC. For
184 example, if under normal conditions the SOL for a path is 4410 MW, but the SOL
185 calculated for the planning horizon is 4100 MW, the lower SOL of 4100 MW governs and
186 is used to set the TTC for this flow-based ATC Path.
- 187 • **Informational limit (lowest priority):** The “informational limit” is used while
188 establishing the initial setup of Paths within the scheduling and reservation system.
189 The informational limit is equal to the initial Path Rating of the Path.

190 Thermally Limited Paths

191 BPA may update assumptions and calculate new TTCs when changes to System conditions will
192 significantly impact those limits and may use those updated assumptions to determine new
193 TTC values for thermally limited paths. The following hierarchy of priorities categorizes the
194 TTC values based on the time period being calculated and the reason for the change. This
195 prioritization may then be used to revise the path TTC for a given time period if BPA
196 determines that more recent assumptions to calculate TTC values better reflect updated
197 System information:

- 198 • **Real-time limit (highest priority):** The “Real-time limit” priority governs when BPA
199 updates the assumptions of system conditions to calculate TTCs during the Real-time
200 horizon. A change to the TTC calculation with the Real-time priority governs all other
201 priorities. For example, if BPA receives an update that a scheduled outage will be
202 extended by two hours early in the Real-time day, BPA may update the TTC.
- 203 • **Scheduling limit:** The “scheduling limit” priority may be used occasionally when the
204 assumptions for the TTC are not governing or an actual scheduling limit has been
205 imposed. If there is more than one scheduling limit, the lowest scheduling limit
206 governs until a Real-time limit TTC is submitted.
- 207 • **Pre-schedule forecast:** The “pre-schedule forecast” TTC priority may be used for a
208 Path if the assumptions for the TTC calculations are updated for the pre-schedule
209 period. For example, for TTCs calculated for flow-based ATC Paths that are derived
210 using nomograms, if the assumptions are re-evaluated just prior to the pre-schedule
211 day to incorporate updated data inputs, the TTC may be updated. The pre-schedule
212 forecast TTC governs over the ‘studied’ priority.

- 213 • **Studied:** The “studied” priority is used when there are outages where a study report
214 has been issued, including those provided by other TOPs. For example, if a study
215 report is issued evaluating assumptions for line outage system conditions, the TTCs in
216 that report govern over any lower-priority TTCs for the duration of the line outage
217 conditions.
- 218 • **Estimated known limit:** The “estimated known limit” priority is used to establish
219 unstudied TTCs or to define seasonal Path TTCs that govern over “short-term
220 seasonal” or “Path Rating” priorities.
- 221 • **Short-term seasonal:** The “short-term seasonal” priority is used for TTCs issued for
222 seasonal Path Ratings. As these Ratings may be higher at certain times during the
223 year, the short-term seasonal priority governs over the Path Rating priority. For
224 example, if the longer-term Path Rating for a path is 7800 MW, but seasonally this
225 Rating increases to 8000 MW, the short-term seasonal Rating of 8000 MW governs and
226 is used to set the TTC during the season to which it applies.
- 227 • **Path Rating:** The “Path Rating” priority is used to set base TTCs using either the
228 Rating of the Paths, TTCs studied using normal conditions, TTCs calculated for the
229 planning horizon, or all of the above. The lowest value resulting from the above
230 calculations governs for the given time period and is used to set the TTC. For
231 example, if under normal conditions the TTC for a Path is 4410 MW, but the TTC
232 calculated for the planning horizon is 4100 MW, the lower TTC of 4100 MW governs and
233 is used to set the TTC for this flow-based ATC Path.
- 234 • **Informational limit (lowest priority):** The “informational limit” is used while
235 establishing the initial setup of Paths within the scheduling and reservation system.
236 The informational limit is equal to the initial Path Rating of the Path.

237 VII. Rated System Path Methodology for BPA’s ATC Paths

238 This section describes how BPA implements the Rated System Path methodology for its ATC
239 Paths. It addresses all of the Requirements in Standard MOD-029-2a.

240 BPA’s ATC Paths

241 The following tables list BPA’s ATC Paths. BPA has a combination of 1:1 and flow-based ATC
242 Paths, and uses MOD-029-2a to calculate ATC for both.

243 **Table 1, BPA’s 1:1 ATC Paths**

1:1 ATC Path Name	Direction
Northern Intertie Total On Oasis: NI_TOTL_N>S	(N>S)
Northern Intertie Total On OASIS: NI_TOTL_S>N	(S>N)
Montana-Northwest West of Garrison On OASIS: WOGARR_E>W	(E>W)

1:1 ATC Path Name	Direction
Montana-Northwest West of Garrison On OASIS: WOGARR_W>E	(W>E)
La Grande On OASIS: LAGR_W>E	(W>E)
La Grande On OASIS: LAGR_E>W	(E>W)
Montana Intertie On OASIS: MI_E>W	(E>W)
Reno-Alturas NW Sierra On OASIS: RATS_N>S	(N>S)
Reno-Alturas NW Sierra On OASIS: RATS_S>N	(S>N)
California-Oregon AC Intertie (COI) On OASIS: AC_N>S	(N>S)
California-Oregon AC Intertie (COI) On OASIS: AC_S>N	(S>N)
Pacific DC Intertie On OASIS: DC_S>N	(S>N)
Pacific DC Intertie On OASIS: DC_N>S	(N>S)
Rock Creek On OASIS: ROCKCK_GEN	Gen
John Day Wind On OASIS: JDWIND_GEN	Gen
Satsop Injection On OASIS: SATSOP_GEN	Gen

244

Table 2, BPA's Flow-Based ATC Paths

Flow-based ATC Path	Direction	Transmission Line Components	Case used for base ETC calculation
North of Hanford On OASIS: NOHANF	(N>S)	Vantage-Hanford 500kV; Grand Coulee-Hanford 500kV; and Shultz-Wautoma 500kV	Heavy load case

Flow-based ATC Path	Direction	Transmission Line Components	Case used for base ETC calculation
North of Hanford On OASIS: NOHANF	(S>N)	Vantage-Hanford 500kV; Grand Coulee-Hanford 500kV; and Shultz-Wautoma 500kV	Heavy load case
South of Allston On OASIS: SOALSN	(N>S)	BPA -Owned Transmission Lines: Keeler-Allston 500kV; Lexington-Ross 230kV; and and St. Helens-Allston 115kV; Portland General Electric -Owned Transmission Lines: Trojan-St. Marys 230kV; and Trojan-River Gate 230kV; PacifiCorp-Owned Transmission Lines: Merwin-St. Johns 115kV; Astoria-Seaside 115kV; and and Clatsop 230/115kV	Heavy load case
South of Allston On OASIS: SOALSN	(S>N)	BPA -Owned Transmission Lines: Keeler-Allston 500kV; Lexington-Ross 230kV; and St. Helens-Allston 115kV; Portland General Electric -Owned Transmission Lines: Trojan-St. Marys 230kV; and Trojan-River Gate 230kV; PacifiCorp-Owned Transmission Lines: Merwin-St. Johns 115kV; Astoria-Seaside 115kV; and Clatsop 230/115kV	Heavy load case
Paul-Allston On OASIS:PAUL_ALSN	(N>S)	Napavine-Allston #1 500kV; and Paul-Allston #2 500kV	Heavy load case

Flow-based ATC Path	Direction	Transmission Line Components	Case used for base ETC calculation
Raver-Paul On OASIS: RAVR_PAUL	(N>S)	Raver-Paul 500 kV Line During outage conditions, the following lines are monitored: Raver – Paul #1 500-kV; St. Clair – South Tacoma #1 230kV; Chehalis – Covington #1 230kV; Puget Sound Energy-Owned Transmission Lines: Frederickson– St. Clair 115kV; Electron Heights – Blumaer 115kV	Heavy load case
Cross Cascades North On OASIS: C-CASC_N	(E>W)	BPA-Owned Transmission Lines Schultz-Raver #1, 3, & 4 500kV; Schultz-Echo Lake #1 500kV; Chief Joseph-Monroe 500kV; Chief Joseph-Snohomish #3 & 4 345kV; Rocky Reach-Maple Valley 345kV; Grand Coulee-Olympia 287kV; Bettas Road - Covington #1 230kV. Puget Sound Energy-Owned Transmission Line Rocky Reach – Cascade 230 kV	Heavy load case
Cross Cascades South On OASIS: C-CACS_S	(E>W)	Big-Eddy-Ostrander 500kV; Ashe-Marion 500kV; Buckley-Marion 500kV; Knight-Ostrander 500kV; John Day-Marion 500kV; McNary-Ross 345kV; Big Eddy-Chemawa 230kV; Big Eddy-McLoughlin 230kV; Midway-North Bonneville 230kV; Jones Canyon-Santiam 230kV; and Big Eddy-Troutdale 230kV PGE-Owned Transmission Line Bethel – Round Butte 230 kV	Heavy load case
West of McNary On OASIS: WOMCNY	(E>W)	Coyote Springs-Slatt #1 500kV; McNary-Ross #1 345kV; Harvalum – Big Eddy #1 230 kV; Jones Canyon-Santiam #1 230kV; McNary-John Day #2 500kV	Heavy load case

Flow-based ATC Path	Direction	Transmission Line Components	Case used for base ETC calculation
West of Slatt On OASIS: WOSLATT	(E>W)	Slatt-Buckley 500kV; and Slatt-John Day 500kV	Heavy load case
West of John Day On OASIS: WOJD	(E>W)	John Day – Big Eddy No. 1 500-kV line (metered at John Day); John Day – Big Eddy No. 2 500-kV line (metered at John Day); and John Day – Marion No. 1 500kV	Heavy load case
South of Boundary On OASIS: SBNDRY	(N>S)	Bell – Boundary #1 230kV; Bell – Boundary #3 230kV; Usk – Boundary #1 230kV; and Boundary 230/115kV Transformer #1	Heavy load case
Columbia Injection On OASIS: CLMBIA	(N>S)	Columbia-Grand Coulee #1 230-kV (metered at Columbia); Columbia-Grand Coulee #3 230-kV (metered at Columbia); Rocky Reach-Columbia #1 230-kV (metered at Columbia); Rocky Reach-Columbia #2 230-kV (metered at Columbia); Columbia-Valhalla #1 115-kV (metered at Columbia); and Columbia-Valhalla #2 115-kV (metered at Columbia)	Heavy load case
Wanapum Injection On OASIS: WANAPM	(N>S)	Midway-Vantage #1 230-kV; and Midway-Priest Rapids #3 230-kV	Heavy load case
West of Lower Monumental On OASIS: W_LOMO	(E>W)	Ashe – Lower Monumental 500kV; Hanford – Lower Monumental 500kV; and McNary – Lower Monumental 500kV	Heavy load case
North of Echo Lake On OASIS: N_ECOL	(S>N)	Echo Lake – Monroe - SnoKing Tap #1 500kV; Echo Lake – Maple Valley #1 500 kV; Echo Lake – Maple Valley #2 500kV; and Covington – Maple Valley #2 230kV	Heavy load case

Flow-based ATC Path	Direction	Transmission Line Components	Case used for base ETC calculation
South of Custer On OASIS: SCSTER	(N>S)	Monroe - Custer #1 500kV; Monroe - Custer #2 500kV; Bellingham - Custer #1 230kV; and Murray - Custer #1 230kV Line	Heavy load case
West of Hatwai On OASIS: WOH_E>W	(E>W)	Lower Granite-Hatwai 500-kV line Grand Coulee-Bell 6 500-kV line Grand Coulee-Bell 3 230-kV line Grand Coulee-Bell 5 230-kV line Grand Coulee-Westside 230-kV line Talbot-Dry Creek 230-kV line Tucannon River-North Lewiston 115-kV line Devils Gap-Stratford 115-kV line Lind-Warden 115-kV line Creston-Bell 1 115kV line Dry Gulch-Pomeroy 69-kV line	Light load case

245 BPA will select the Rated System Path Methodology if new ATC Paths are implemented,
246 and update the appropriate table above. (MOD-001 R1)

247 **Calculating Total Transfer Capability (TTC)**

248 **Data and Assumptions**

249 When calculating TTC for its ATC Paths, BPA uses WECC base cases that utilize data and
250 assumptions consistent with the time period being studied. (MOD-029, R1.1) In addition to
251 BPA’s TOP area, these WECC base cases model the entire Western Interconnection.
252 Hence, the WECC base cases include all TOP areas regardless if they are either contiguous
253 to BPA’s TOP area or are linked to BPA’s TOP area by a joint operating Agreement. (MOD-
254 029 R1.1.1.2, R1.1.1.3)

255 TOP areas contiguous with BPA’s TOP area include (MOD-029 R1.1.1.2):

- 256 • Avista Corporation (AVA)
- 257 • BC Hydro (BCH)
- 258 • California Independent System Operator (CAISO)
- 259 • City of Tacoma, Department of Public Utilities, Light Division
- 260 • Eugene Water and Electric Board (EWEB)
- 261 • Idaho Power Company (IPCO)
- 262 • Los Angeles Department of Water and Power (LADWP)
- 263 • NorthWestern Energy (NWMT)
- 264 • NV Energy

- 265 • PacifiCorp (PAC)
- 266 • Pend Oreille County Public Utility District No. 1
- 267 • Portland General Electric (PGE)
- 268 • Public Utility District No. 1 of Chelan County
- 269 • Public Utility District No. 1 of Clark County
- 270 • Public Utility District No. 1 of Snohomish County
- 271 • Public Utility District No. 2 of Grant County, Washington
- 272 • PUD No. 1 of Douglas County
- 273 • Puget Sound Energy, Inc. (PSEI)
- 274 • Seattle City Light (SCL)

275 BPA uses the following data and assumptions in the WECC base cases when calculating
 276 TTCs for its ATC Paths:

277 BPA models all existing System Elements in their normal operating condition for the
 278 assumed initial conditions, up to the time horizon in which BPA begins modeling
 279 outages (see Section V, “Outages”). (MOD-029 R1.1.2)

280 The WECC base cases include generators and phase shifters that meet the guidelines
 281 set out in the WECC Data Preparation Manual. (MOD-029 R1.1.3) (MOD-029 R1.1.4)

282 BPA uses the seasonal Load forecasts contained in the WECC base cases for each BA.
 283 (MOD-029 R1.1.5)

284 Generation and Transmission Facility additions and retirements within the WECC
 285 footprint are included in the WECC seasonal operating base cases for the season in
 286 which they are energized/de-energized, respectively. BPA engineers modify the WECC
 287 base cases to reflect the actual dates of energization/de-energization. (MOD-029
 288 R1.1.6, R1.1.7)

289 The WECC base cases include Facility Ratings as provided to WECC by the Transmission
 290 Owners and Generator Owners. (MOD-029 R1.2)

291 If Facility changes are made by BPA or another entity, then the base cases will be
 292 updated to reflect these changes with a Mid-Season update. (MOD-029 R1.1, R1.2)

293 The approved seasonal operating base cases that include the Facility changes will not
 294 be used until 0 to 16 days prior to the energization or implementation of the Facility
 295 change. (MOD-029 R1.1, R1.2)

296 For periods beyond two weeks, the WECC base cases will be updated as necessary to
 297 perform seasonal studies for the current or upcoming season in accordance with the
 298 current BPA study processes. (MOD-029 R1.1, R1.2, R2.1)

299 For stability limited paths, except West of Garrison and Northern Intertie South to
 300 North, BPA uses the minimum SOL from the relevant seasonal studies when there are
 301 no studied outages to set the TTC of the path for the corresponding seasonal time
 302 periods.

303 For West of Garrison, for the seasons or time periods in which the seasonal studies
304 have not been completed, the most recent year’s seasonal study results will be used
305 for setting the TTC for the relevant Path.

306 For Northern Intertie South to North, for the seasons or time periods in which the
307 seasonal studies have not been completed, the most recent year’s seasonal study
308 results will be used for setting the TTC for the relevant Path. BPA uses the minimum
309 SOL from the relevant seasonal studies to set the TTC of the Path for periods from the
310 next day and beyond. For the Real-time horizon, when there are no studied outages,
311 BPA uses the maximum SOL from the relevant seasonal studies to set the TTC of the
312 Path.

313 For thermally limited paths, BPA uses a TTC from the relevant seasonal studies when
314 there are no studied outages to set the TTC of the path for the corresponding seasonal
315 time periods.

316 BPA models Special Protection Systems (BPA uses the term Remedial Action Schemes
317 or RAS) that currently exist or are projected for implementation within the studied
318 time horizon. (MOD-029 R1.1.8)

319 The WECC base cases include all series compensation for each line at the expected
320 operating level. (MOD-029 R1.1.9)

321 BPA uses no other modeling requirements for calculating TTC in addition to those
322 specified in this document. (MOD-029 R1.1.10)

323 **Process to Determine TTC**

324 BPA adjusts generation and Load levels within the WECC power-flow base cases to
325 determine the TTC that can be simulated for each of its ATC Paths, while at the same
326 time satisfying all planning criteria contingencies, as follows:

327 BPA studies single and multiple contingencies that are relevant to the Path being studied.
328 (MOD-029 R2.1)

329 When modeling normal conditions, BPA models all Transmission Elements in BPA’s BAA and
330 adjacent BAAs at or below 100 percent of their continuous Rating. (MOD-029 R2.1.1)

331 When modeling contingencies for stability limited paths, refer to the current version of
332 “RC West System Operating Limits Methodology for the Operations Horizon” (RC West SOL
333 Methodology) posted on RC West’s website <https://rc.caiso.com> for a detailed description
334 of how BPA determines SOLs used to set TTCs. (MOD-029 R2.1.2)

335 When modeling contingencies for thermally limited paths, BPA determines TTCs by
336 stressing the system until flows exceed emergency Facility Ratings or voltages fall outside
337 emergency system voltage limits (i.e., the post-Contingency state). If a facility does not
338 have an emergency Facility Rating, the normal Facility Rating is used. If there is no
339 emergency system voltage limit, the normal system voltage limit is used. (MOD-029
340 R2.1.2) By meeting the criteria in the RC West SOL Methodology, uncontrolled separation
341 should not occur. (MOD-029 R2.1.3)

342 The Available Transfer Capability (ATC) Paths listed below, for which BPA uses the Rated
343 System Path Methodology, have TTCs from studies in only the prevailing direction of flow.
344 The TTC values for the non-prevailing direction of flow are determined as follows:

345 For paths: West of Hatwai, Columbia Injection, Wanapum Injection, South of Custer,
346 North of Echo Lake, South of Boundary, West of Lower Monumental, and the Montana
347 Intertie;

348 Use the prevailing flow direction TTC as the non-prevailing flow direction TTC

349 For paths: Paul-Allston, Raver-Paul, West of McNary, West of Slatt, and West of John Day;

350 Use the non-RAS TTC as the non-prevailing flow direction TTC

351 All of BPA's other ATC Paths have either reliability-based SOLs or TTCs in both the
352 prevailing and non-prevailing directions of flow. (MOD-029 R2.2)

353 For ATC Paths where TTC varies due to simultaneous interaction with one or more other
354 Paths, BPA develops a nomogram, represented either by an equation or its graphical
355 representation, describing the interaction of the Paths and the resulting TTC under
356 specified conditions. BPA then calculates a value, based on that nomogram and
357 forecasted System conditions for the time period studied, to develop its TTC values for
358 the affected ATC Paths. (MOD-029 R2.4)

359 BPA or the adjacent Path TOP identifies when the new or increased TTC for an ATC Path
360 being studied by BPA or the adjacent Path TOP has an adverse impact on the TTC value of
361 another existing Path by modeling the flow on the Path being studied at its proposed new
362 TTC level, while simultaneously modeling the flow on the existing Path at its TTC level. In
363 doing so, BPA or the adjacent Path TOP honors the reliability criteria described above.
364 BPA or the adjacent Path TOP includes the resolution of this adverse impact in its study
365 report for the ATC Path. (MOD-029 R2.5)

366 BPA has Transmission Ownership Agreements where multiple ownerships of Transmission
367 rights exist on an ATC Path. TTC for the affected ATC paths is allocated according to
368 contractual ownership rights. See section IV, "Allocation Processes" for further details.
369 (MOD-029 R2.6)

370 The ratings for BPA's Available Transfer Capability (ATC) Paths whose ratings were
371 established, known, and used in operation since January 1, 1994, have been re-
372 established using updated methods. BPA studies its ATC Paths, with the exception of
373 LaGrande, on a periodic basis and reconfirms the rating of each ATC Path based on these
374 studies. These ratings are then used to establish the Total Transfer Capability for the
375 path.

376 For the LaGrande path, BPA uses the Accepted Rating of the path as defined in the WECC
377 Path Rating Catalog. BPA's LaGrande path is part of the NW-Idaho path (WECC Path
378 14). The rating of Path 14 was reconfirmed through an updated study in 2010 when the
379 path definition had to be modified due to the addition of the Hemingway Substation by
380 PAC and Idaho Power.

381 BPA creates a study report that describes the TTC applicable to the outages during the
382 studied time period and includes the limiting Contingencies and the limiting cause for the
383 calculated TTC. The RC West SOL Methodology document (RC West SOL Methodology
384 posted at: <https://rc.caiso.com>) defines the steps taken and assumptions BPA used to
385 determine TTC for each stability limited ATC path. BPA creates a study report for each
386 study it performs. The study report relies on the basic assumptions included in RC West
387 SOL methodology and identifies any changes to those basic assumptions. (MOD-029 R2.8)

388 As described in Section III, “Overview,” information regarding TTCs is shared electronically
389 between the appropriate BPA organizations within seven calendar days of the finalization of
390 the study report for the TTCs. BPA sends a notice to all TSPs for the ATC Paths listed in Table
391 1 where there are multiple TSPs *prior* to limitations in TTCs. (MOD-029 R4)

392 These notices are called Notices of Planned Path Limitation. Where BPA has performed a
393 study, the notice states that the TTC study report is available to TSPs for the specific Path
394 within seven calendar days upon request to nercatcstandards@bpa.gov with **TTC Study
395 Report Request** in the subject line. Use the **TTC Study Report Request Form** found on BPA’s
396 website shown below to submit the request.

397 <https://www.bpa.gov/transmission/Doing%20Business/ATCMethodology/Pages/default.aspx>

398 An ATC Path for which BPA does not perform studies to determine the most current value of
399 TTC is Reno - Alturas NW Sierra (RATS). For RATS, NV Energy determines TTC. The TTC
400 Ratings are provided to BPA and BPA then sends a Notice of Planned Path Limitation. (MOD-
401 029 R3)

402 **Calculating Firm Transmission Service for ATC Paths**

403 **Calculating Firm Existing Transmission Commitments (ETC_F)**

404 When calculating ETC_F for all time periods for its ATC Paths, BPA uses the following algorithm
405 as specified in MOD-029 R5:

$$406 \text{ETC}_F = \text{NL}_F + \text{NITS}_F + \text{GF}_F + \text{PTP}_F + \text{ROR}_F + \text{OS}_F$$

407 **Where:**

408 **NL_F** is the firm capacity set aside to serve peak Native Load forecast commitments for the
409 time period being calculated, to include losses, and Native Load growth, not otherwise
410 included in Transmission Reliability Margin or Capacity Benefit Margin.

411 BPA does not have any **NL_F**, and thus sets **NL_F** at zero for all of its ATC Paths for all time
412 periods. All of BPA’s firm Transmission obligations are captured in the **NITS_F**, **PTP_F**, **GF_F**
413 and **ROR_F** components of the ETC_F algorithm.

414 **NITS_F** is the firm capacity reserved for Network Integration Transmission Service serving Load,
415 to include losses, and Load growth, not otherwise included in Transmission Reliability Margin
416 or Capacity Benefit Margin.

417 For BPA's 1:1 ATC Paths where NITS_F commitments exist to serve Network Load outside
418 BPA's BAA, the firm capacity set aside for NITS_F is equal to the Load forecast, which
419 includes losses and Load growth, minus generation outside BPA's BAA that is designated to
420 serve that Load. For BPA's 1:1 ATC Paths where NITS_F commitments exist to serve
421 Network Load inside BPA's BAA from a forecasted or designated network resource that
422 impacts the ATC Path, the firm capacity set aside for NITS_F is equal to the amount the
423 resource is forecasted/designated for.

424 For BPA's flow-based ATC Paths, BPA accounts for NITS_F obligations with a combination of
425 base ETC and interim ETC calculations, as described further in this document.

426 **GF_F** is the firm capacity set aside for grandfathered Transmission Service and contracts for
427 energy and/or Transmission Service, where executed prior to the effective date of a
428 Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

429 The amount of GF_F BPA sets aside across its 1:1 ATC Paths is based on the terms of each
430 individual contract.

431 For BPA's flow-based ATC Paths, BPA accounts for GF_F obligations with base ETC
432 calculations, as described further in this document.

433 **PTP_F** is the firm capacity reserved for confirmed Point-to-Point Transmission Service.

434 In BPA's calculations for 1:1 ATC Paths, PTP_F is equal to the sum of the MW Demands of
435 PTP_F reservations or schedules.

436 For BPA's flow-based ATC Paths, BPA accounts for PTP_F obligations with a combination of
437 base ETC and interim ETC calculations, as described further in this document.

438 In some cases, BPA has PTP_F contracts that give customers the right to schedule between
439 multiple Points of Receipt (PORs) and Points of Delivery (PODs). However, the customer
440 can only schedule up to the MW amount specified in their contract. Multiple reservations
441 are created for these special cases to allow BPA to model each POR-to-POD combination.
442 The amount set aside for these cases does not exceed the total PTP_F rights specified in
443 the contracts.

444 **ROR_F** is the firm capacity reserved for roll-over rights for contracts granting Transmission
445 Customers the right of first refusal to take or continue to take Transmission Service when the
446 Transmission Customer's Transmission Service contract expires or is eligible for renewal.

447 BPA assumes that all of its Transmission Service Agreements eligible to roll-over in the
448 future will be rolled over. If a Transmission Customer chooses not to exercise its roll-over
449 rights by the required deadline, BPA no longer holds out capacity for roll-over rights for
450 that Transmission Customer.

451 **OS_F** is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not
452 specified above using Firm Transmission Service as specified in the ATCID.

453 BPA has no OS_F and thus sets OS_F at zero for all of its ATC Paths for all time periods. All of
454 BPA's firm Transmission obligations are captured in the NITS_F, PTP_F, GF_F and ROR_F
455 components of the ETC_F algorithm.

456 Although BPA uses the above algorithm to calculate ETC_F for all of its ATC Paths, BPA's ETC_F
457 calculation methodology differs between its 1:1 and Flow-based ATC Paths. For 1:1 ATC
458 Paths, BPA calculates ETC_F by assuming that 1 MW of reserved firm capacity equals 1 MW of
459 ETC_F across that ATC Path. For the Flow-based ATC Paths, BPA calculates ETC_F by summing
460 the base ETC from power-flow ETC studies with interim ETC_F calculated using Power Transfer
461 Distribution Factors.

462 **Determining base ETC for Flow-Based ATC Paths**

463 **Use of WECC Base Cases to Determine Base ETC**

464 BPA uses the WECC seasonal base cases and modifies them to calculate the base ETC
465 for its flow-based ATC Paths. BPA refers to these base cases as ETC Cases.

466 The WECC base cases include generation and Transmission expected to be in service or
467 available for service for the time period studied. The WECC base cases reflect input
468 from the WECC Significant Additions Report, which details retirements and new
469 additions, including those from other TSPs. BPA models new Transmission additions
470 for its own System in the WECC base cases as out of service until the energization date
471 is within 0-16 days out, which is the time period BPA has determined to provide
472 enough certainty about the date of energization.

473 The WECC base cases that BPA uses meet the following criteria:

474 The WECC base cases include generator data in the power flow with generation
475 maximum (P_{max}) reflecting the capability of the units. Under no circumstances is
476 P_{max} greater than the maximum capability of the unit. BPA always uses the power
477 flow (P_{gen}) or optimal output of the generator at or within the P_{max} and P_{min} Ratings
478 for generators that are in service. Within each base case, the individual Generator
479 Owners are identified by numeric code.

480 The WECC base cases model the entire Western Interconnection, including AC
481 Transmission Lines 115kV and above and all DC Transmission Lines. Significant looped
482 Transmission Lines rated at less than 115 kV are also included in the WECC base cases.

483 **Determining Base ETC for Heavy Load Base Cases**

484 BPA creates monthly heavy load ETC Cases to calculate base ETC values. BPA's ETC
485 Cases are produced using a power flow model that computes how much power will
486 flow over each flow-based ATC Path for the assumed Load and generation levels for
487 each time period studied. Counterflows are inherently modeled in these base cases.

488 BPA uses the following assumptions to create heavy load ETC Cases for its base ETC
489 calculations:

490 **System topology:** Normal operating conditions are used. BPA uses the WECC Winter
491 seasonal case for its November through March ETC base cases, the WECC Spring
492 seasonal case for its April and May ETC base cases, and the WECC Summer seasonal
493 case for its June through October ETC base cases.

494 **Load:** BPA uses Loads contained in the WECC seasonal base cases for the time periods
495 being studied, along with any updates to those Loads BPA may have made after the
496 WECC base cases were received from WECC.

497 • **NITS_F, PTP_F and GF_F:** BPA assumes a 1-in-2 year monthly heavy load forecast in all
498 its monthly ETC cases

499 **Generation:** For the generators in BPA’s Balancing Authority or directly
500 interconnected to BPA, BPA uses the following generation assumptions:

501 **FCRPS:** For the FCRPS resources serving NITS_F, PTP_F, and GF_F Long-Term Reservations,
502 generation levels are set using a multiple-step process. For all time periods studied,
503 BPA uses the following process:

504 • The Columbia Generating Station is assumed to be on-line at full Load in the ETC
505 cases. Generation levels at the Libby, Hungry Horse, Dworshak, and Albeni Falls
506 projects are set based on the requirements set forth in the 2000 Biological
507 Opinion. For November through May ETC cases, the generation levels at the
508 Willamette Valley projects⁵ are set at the minimum levels seen by season during
509 Calendar Year 2001. For the June through October ETC cases, the generation
510 levels at the Willamette Valley projects are set at a monthly fleet-aggregate lower
511 10th percentile of Heavy Load Hour block generation from the planning period of
512 record and adjusted as needed to accurately reflect operations that BPA knows are
513 in place. BPA is transitioning the modeling of the Willamette Valley projects in its
514 ETC cases to this latter method. **Nameplate Adjusted Method:** When creating
515 heavy load ETC Cases, generation levels for all other federal hydro projects⁶ are
516 set by first determining the nameplate for each project and then adjusting such
517 nameplates by outages forecasted for the particular plants. Next in the month of
518 August, the Lower Snake plants (Lower Granite, Lower Monumental, Little Goose,
519 and Ice Harbor) are capped at the observed project outflow over the past ten
520 Augusts. Then multiple generation scenarios are modelled by stressing one of
521 three different “zones” of Federal hydro resources to the nameplate adjusted
522 generation levels described above and scales the generation at the remaining
523 Federal hydro projects to match the sum of the demands for all contracts that call
524 out non-specific Federal hydroelectric projects as PORs after adjusting these
525 demands for the portion served by Columbia Generating Station, Libby, Hungry
526 Horse, Dworshak, Albeni Falls, and the Willamette Valley projects. The Federal
527 PTP demands at each project are then added to this result to obtain the final
528 assumed generation level for each Federal hydro project. This overall method for
529 modeling the federal resources is referred to as the Nameplate Adjusted Method.

⁵ Willamette Valley projects include: Big Cliff, Cougar, Detroit, Dexter, Foster, Green Peter, Hills Creek, Lookout Point, and Lost Creek.

⁶ Federal hydro projects include: Grand Coulee, Chief Joseph, Lower Granite, Lower Monumental, Little Goose, Ice Harbor, McNary, John Day, The Dalles, Bonneville.

530 **Non-Federal Thermal Generators:** Non-federal thermal generators associated with
531 PTP_F, GF_F and NITS_F Transmission Service for BPA’s area and all adjacent TSP areas are
532 set at up to the contract Demand.

533 **Wind Generators:**

- 534 • **PTP_F:** Wind generators associated with PTP_F Long-Term Reservations are set at
535 the greater of the following:
 - 536 ○ Modeled on at 100 percent of the contract demand for the wind
537 generator; or
 - 538 ○ Modeled off and replaced by the “Balancing Logic Method”.
 - 539 • **NITS_F:** The flow-based ATC Path impacts of wind generators identified as
540 designated network resources in NITS_F contracts or in the NT Resources
541 Memorandum of Agreement in BPA’s area are determined on a flow-based ATC
542 Path-by-flow-based ATC Path basis and set at the greater of the following:
 - 543 ○ The wind generators modeled on at the designated amount of the wind
544 generators; or,
 - 545 ○ The wind generators modeled off and replaced by increasing the FCRPS
546 generation level by the designated amount of the wind generators using
547 the “Nameplate Adjusted Method” for all ETC cases described above.
- 548 Wind generators designated as network resources in NITS_F contracts for all
549 adjacent TSPs are modeled up to the designated amount.
- 550 • **GF_F:** BPA and all of BPA’s adjacent TSPs have no GF_F contracts for wind
551 generators.

552 **Behind the Meter Generators:** Non-federal resources that do not require
553 Transmission Service over the FCRTS and that are behind the meter are set up to
554 levels used in BPA’s process for power system planning studies.

555 **Mid-Columbia Hydro Projects:** Generation levels at the non-federal Mid-Columbia
556 hydro projects are set up to 90 percent of their historical output by season.

557 When creating heavy load ETC Cases, if there is more generation than load plus
558 committed exports in the base case, BPA reduces all excess generation prorata, except
559 for the stressed FCRPS zone, using the “Balancing Logic Method”; the exports modeled
560 on the COI and Pacific DC Intertie in the base case are reduced to match BPA’s
561 obligation for firm export. The generation reduction is done to bring generation and
562 load into balance in order to solve the power flow model.

563 **Sensitivity Studies for Heavy Load Base Cases**

564 In calculating its base ETC values, BPA runs ETC Case Scenarios for three different
565 sensitivities: the Canadian Entitlement Return (CER) obligation modeled on or off,
566 wind resources designated to serve PTP_F and NITS_F on or off, and stressing the three
567 different zones of the FCRPS.

568 For the FCRPS scenarios, the three “zones” that are stressed individually in the
569 scenarios are made up of the following projects: (i) Upper Columbia zone includes
570 Grand Coulee and Chief Joseph; (ii) Lower Snake zone includes Lower Monumental,
571 Lower Granite, Little Goose, and Ice Harbor; and (iii) Lower Columbia zone includes
572 McNary, John Day, The Dalles and Bonneville.

573 For the CER Scenarios, BPA models the FCRPS generators delivering or not delivering
574 energy to Canada in the amount specified in the Canadian Entitlement Agreement.

575 In the case where BPA models the FCRPS generators delivering energy to Canada,
576 exports to Canada for the CER and the FCRPS generation level using the “Nameplate
577 Adjusted Method” are increased by the amount specified in the Canadian Entitlement
578 Agreement.

579 In the case where BPA models the FCRPS generators not delivering energy to Canada,
580 exports to Canada for the CER and the FCRPS generation levels using the “Nameplate
581 Adjusted Method” are reduced by the MW amount specified in the Canadian
582 Entitlement Agreement.

583 For the wind resource scenarios, see above for a description of the base ETC
584 assumptions for wind generators serving PTP_F and NITS_F.

585 Therefore, in its heavy load base ETC sensitivity analysis, BPA models the following 6
586 scenarios:

- 587 1. Wind modeled off/Upper Columbia stressed
- 588 2. Wind modeled off/Lower Snake stressed
- 589 3. Wind modeled off/Lower Columbia stressed
- 590 4. Wind modeled on/Upper Columbia stressed
- 591 5. Wind modeled on/Lower Snake stressed
- 592 6. Wind modeled on/Lower Columbia stressed

593 All scenarios are run for (i) April, May, June, July, August, September and October
594 with CER modeled off and (ii) all months with CER modeled on.

595 BPA uses the highest base ETC value calculated from these scenarios in its firm ATC
596 calculations across the flow-based ATC Paths. BPA uses the lowest base ETC value
597 from these scenarios in its non-firm ATC calculations across the flow-based ATC Paths.
598 The lowest base ETC value is accounted for using an SADJ in the non-firm ATC
599 calculation.

600 **Determining Base ETC and Sensitivities for Light Load Base Cases**

601 BPA uses the WECC Winter seasonal light load case as the starting point for its Winter
602 seasonal light load ETC base case. The ETC from this case is used as the base ETC for
603 the months of November through March.

604 BPA uses the WECC Summer seasonal light load case as the starting point for its
605 Summer light load ETC base case. The ETC from the Summer case is used as the base
606 ETC for the months of April through October.

607 BPA uses the following assumptions in light load ETC base cases:
608 a. System topology: Normal operating conditions are used.
609 b. Loads: Loads from the WECC light load cases are used.
610 c. Generation: BPA uses generation assumptions from historical data. Canadian
611 Entitlement is modeled as delivering energy to Canada in the amount specified
612 in the Canadian Entitlement Agreement.

613 There are two sensitivity studies performed for the light load ETC base cases:
614 a. Federal generation east of the path is increased, and a corresponding amount
615 of federal generation west of the path is reduced
616 b. Federal generation east of the path is reduced, and a corresponding amount of
617 federal generation west of the path is increased

618 BPA uses the highest base ETC value calculated from these scenarios in its firm ATC
619 calculations across the flow-based ATC Paths where light load cases are utilized. BPA
620 uses the lowest base ETC value from these scenarios in its non-firm ATC calculations
621 across the flow-based ATC Paths where light load cases are utilized. The lowest base
622 ETC value is accounted for using an SADJ in the non-firm calculation.

623 **Calculating Interim ETC_F for Flow-based ATC Paths**

624 To calculate the impacts for all NITS_F and PTP_F reservations that were not modeled in the
625 base ETC cases, BPA uses PTDF analysis on the demand in each reservation. PTDF analysis
626 is the fraction of energy (expressed as a percentage or as a decimal) that will flow across
627 BPA's monitored flow-based ATC Paths as that energy is injected at a POR (or source)
628 relative to a slack bus, and withdrawn at a POD (or sink) relative to a slack bus, for each
629 flow-based ATC Path.

630 PTDF impacts are calculated as per BPA's Transmission Service Requests Evaluation
631 business practice. If a reservation's impact on a flow-based ATC Path is determined to be
632 *de minimis* per the Transmission Service Requests Evaluation business practice, then BPA
633 deems the impact of the reservation to be zero when calculating ETC_F.

634 The sum of these positive impacts is referred to as the interim ETC_F value, and is added to
635 the base ETC values to produce a final ETC_F value for each time period for each flow-
636 based ATC Path.

637 **Outages in PTDF Calculations**

638 BPA calculates PTDFs by adjusting the WECC base cases to include transmission
639 outages in BPA's outage system for BPA's area and any adjacent TSP areas. Note that
640 BPA has no executed coordination Agreements with other TSPs. (MOD-001 R3.6)

641 **Outage Criteria in ETC Calculations**

642 BPA uses the outage planning timeline described in the "Outages" section. The
643 following criteria determine which outages are incorporated into BPA's hourly, daily
644 and monthly ETC calculations: (MOD-001 R3.6)

645 **Hourly ETC Calculations**

646 For its hourly ETC calculations, BPA uses hourly PTDFs published at least once per
647 day. Transmission outages for Transmission Lines, sections of Transmission Lines,
648 transformers and taps are used to set branches as *open* in the appropriate base
649 case for the hour being calculated.

650 **Daily ETC Calculations**

651 For its daily ETC calculations, BPA uses the most recent PTDFs published for the
652 hour ending 11 of each day, since hour ending 11 tends to have the highest
653 coincidence of outages. Therefore all Transmission outages scheduled to occur
654 during the hour ending 11, regardless of the duration of the outage, impact daily
655 ETC calculations. (MOD-001 R3.6.1)

656 BPA includes Transmission outages in daily ETC calculations beyond the 10- to 16-
657 day planned outage study period if the outage is officially scheduled in BPA's
658 outage system.

659 **Monthly ETC Calculations**

660 For its monthly ETC calculations, BPA uses the most recent daily PTDFs published
661 for the first Tuesday of that month. BPA includes Transmission outages in monthly
662 ETC calculations beyond the 10- to 16-day planned outage study period if the
663 outage is officially scheduled in BPA's outage system. (MOD-001 R3.6.2)

664 **Source/POR and Sink/POD Identification and Mapping**

665 In the ETC components of its flow-based ATC Path ATC calculations, BPA accounts for
666 source and sink for Transmission Service through the following processes:

667 BPA maps the source/POR and sink/POD to the WECC base cases. In this mapping, BPA
668 has assigned network bus points that represent the primary interface for
669 Interconnection with specific generation projects, adjacent electrical Systems or
670 Load-serving entities and trading hubs. Some adjacent electrical Systems have
671 multiple Interconnection points deemed as PORs/sources or PODs/sinks. The mapping
672 of these points is published in the Transmission Service Contract Points list on BPA's
673 OASIS homepage.

674 The source used in BPA's flow-based ATC Path ATC calculations of transactions within
675 BPA's BAA is obtained from the POR field for Short-Term Reservations and the source
676 field for Long-Term Reservations, as shown on the TSR template in OASIS. BPA
677 represents the impact of Transmission Service using the source or POR as follows:

- 678 • If the source or POR has been identified in the reservation and is discretely
679 modeled in the WECC base cases, BPA uses the discretely modeled point as the
680 source.

- 681
- 682
- 683
- 684
- 685
- In cases where the source or POR has been identified in the reservation and the point can be mapped to an “equivalent” or “aggregate” representation in the WECC base cases, BPA maps the source to the equivalence point in the WECC base cases. These points are published in the Transmission Service Contract Points List on BPA’s OASIS home page.
 - If the source or POR has been identified in the reservation and the point cannot be mapped to a discretely modeled point or an “equivalence” representation in the WECC base cases, BPA uses the immediately adjacent BA associated with the TSP from which the power is to be received as the source.
 - BPA requires a specified source or POR to be identified for all reservations.

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The sink used in BPA’s flow-based ATC Path ATC calculations of transactions within BPA’s BAA is obtained from the POD field for Short-Term Reservations and the sink field for Long-Term Reservations, as shown on the TSR template in OASIS. BPA represents the impact of Transmission Service using the sink or POD as follows:

- If the sink or POD has been identified in the reservation and is discretely modeled in the WECC base cases, BPA uses the discretely modeled point as the sink or POD.
- In cases where the sink or POD has been identified in the reservation and the point can be mapped to an “equivalent” or “aggregate” representation in the WECC base case, BPA maps the sink or POD to the equivalence points in the WECC base cases. These points are published in the Transmission Service Contract Points list on BPA’s OASIS home page.
- If the sink or POD has been identified in the reservation and the point cannot be mapped to a discretely modeled point or an “equivalence” representation in the WECC base cases, BPA uses the immediately adjacent BA associated with the TSP receiving the power as the sink or POD.
- BPA requires a specified sink or POD to be identified for all reservations.

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BPA has grouped the FCRPS generators in BPA’s BAA and the Mid-Columbia generators based on the primary interface between BPA and the generation projects. These groupings are assigned weighted PTDFs that represent how the generators participate in the group. The weighted PTDF for the FCRPS bus point is derived from a “weighted FCRPS” bus point.

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The PTDF weighting for this point varies by time period and path based on stress scenarios. The PTDF weighting is derived from generation forecasts of the federal resources, for calculations for the next hour through approximately two weeks. Beyond this time frame, BPA derives the weighting of the PTDF by applying the generation dispatch determined in the ETC Cases. BPA derives the PTDF weighting for the Mid-Columbia bus point by applying the generation dispatch determined in the ETC Cases.

720 BPA has grouped the generators in its adjacent BAAs based on the primary interface
721 between each BAA and the generation projects within that BAA (excluding some
722 remote generators that are scheduled via NERC e-Tag). These groupings are assigned
723 weighted PTFDs that represent how the generators participate in the group and are
724 used to evaluate transactions within and between adjacent BAAs that do not include
725 BPAT. BPA derives the PTFD weightings for these points from BAA-provided generation
726 estimates or by applying the generation dispatch determined in the ETC Cases if
727 generation estimates are not available. In the ETC Cases, these generators are
728 modeled up to the long-term firm Transmission rights associated with the generators.

729 **Calculating Firm Available Transfer Capability (ATC_F)**

730 When calculating ATC_F for its ATC Paths for all time periods, BPA uses the following algorithm
731 (MOD-029 R7):

$$732 \quad \text{ATC}_F = \text{TTC} - \text{ETC}_F - \text{CBM} - \text{TRM} + \text{Postbacks}_F + \text{Counterflows}_F$$

733 **Where:**

734 **ATC_F** is the firm Available Transfer Capability for the ATC Path for that period.

735 **TTC** is the Total Transfer Capability of the ATC Path for that period.

736 **ETC_F** is the sum of existing firm commitments for the ATC Path during that period.

737 For ATC_F calculations for all time periods, BPA divides ETC_F into the following variables
738 within its ATC software:

$$739 \quad \text{ETC}_F = \text{LRES} + \text{SRES} + \text{LETC} - \text{SADJ/ETC Adjustments}$$

740 **Where:**

741 **LRES** is the sum of positive impacts of BPA's Long-Term Reservations.

742 **SRES** is the sum of positive impacts of BPA's Short-Term Reservations.

743 **LETC** is used to ensure that the amount of NITS_F, GF_F, PTP_F and ROR_F capacity BPA sets
744 aside in the LRES variable for contracts where BPA gives customers the right to schedule
745 the capacity reserved between multiple PORs and PODs does not exceed the total capacity
746 specified in those contracts.

747 LETC is also used to align the ETC calculated in the power flow base case with additional
748 PTFD calculations in order to balance to the standard OATI calculation. This adjustment is
749 derived by comparing two values: a) the impacts of the confirmed PTP_F, GF_F, NITS_F and
750 ROR_F Long-Term Reservations derived from the base ETC Cases and b) the impacts of the
751 same reservations calculated using PTFD Analysis for each flow-based ATC Path. The
752 adjustment for each flow-based ATC Path is equal to the difference of these two values.
753 Conditional firm reservations are not included in the ETC Cases and therefore are also not
754 included in this comparison.

755 **SADJ/ETC Adjustments** is the variable BPA uses to make adjustments to ETC_F not
 756 captured in LRES or SRES.

757 BPA applies one such adjustment to allow for deferral competitions, as required in Section
 758 17.7 of BPA’s OATT. When a deferral reservation is confirmed, BPA applies an SADJ/ETC
 759 Adjustment to hold out capacity for the time period deferred, starting at the latter of five
 760 months out or the service commencement date of the original reservation, to allow for a
 761 competition. At four months out, if no competition is identified, the SADJ/ETC
 762 Adjustment is modified to release the capacity for the fourth month out.

763 BPA uses a SADJ/ETC Adjustment to account for a portion of the firm TRM that BPA
 764 applies on the NI S>N.

765 BPA also uses SADJ/ETC Adjustments to ensure accurate accounting of ETC_F . These
 766 adjustments may be performed to account for situations such as data modeling
 767 corrections, and are noted in the descriptions of the adjustments.

768 The following diagram illustrates how the variables in BPA’s ATC software correspond to
 769 the variables in the ETC_F algorithm.

$ETC_F =$	$NITS_F$	+	GF_F	+	PTP_F	+	ROR_F
	↓		↓		↓		↓
	LRES		LRES		LRES		LRES
	+				+		
	SRES				SRES		
	+		+		+		+
	LETC		LETC		LETC		LETC
	-		-		-		-
	SADJ/ETC Adjustments		SADJ/ETC Adjustments		SADJ/ETC Adjustments		SADJ/ETC Adjustments

770 **CBM** is the Capacity Benefit Margin for the ATC Path during that period.

771 BPA does not maintain CBM and thus sets CBM at zero for all of its ATC Paths for all time
 772 periods.

773 **TRM** is the Transmission Reliability Margin for the ATC Path during that period.

774 The description of how BPA implements TRM can be found in BPA’s TRMID, which is posted
 775 on BPA’s website.

776 **Postbacks_F** are changes to firm Available Transfer Capability due to a change in the use of
 777 Transmission Service for that period, as defined in Business Practices.

778 BPA automatically recalculates ETC_F to account for changes to Transmission Service
 779 Requests (such as request types of Recall and Redirect and annulments). Since these
 780 types of changes to Transmission Service Requests are captured in ETC_F , BPA sets
 781 $Postbacks_F$ at zero for all time periods when calculating ATC_F .

782 **Counterflows_F** are adjustments to firm Available Transfer Capability as determined by the
783 Transmission Service Provider and specified in their ATCID.

784 BPA does not include confirmed Transmission reservations, expected interchange or
785 internal flow counter to the direction of the ATC Path being calculated in its ATC_F
786 calculations. BPA's rationale is that it does not want to offer firm ATC due to counterflow
787 that may not be scheduled as this could lead to curtailments of Firm Transmission Service
788 in the Real-time horizon. (MOD-001 R3.2) Therefore BPA sets Counterflows_F at zero for all
789 of its ATC Paths for all time periods.

790 For flow-based ATC Paths, counterflows are automatically modeled in the base ETC cases.
791 In instances where the power flow study results in a negative base ETC value, BPA uses
792 zero as the base ETC for purposes of calculating ATC_F. This is done to ensure that BPA
793 does not make capacity available as a result of counterflows that may or may not
794 materialize in real-time.

795 **Calculating Non-Firm Transmission Service for BPA's ATC Paths**

796 BPA sells six non-firm Transmission products. Those products are:

- 797 1. **NITS_{NF6}**. This is a non-firm Transmission product available only to Transmission
798 Customers with NITS Agreements. It is the highest quality of Non-Firm Transmission
799 Service in that it is the last Non-Firm Transmission Service that would be Curtailed, if
800 necessary.
- 801 2. **PTP_{NF5}**. This is a non-firm Transmission product available only to Transmission
802 Customers with PTP service Agreements. PTP_{NF5} is the fifth Non-Firm Transmission
803 Service that would be Curtailed, if necessary.
- 804 3. **PTP_{NF4}**. This is a non-firm Transmission product available only to Transmission
805 Customers with PTP service Agreements. PTP_{NF4} is the fourth Non-Firm Transmission
806 Service that would be Curtailed, if necessary.
- 807 4. **PTP_{NF3}**. This is a non-firm Transmission product available only to Transmission
808 Customers with PTP service Agreements. PTP_{NF3} is the third Non-Firm Transmission
809 Service that would be Curtailed, if necessary.
- 810 5. **PTP_{NF2}**. This is a non-firm Transmission product available only to Transmission
811 Customers with PTP service Agreements. PTP_{NF2} is the second Non-Firm Transmission
812 Service that would be Curtailed, if necessary.
- 813 6. **PTP_{NF1}**. This is a non-firm Transmission product available only to Transmission
814 Customers with PTP service Agreements. PTP_{NF1} is the first Non-Firm Transmission
815 Service that would be Curtailed, if necessary (this Transmission Service has the highest
816 likelihood of being Curtailed).

817 BPA calculates ETC_{NF} and ATC_{NF} for each of these products.

818 **Calculating Non-Firm Existing Transmission Commitments (ETC_{NF})**

819 BPA calculates ETC_{NF} for all time periods for an ATC Path using the following algorithm as
820 specified in MOD-029 R6:

821
$$\text{ETC}_{\text{NF}} = \text{NITS}_{\text{NF}} + \text{GF}_{\text{NF}} + \text{PTP}_{\text{NF}} + \text{OS}_{\text{NF}}$$

822 **Where:**

823 **NITS_{NF}** is the non-firm capacity set aside for Network Integration Transmission Service serving
824 Load (i.e., secondary service), to include losses, and Load growth not otherwise included in
825 Transmission Reliability Margin or Capacity Benefit Margin.

826 In BPA’s calculations, this is comprised of the NITS_{NF6} Transmission product. BPA’s NITS_{NF6}
827 calculation does not include losses or Load growth, since losses and Load growth are
828 already set aside as firm capacity in NITS_F.

829 **GF_{NF}** is the non-firm capacity set aside for grandfathered Transmission Service and contracts
830 for energy and/or Transmission Service, where executed prior to the effective date of a
831 Transmission Service Provider’s Open Access Transmission Tariff or “safe harbor tariff”.

832 BPA does not have any grandfathered non-firm Transmission Service obligations and thus
833 sets GF_{NF} at zero for all of its ATC Paths for all time periods.

834 **PTP_{NF}** is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

835 In BPA’s calculations, PTP_{NF} includes the PTP_{NF5}, PTP_{NF4}, PTP_{NF3}, PTP_{NF2} and PTP_{NF1}
836 Transmission products.

837 **OS_{NF}** is the non-firm capacity reserved for any other service(s), contract(s), or agreement(s)
838 not specified above using non-firm transmission service as specified in the ATCID.

839 BPA has no OS_{NF} and thus sets OS_{NF} at zero for all of its ATC Paths for all time periods.

840 ETC_{NF} for 1:1 ATC Paths is calculated by assuming that 1 MW of reserved and/or scheduled
841 capacity results in 1 MW of impact across the 1:1 ATC Path.

842 When calculating ETC_{NF} flow-based ATC Paths, BPA sums the positive impacts of reservations
843 and/or schedules as determined by PTDF analysis, per BPA’s Transmission Service Requests
844 Evaluation business practice. When calculating ETC_{NF} for flow-based ATC Paths when using
845 reservations, BPA deems *de minimis* impacts of the reservations to be zero. However, when
846 calculating ETC_{NF} for flow-based ATC Paths when using schedules, all impacts are accounted
847 for in ETC_{NF}, regardless of whether their PTDF analysis impact is deemed to be *de minimis* or
848 not.

849 **Calculating Non-Firm Available Transfer Capability (ATC_{NF})**

850 BPA uses two time horizons when calculating ATC_{NF} for all of its ATC Paths: Real-time and
851 Beyond Real-time. The Real-time horizon begins at 10 p.m. each day for the 24 hours in the
852 next day. ETC_F and ETC_{NF} for the Real-Time horizon are calculated using schedules and
853 reservations that have not yet been scheduled. The beyond Real-time horizon includes hourly
854 for the hours after those included in the Real-time period as well as daily and monthly
855 calculations. ETC_F and ETC_{NF} for the time horizon beyond Real-time are calculated using
856 reservations.

857 BPA calculates ETC_{NF} and ATC_{NF} for the six non-firm Transmission products associated with
858 NERC Curtailment priorities as follows:

- 859 1. **ATC_{NF6}**: ATC_{NF6} is calculated using an ETC_{NF} that only includes the NITS_{NF6} transmission
860 product.
- 861 2. **ATC_{NF5}**: ATC_{NF5} is calculated using an ETC_{NF} that includes the NITS_{NF6} and PTP_{NF5}
862 transmission products.
- 863 3. **ATC_{NF4}**: ATC_{NF4} is calculated using an ETC_{NF} that includes the NITS_{NF6}, PTP_{NF5} and PTP_{NF4}
864 transmission products.
- 865 4. **ATC_{NF3}**: ATC_{NF3} is calculated using an ETC_{NF} that includes the NITS_{NF6}, PTP_{NF5}, PTP_{NF4},
866 and PTP_{NF3} transmission products.
- 867 5. **ATC_{NF2}**: ATC_{NF2} is calculated using an ETC_{NF} that includes the NITS_{NF6}, PTP_{NF5}, PTP_{NF4},
868 PTP_{NF3} and PTP_{NF2} transmission products.
- 869 6. **ATC_{NF1}**: ATC_{NF1} is calculated using an ETC_{NF} that includes the NITS_{NF6}, PTP_{NF5}, PTP_{NF4},
870 PTP_{NF3}, PTP_{NF2} and PTP_{NF1} transmission products.

871 When calculating ATC_{NF} for its ATC paths for the real-time and beyond real-time horizons, BPA
872 uses the following algorithm as specified in MOD-029 R8:

$$873 \text{ATC}_{\text{NF}} = \text{TTC} - \text{ETC}_{\text{F}} - \text{ETC}_{\text{NF}} - \text{CBM}_{\text{S}} - \text{TRM}_{\text{U}} + \text{Postbacks}_{\text{NF}} + \text{Counterflow}_{\text{NF}}$$

874 **Where:**

875 ATC_{NF} is the non-firm Available Transfer Capability for the ATC Path for that period.

876 BPA calculates six ATC_{NF} values as described above.

877 TTC is the Total Transfer Capability of the ATC Path for that period.

878 ETC_F is the sum of existing firm commitments for the ATC Path during that period.

879 The section below outlines how BPA calculates ETC_F for all of its ATC Paths for the beyond
880 Real-time and the Real-time horizons.

881 **ETC_F for the Beyond Real-Time Horizon**

882 For ATC_{NF} calculations for the beyond Real-time horizon, BPA utilizes the following
883 variables within its ATC software to calculate ETC_F :

884 $ETC_F = LRES + SRES - SADJ/ETC \text{ Adjustments} + LETC$

885 **Where:**

886 **LRES** is the sum of positive impacts of BPA's Long-Term Reservations.

887 **SRES** is the sum of positive impacts of BPA's Short-Term Reservations.

888 **SADJ/ETC Adjustments** is the variable used to make adjustments to ETC_F not captured
889 in LRES or SRES.

890 BPA applies one such adjustment to allow for deferral competitions, as required in
891 Section 17.7 of BPA's OATT. When a deferral reservation is confirmed, BPA applies a
892 SADJ/ETC Adjustment to hold out capacity for the time period deferred, starting at
893 the latter of five months out or the service commencement date of the original
894 reservation, to allow for a competition. At four months out, if no competition is
895 identified, the SADJ/ETC Adjustment is modified to add back capacity for the fourth
896 month out.

897 BPA uses SADJ/ETC Adjustments to ensure accurate accounting of ETC_F . These
898 adjustments may be performed to account for situations such as data modeling
899 corrections, and are noted in the descriptions of the adjustments.

900 BPA also uses SADJ/ETC Adjustments to properly reflect the lowest base ETC value
901 from its ETC base cases in its non-firm ATC calculation for flow-based ATC Paths.

902 **LETC** is used to ensure that the amount of $NITS_F$, GF_F , PTP_F and ROR_F capacity BPA sets
903 aside in the LRES variable for contracts where BPA gives customers the right to
904 schedule the capacity reserved between multiple PORs and PODs does not exceed the
905 total capacity specified in those contracts.

906 **LETC** is also used to align the ETC calculated in the power flow base case along with
907 additional PTDF calculations in order to balance to the standard OATI calculation.

908 This adjustment is derived by comparing two values: a) the impacts of the PTP_F , GF_F
909 and $NITS_F$ Long-Term Reservations derived from the base ETC Cases and b) the impacts
910 of the same reservations calculated using PTDF Analysis for each flow-based ATC Path.
911 The adjustment for each flow-based ATC Path is equal to the difference of these two
912 values. Conditional firm reservations are not included in the ETC Cases and therefore
913 are also not included in this comparison.

914 The following diagram illustrates how the variables in BPA's ATC software correspond
915 to the variables in the ETC_F algorithm for the Beyond Real-time horizon.

916

ETC_F =	NITS_F	+	GF_F	+	PTP_F	+	ROR_F
	↓		↓		↓		↓
	LRES		LRES		LRES		LRES
	+				+		
	SRES				SRES		
	+		+		+		+
	LETC		LETC		LETC		LETC
	-		-		-		-
	SADJ/ETC Adjustments		SADJ/ETC Adjustments		SADJ/ETC Adjustments		SADJ/ETC Adjustments

917 **ETC_F for the Real-Time Horizon**

918 For ATC_{NF} calculations for the Real-time horizon, BPA divides ETC_F into the following
919 variables within its ATC software:

920 **ETC_F = SCH⁺₇ + ASC⁺₇ + RADJ/ETC Adjustment**

921 **Where:**

922 **SCH⁺₇** is the sum of the positive impacts of schedules that reference confirmed NITS_F,
923 GF_F and PTP_F reservations for the ATC Path for that period. The energy profile of the
924 schedule is used except for the schedule types of Dynamic, Capacity and Pseudo-tie.

925 **ASC⁺₇** is the sum of the positive impacts of dynamic schedules that reference
926 confirmed NITS_F, GF_F and PTP_F reservations for the ATC Path for that period. The
927 transmission profile of the schedule is used for the schedule types of Dynamic,
928 Capacity and Pseudo-tie.

929 **RADJ/ETC Adjustment:** BPA uses RADJ/ETC adjustments to ensure accurate
930 accounting of ETC_F. These adjustments may be performed to account for situations
931 such as data modeling corrections.

932 The following diagram illustrates how the variables in BPA's ATC software correspond
933 to the variables in the ETC_F algorithm for the Real-time horizon. ROR_F is not included
934 in ETC_F for the Real-time horizon because ROR_F is not relevant for the Real-time
935 horizon.

936

ETC_F =	NITS_F	+	GF_F	+	PTP_F
	↓		↓		↓
	SCH⁺₇		SCH⁺₇		SCH⁺₇
	+		+		+
	ASC⁺₇		ASC⁺₇		ASC⁺₇
	+		+		+
	RADJ/ETC Adjustment		RADJ/ETC Adjustment		RADJ/ETC Adjustment

937 **ETC_{NF}** is the sum of existing non-firm commitments for the ATC Path during that period.

938 The section below outlines how BPA calculates ETC_{NF} for all of its ATC Paths for the
939 beyond Real-time and the Real-time horizons.

940 **ETC_{NF} for the Beyond Real-Time Horizon**

941 For ATC_{NF} calculations for the beyond Real-time horizon, ETC_{NF} is reflected as the
942 following variable within BPA’s ATC software:

943 **ETC_{NF} = RRES_{6,5,4,3,2,1}**

944 **Where:**

945 **RRES_{6,5,4,3,2,1}** is the sum of the positive impacts of all confirmed NITS_{NF6}, PTP_{NF5}, PTP_{NF4},
946 PTP_{NF3}, PTP_{NF2} and PTP_{NF1} reservations.

947 The following diagram illustrates how the variables in BPA’s ATC software correspond
948 to the variables in the ETC_{NF} algorithm for the Beyond Real-time horizon.

ETC_{NF} =	NITS_{NF}	+	PTP_{NF}
	↓		↓
	RRES₆		RRES_{5,4,3,2,1}

949 **ETC_{NF} for the Real-Time Horizon**

950 For ATC_{NF} calculations in the Real-time horizon, ETC_{NF} is reflected as the following
951 variables within BPA’s ATC software:

952 **ETC_{NF} = SCH⁺_{6,5,4,3,2,1} + ASC⁺_{6,5,4,3,2,1}**

953

954 **Where:**

955 **SCH⁺_{6,5,4,3,2,1}** is the sum of the positive impacts of schedules referenced to confirmed
 956 NITS_{NF6}, PTP_{NF5}, PTP_{NF4}, PTP_{NF3}, PTP_{NF2} and PTP_{NF1} reservations, plus the sum of the
 957 positive impacts of confirmed NITS_{NF6}, PTP_{NF5}, PTP_{NF4}, PTP_{NF3}, PTP_{NF2} and PTP_{NF1}
 958 reservations that have not yet been scheduled. Once these reservations are
 959 scheduled, the schedule is used for ETC_{NF}, thereby adding back the difference
 960 between the reservation and schedule amounts to ATC_{NF}. The energy profile of the
 961 schedule is used except for the schedule types of Dynamic, Capacity and Pseudo-tie.

962 **ASC⁺_{6,5,4,3,2,1}** is the sum of positive impacts of dynamic schedules referenced to
 963 confirmed NITS_{NF6}, PTP_{NF5}, PTP_{NF4}, PTP_{NF3}, PTP_{NF2} and PTP_{NF1} reservations, plus the sum of
 964 the positive impacts of confirmed NITS_{NF6}, PTP_{NF5}, PTP_{NF4}, PTP_{NF3}, PTP_{NF2} and PTP_{NF1}
 965 reservations that have not yet been scheduled. Once these reservations are
 966 scheduled, the schedule is used for ETC_{NF}, thereby adding back the difference
 967 between the reservation and schedule amounts to ATC_{NF}. The transmission profile of
 968 the schedule is used for the schedule types of Dynamic, Capacity and Pseudo-tie.

969 The following diagram illustrates how the variables in BPA’s ATC software correspond
 970 to the variables in the ETC_{NF} algorithm for the Real-time horizon.

971

ETC_{NF} =	NITS_{NF}	+	PTP_{NF}
	↓		↓
	SCH⁺₆		SCH⁺_{5,4,3,2,1}
	+		+
	ASC⁺₆		ASC⁺_{5,4,3,2,1}

972 **CBM_s** is the Capacity Benefit Margin for the ATC Path that has been scheduled during that
 973 period.

974 BPA does not maintain CBM and thus sets CBM_s at zero for all of its ATC Paths for all time
 975 periods.

976 **TRM_U** is the Transmission Reliability Margin for the ATC Path that has not been released for
 977 sale (unreleased) as non-firm capacity by the Transmission Service Provider during that
 978 period.

979 The description of how BPA implements TRM can be found in BPA’s TRMID, which is posted
 980 on BPAs website.

981 **Postbacks_{NF}** are changes to non-firm Available Transfer Capability due to a change in the use
 982 of Transmission Service for that period, as defined in Business Practices.

983 The section below outlines how BPA calculates Postbacks_{NF} for all of its ATC Paths for the
984 beyond Real-time and the Real-time horizons.

985 **Postbacks_{NF} for the Beyond Real-time horizon**

986 BPA automatically recalculates ETC_{NF} to account for changes to Transmission Service
987 Requests (such as request types of Recall and annulments) for the Beyond Real-time
988 horizon. Since these types of changes to Transmission Service Requests are captured in
989 ETC_{NF}, BPA sets Postbacks_{NF} at zero for this horizon.

990 **Postbacks_{NF} for the Real-time Horizon**

991 BPA automatically recalculates ETC_{NF} to account for changes to Transmission Service
992 Requests (such as request types of Recall and annulments) for the Real-time Horizon.
993 Since these types of changes to Transmission Service Requests are captured in ETC_{NF}, BPA
994 sets Postbacks_{NF} at zero for this horizon for all paths with the exception of COI N>S.

995 For ATC_{NF} calculations for the COI N>S path in the Real-time horizon, BPA uses a
996 Postbacks_{NF}, expressed as RADJ/ETC. For its hourly COI N>S non-firm calculations, BPA
997 posts back any unused share of non-firm capacity that is available to BPA by capacity
998 ownership and other Agreements for the COI N>S, if needed to prevent Curtailments.

999 **Counterflow_{NF}** are adjustments to non-firm Available Transfer Capability as determined by
1000 the Transmission Service Provider and specified in its ATCID.

1001 Since a schedule provides assurance that the transaction will flow, all counterflows
1002 resulting from firm and non-firm Transmission schedules, excluding tag types dynamic,
1003 pseudo and capacity, are added back to ATC_{NF} in the Counterflows_{NF} component. (MOD-001
1004 R3.2)

1005 In BPA's ATC_{NF} calculations, Counterflows_{NF} is expressed as SCH_{7,6,5,4,3,2,1}, which is the sum
1006 of schedules flowing in the direction counter to the direction of the ATC Path.

1007 Counterflows are modeled in the ETC Cases used to determine ETC_F for BPA's flow-based
1008 ATC Paths. In instances where the power flow study results in a negative base ETC value,
1009 BPA uses zero as the base ETC for purposes of calculating ATC_{NF}. This is done to ensure
1010 that BPA does not make capacity available as a result of counterflows that may or may not
1011 materialize in real-time

1012 In some cases, the amount of Counterflows_{NF} exceeds the sum of the ETC_F and ETC_{NF},
1013 which, when added to TTC, results in ATC_{NF} greater than TTC.

1014 Note: The variable RADJ/ETC is also used to respond to a BPA dispatcher order to change ATC
1015 values by a specified amount and thereby reduce schedules in-hour when the flow exceeds
1016 the TTC.

1017 **Adjustments to flow-based ATC Path ATC Values**

1018 There may be instances where BPA needs to perform testing in the production environment of
1019 the systems that manage BPA's ATC calculations. In these instances, BPA may adjust its ATC
1020 values across the flow-based ATC Paths to ensure that Hourly requests are not declined due to
1021 lack of ATC across the flow-based paths. BPA will issue a notice to customers with the details
1022 prior to performing this testing.

1023 **VIII. Data Sources and Recipients**

1024 BPA receives data for use in its ATC calculations, and provides data for use in calculating 1:1
1025 and flow-based ATC Path capabilities through the WECC base case process. BPA also directly
1026 receives and provides data, such as outage information and specific Transmission
1027 commitments, from and to the following Transmission Service Providers and Transmission
1028 Operators: (MOD-001 R3.3, R3.4)

- 1029 • Avista Corporation
- 1030 • BC Hydro
- 1031 • California Independent System Operator
- 1032 • City of Tacoma, Department of Public Utilities, Light Division
- 1033 • Eugene Water and Electric Board
- 1034 • Fortis BC
- 1035 • Idaho Power Company
- 1036 • Los Angeles Department of Water and Power
- 1037 • NV Energy
- 1038 • NorthWestern Energy
- 1039 • Pacific Gas & Electric
- 1040 • PacifiCorp
- 1041 • Pend Oreille County Public Utility District No. 1
- 1042 • Portland General Electric
- 1043 • Public Utility District No. 1 of Chelan County
- 1044 • Public Utility District No. 1 of Clark County
- 1045 • Public Utility District No. 1 of Douglas County
- 1046 • Public Utility District No. 2 of Grant County, Washington
- 1047 • Public Utility District No. 1 of Snohomish County
- 1048 • Puget Sound Energy, Inc.
- 1049 • Sacramento Municipal Utility District
- 1050 • Seattle City Light
- 1051 • Southern California Edison
- 1052 • Transmission Agency of Northern California
- 1053 • Western Area Power Administration - Sierra Nevada Region
- 1054 • California Independent System Operator

1055 IX. Responding to Data Requests

1056 Upon official request from any Transmission Service Provider, Planning Coordinator,
1057 Reliability Coordinator, or Transmission Operator for any data from the list below, solely for
1058 use in the requestor's ATC or AFC calculations, BPA will begin to make the data available
1059 within 30 calendar days of receiving the request.

- 1060 • Expected generation and Transmission outages, additions, and retirements
- 1061 • Load forecasts
- 1062 • Unit commitments and order of dispatch, to include all designated resources (BPA does
1063 not have resources that are committed or have the legal obligation to run)
- 1064 • Firm NITS and non-firm NITS (i.e. Secondary Service)
- 1065 • Firm and non-firm Transmission reservations
- 1066 • Grandfathered obligations
- 1067 • Firm roll-over rights
- 1068 • Any firm and non-firm adjustments applied by BPA to reflect parallel path impacts
- 1069 • Power flow models and underlying assumptions
- 1070 • Contingencies, provided in one or more of the following formats:
 - 1071 ○ A list of Elements
 - 1072 ○ A list of flow-based ATC Paths
 - 1073 ○ A set of selection criteria that can be applied to the WECC base cases used by
1074 BPA
- 1075 • Facility Ratings
- 1076 • Any other service that impact ETCs
- 1077 • Values of CBM and TRM for all ATC Paths
- 1078 • Values of TTC and ATC for all ATC Paths
- 1079 • Source and sink identification and mapping to the WECC base cases

1080 BPA will make this data available on the schedule specified by the requestor (but no more
1081 frequently than once per hour, unless mutually agreed to by the requestor and Bonneville).

1082 For a Transmission Service Provider, Planning Coordinator, Reliability Coordinator, or
1083 Transmission Operator to officially request data to use in ATC or AFC calculations, the
1084 requestor must fill out the **Data Request Form** (MOD-001 R9) found on BPA's website
1085 <https://www.bpa.gov/transmission/Doing%20Business/ATCMethodology/Pages/default.aspx>.
1086 The completed request form must be sent to nercatcstandards@bpa.gov with **Data request**
1087 **Form** (MOD-001 R9) in the subject line. (MOD-001 R9)

1088 X. ATCID Revisions

1089 BPA will notify the entities contained in ATCID TP Distribution List when implementing a new
1090 or revised ATCID and make its current ATCID available. (MOD-001 R4, R5)

XI. Version History

ATCID Revision History			
Version	Date Revised	Description of Changes	Prepared by
1.0	03/30/2011	BPA ATCID FINAL	S Long L Trolese C Etheridge
2.0	05/11/2011	P.31 Table 2 BPA Flowgates: Corrected the definition of the West of McNary Flowgate by replacing McNary - Horse Heaven 230 kV line with Harvalum - Big Eddy #1 230 kV line in the West of McNary Flowgate Transmission Line Components	L Trolese
3.0	08/11/2011	<p>P. 7 line 114: Revised frequency of hourly calculations from at least three times per hour to at least once per hour.</p> <p>P. 12-13 Table 1 BPA Paths: Added Montana-Northwest to the Path Name; added Garrison 500 kV 1 and 2 to the Transmission Line Components of the West of Garrison E>W and W>E Paths and revised the Montana Intertie Transmission Line Component from Broadview - Garrison 500 kV 1 and 2 to Townsend-Garrison 500 kV 1 and 2 to be effective October 1, 2011.</p> <p>P. 17 lines 395-397: Revised sentence to include Montana Intertie as an ATC Path that is limited by contract.</p> <p>P. 18 lines 440-445: Revised paragraph to include Montana Intertie as an ATC Path where another TOP sets the TTC.</p> <p>P. 19 line 483-486 and P. 40 line 1102: Added forecasted network resources to be included in Network Integration Transmission Service</p> <p>P. 20 line 517: corrected reference from ETC to ATC_{NF}.</p> <p>P. 20 line 531; P. 22 ETC_F variable diagram, P. 25 line 669, P. 26 ETC_F variable diagram, P. 47 line 1324, P. 49 ETC_F variable diagram, P. 53 line 1493 and P. 54 ETC_F variable diagram: Corrected ETC_F formula to subtract SADJ/ETC Adjustments instead of add it.</p>	L Trolese

ATCID Revision History			
		<p>P. 27 lines 724-726 and P. 55 lines 1549-1551: Updated reason for why ROR_F is not included in the real-time horizon.</p> <p>P. 29 line 789: Deleted “implemented” from which schedules impact counterflows.</p> <p>P. 30 lines 798-800: Added a note describing the variable RADJ/Congestion Management and how it impacts ATC calculations.</p> <p>P. 44: Corrected footnote 7 to align it with the reference.</p> <p>P. 47: Deleted language referring to including adjacent TSP reservations in interim ETC_{Fi}.</p> <p>P. 53 lines 1517-1521: Added paragraph describing LETC that was mistakenly left out in Version 1.0 and 2.0.</p> <p>P. 57 line 1604: Deleted “confirmed” from which schedules impact counterflows.</p> <p>P. 58: Replaced table delineating the NERC registered functions of the entities with a bulleted list of the entities.</p> <p>Appendix A: Updated List of Contracts and Specific Paths with Shared Ownership to indicate the Colstrip Project on the Montana Intertie Path will no longer be represented as an allocation agreement after October 1, 2011.</p> <p>Appendix C: Updated the SOL Methodology.</p> <p>Appendix D: Updated BPA’s NITS, GF, and PTP Agreements to include the Colstrip Project and other contracts that have been added since February 3, 2011.</p>	
4.0	09/30/2011	P. 27 lines 720 - 722 and ETC_F variable diagram: added new use for RADJ/ETC Adjustments variable.	L Trolese
5.0	10/20/2011	<p>P. 39 lines 1068-1070, P. 40 lines 1077-1079 and lines 1087-1089: Removed language referring to the month of August.</p> <p>P. 40 lines 1103-1114, P. 41 lines 1118-1128 and P. 48 lines 1325-1331: added paragraph describing how BPA accounts for the impacts of its adjacent TSP firm NITS and PTP Transmission Service.</p>	L Trolese

ATCID Revision History			
6.0	11/1/2011	P.31 Table 2 BPA Flowgates: Added the McNary - John Day #2 500 kV line to the West of McNary Flowgate definition. Appendix C: Updated the SOL Methodology.	L Beckman
7.0	11/10/2011	P. 40 line 1103 and P.41 line 1118: Changed effective date from November 8 th to no later than November 15, 2011 for incorporating adjacent TSP TSRs into AFC calculations.	L Beckman
8.0	02/03/2012	P. 35 line 907: Added paragraph describing how BPA prepares for the addition of a flowgate.	L Beckman
9.0	02/13/2012	P. 5, P. 22, P. 29: Defined BPA's TRM practice for the Northern Intertie S>N Path. P. 20 line 528 and P. 23 line 597: Replaced NI Holdout in the ATC _F formula with TRM.	L Beckman
10.0	02/14/2012	P.30-31 Table 2 BPA Flowgates: Corrected the following flowgate definitions: South of Allston Flowgate: replaced Astoria-Seaside 115kV; and Lewis & Clark-Astoria Tap 115kV line with Astoria-Seaside 115kV; and Clatsop 230/115kV line in the South of Allston Flowgate Transmission Line Components. North of John Day Flowgate: replaced Wautoma-John Day 500kV line with Wautoma-Rock Creek 500kV line in the North of John Day Flowgate Transmission Line Components. Cross Cascades North Flowgate: Added the Anderson Canyon-Beverly Park 115 kV line to the Cross Cascades North Flowgate Transmission Line Components. Cross Cascades South Flowgate: replaced Hanford-Ostrander 500kV line with Wautoma-Ostrander 500kV line, replaced McNary-Santiam 230kV line with Jones Canyon-Santiam 230kV line, replaced Parkdale-Troutdale 230kV with Big Eddy-Troutdale 230kV, and added Bethel - Round Butte 230 kV line in the Cross Cascades South Flowgate Transmission Line Components. West of McNary Flowgate: replaced McNary-Santiam 230kV line with Jones Canyon-Santiam 230kV line in the West of McNary Flowgate Transmission Line Components.	L Beckman
11.0	02/22/2012	P. 8 line 166: Removed reference to Northwest Power Pool (NWPP) Outage Coordination Processes, dated 01/29/09.	L Beckman
12.0	03/01/2012	P. 32 Table 2 BPA Flowgates: Added the West of John Day Flowgate and Transmission Line Components. P. 32 Figure 3 BPA Network Flowgate Map: Added the West of John Day Flowgate.	L Beckman

ATCID Revision History			
13.0	03/27/2012	<p>P. 31 Table 2 BPA Flowgates: Removed the Anderson Canyon-Beverly Park 115 kV line from the Cross Cascades North Flowgate Transmission Line Components.</p> <p>P. 4 line 52: Moved MOD 008-01 to the Methodologies Selected section.</p>	L Beckman
14.0	04/11/2012	Appendix A: Updated Portland General Electric's Intertie Agreements to reflect the termination of the AC/DC Exchange Agreement that will be effective on 7/1/2012.	L Beckman
15.0	05/15/2012	<p>P. 38 lines 1013-1015, P. 41 lines 1107-1115, P. 46 lines 1282-1289, P. 50 lines 1402-1407 and P. 50 lines 1422-1427: Moved language regarding the PTDF Analysis impact and percentage used in the Western Interconnection-wide Congestion Management Procedure.</p> <p>P. 40 lines 1084-1093: Added generation estimates as the source of the PTDF weightings.</p> <p>P. 42 lines 1157-1159 and P. 51 lines 1433-1436: Added description of how BPA accounts for schedules in ETC_{Fj}.</p> <p>P. 44-45: Removed the definition of and all reference to the "94th Percentile Method".</p> <p>P. 47 lines 1305-1315 and P. 52 lines 1476-1486: clarified that LRES and SRES include reservations for all of BPA's adjacent TSP areas, filtered to reduce duplicates.</p>	L Beckman L Trolese
16.0	06/27/2012	P. 40 lines 1084-1086: changed sentence to describe that BPA is grouping the generators for all of its adjacent BAAs instead of just a subset.	L Trolese
17.0	08/15/2012	<p>P. 31 Table 2 BPA Flowgates: Added outage conditions flowgate definition for Raver-Paul (N>S).</p> <p>P. 29-30 lines 774,787,799: Replaced RADJ variable descriptions with RADJ/ETC.</p>	L Beckman
18.0	09/20/2012	<p>P. 12 line 299 Table 1 BPA Paths: Removed Transmission Line Components and RAS.</p> <p>P. 23-28 lines 599-607, 633, 750 and 752: Added new Non-firm products to formulas used for calculating Non-firm ETC and Non-firm ATC.</p> <p>P. 50-56 lines 1403-1411, 1428, 1479-1484 and 1604: Added new Non-firm products to formulas used for calculating Non-firm ETC and Non-firm AFC.</p> <p>Appendix C: Updated the SOL Methodology.</p>	L Beckman

ATCID Revision History			
19.0	10/18/2012	P. 48 and 53, lines 1334 and 1513: Removed language on accounting for Conditional Firm products in the ETC Adjustment.	L Beckman
20.0	10/24/2012	P. 32 Table 2 BPA Flowgates: Added the South of Boundary Flowgate and Transmission Line Components. P. 33 Figure 3 BPA Network Flowgate Map: Added the South of Boundary Flowgate.	L Beckman
21.0	11/14/2012	P. 8, lines 159-167: Updated BPA's allocation processes for the Columbia Injection (N>S) and Wanapum Injection (N>S) flowgates. P. 31 Table 2 BPA Flowgates: Replaced Bettas Road - Covington #1 230kV with Bettas Road - Covington #1 230kV in the Cross Cascades North Flowgate Transmission Line Components. P. 31-33 Table 2 BPA Flowgates: Added the North of Hanford (S>N), South of Allston (S>N), Columbia Injection (N>S), Wanapum Injection (N>S) and West of Lower Monumental (E>W) Flowgates in Transmission Line Components, effective Nov. 30, 2012. P. 45 and 46, lines 1245-1248, 1286-1288 and 1318: Added documentation describing ETC calculation practices for light load ETC Cases. P. 55 and 56, lines 1564, 1574-1576 and 1580: Added RETC variable and definition to calculation formula for ETC _i for the Real-Time Horizon.	L Beckman
22.0	01/31/2013	Appendix A: Updated Seattle City Light's PNW AC Intertie Ownership Agreement to reflect shared ownership, effective 1/31/13.	L Wickizer
23.0	01/31/2013	P. 5 line 61, P. 22 line 579, P. 23 lines 594-596, P. 29 line 786: Removed BPA's TRM practice for the Northern Intertie S>N Path, effective Feb. 13, 2013. P. 31-33 Table 2 BPA Flowgates: Added the North of Echo Lake (S>N) and South of Custer (N>S) Flowgates and removed the Monroe-Echo Lake Flowgate in Transmission Line Components, effective Feb. 13, 2013. P. 32 Table 2 BPA Flowgates: Added John Day - Marion No. 1 500kV in the West of John Day Flowgate Transmission Line Components, effective Feb. 13, 2013. P.33 Figure 3 BPA Network Flowgate Map: Updated location of the North of Echo Lake (S>N) and South of Custer (N>S) Flowgates.	L Wickizer

ATCID Revision History			
24.0	02/12/2013	P. 5 lines 52-57, P. 22 lines 581-584, P. 23 lines 597-601, P. 29 lines 788-793, P. 30 lines 826-830: Added BPA's updated TRM practice for the Northern Intertie Path.	L Wickizer
25.0	03/04/2013	P. 58 lines 1651-1655: Added BPA's practice for Converting AFC to ATC.	L Wickizer
26.0	03/25/2013	P.32 Table 2 BPA Flowgates: Updated flowgate names on OASIS. P. 41 lines 1102-1112: Added documentation for Mid-Columbia generators in the weighted PTDF description.	L Wickizer
27.0	05/01/2013	P. 38-39 lines 993-1002: Updated BPA's process for mapping and incorporating outages into the WECC base case. Appendix A: Updated Avista's West of Hatwai Ownership Agreement number.	L Wickizer
28.0	05/15/2014	P. 7-8 lines 123-127, 131-134, 142-143, 149-150: Language clarification in Limiting Assumptions section. P. 9 lines 178-203: Updated BPA's process for outage planning. P. 10 lines 209 - 222: Language clarification on Daily and Hourly TTC and TFC Calculations. P. 10-11 lines 238 - 272: Language clarification on SOL Priorities Used to Set TTC and TFC. P. 37, lines 884-885, 892: Language clarification on SOL study process. P. 38, lines 952-953: Language clarification on SOL study process. P. 39, line 965: Language clarification on TFC calculation. Appendix C: Updated the SOL Methodology.	M Olczak
29.0	05/31/2014	P. 33 Table 2 BPA Flowgates: Added outage conditions flowgate definition for West of McNary.	M Olczak

ATCID Revision History			
30.0	7/24/2014	<p>P. 32 Table 2 BPA Flowgates: Changed Olympia - South Tacoma 230kV to St. Clair - South Tacoma 230kV in the Raver-Paul section.</p> <p>P. 36 Table 3 Interfaces with BAs Adjacent to BPA: Added Gridforce Energy Management as a BA-BA interconnection.</p> <p>P. 36 Table 3 Interfaces with BAs Adjacent to BPA: Updated to show Portland General Electric and Seattle City Light also have connections accounted for with paths that use the Rated System Path Methodology.</p> <p>P. 5 Clarification on number of BAs within the WECC area</p>	J Ofstead
31.0	09/13/2014	P. 33 Table 2 BPA Flowgates: Updated West of McNary flowgate definition during outages.	J Ofstead
32.0	10/21/2014	P. 7, lines 106-108: Language clarification on ATC and AFC hourly firm calculations	J Ofstead
33.0	12/05/2014	P. 18, lines 410-417: Language updated to reflect the current practice of setting TTCs in the non-prevailing flow direction on BPA's ATC Paths that use the Rated System Path Methodology.	L. Proctor
34.0	06/01/2015	<p>P. 4, lines 32-38: Deleted lines regarding registration amongst other organizations other than NERC.</p> <p>P.5-6, lines 67-101: Deleted section on "BPA's Use of Western Electricity Coordinating Council Base Cases".</p> <p>P. 9, lines 179-238: Added "...and Criteria for TTC and TFC Calculations" to section title and deleted "Timeline" from title. Deleted all content in section except "Outage planned and the policy are posted to the Outage Plans website (http://www.oatiaoasis.com/bpat/index.html) (MOD-001 R3.6.1) (MOD-001 R3.6.2)"</p> <p>P15, lines 319-321: Added language to reflect the tracking and monitoring of the previous 12 months of curtailments due to the issuance of generation limits and inclusion of ATC calculations in Table 1.</p> <p>P.16, lines 347-349: Deleted language to reflect current practices.</p> <p>P. 16, line 350: Added "...and phase shifters".</p> <p>P. 16, lines 352-359: Deleted language regarding phase shifters.</p>	L. Proctor

ATCID Revision History

		<p>P. 18, lines 362-363: Deleted language regarding BPA engineers running variations on WECC base cases.</p> <p>P.17, lines 371-373: Added language on base cases being updated with a Mid-Season update.</p> <p>P. 17, lines 388-389: Deleted reference to Table 1 for RAS.</p> <p>P. 17, line 391: Deleted language reference to BPA transmission lines with series compensation.</p> <p>P. 18, lines 401-404: Deleted language on modeling contingencies.</p> <p>P. 18, lines 416-417: Deleted language related to Montanan Intertie Path limitation by Colstrip Project and NorthWestern Energy is the TO and set TTC for this ATC Path.</p> <p>P. 18, lines 423-424: Deleted the reference to ATC paths for which BPA expresses TTC by nomogram.</p> <p>P. 18, lines 431-432: Deleted language related to the process defined by WECC’s OTCP.</p> <p>P. 18, line 437: Deleted reference to LaGrande Path.</p> <p>P. 18, lines 438-442: Deleted language related to path ratings.</p> <p>P. 19 lines 460-484: Updated language on TTC ratings.</p> <p>P. 21, lines 538: Deleted reference to Appendix D, which has been deleted from this document.</p> <p>P.30, lines 820-822: Deleted reference to DSO 319.</p> <p>P.31, lines 851-852: Table 2, BPA Flowgates: Deleted facilities monitored during outage conditions for West of McNary.</p> <p>P. 35, lines 863-866: Deleted “History or Flowgates”.</p> <p>P. 35, line 873 and line 87: Replaced “included as” with “protected for by”.</p> <p>P. 36, lines 883-884: Deleted “Note” on multiple interfaces.</p>	
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ATCID Revision History			
		<p>P. 39-40, lines 1002, 1007 and 1008: Replaced “WECC” with “Peak”.</p> <p>P. 40, lines 1032-1033: Updated language for accuracy.</p> <p>P. 40, lines 1037 and 1049: Replaced “calculated” with “published”.</p> <p>P. 41, lines 1064: Added “...the PTDF difference is...”.</p> <p>P. 44, lines 1164, 1175, 1190 and 1195: Deleted reference to BPA not having coordination agreements with other TSP.</p> <p>P.45, lines 1199: Added language to reflect BPA does not have coordination agreements with other TSPs.</p> <p>P. 45, line 1213: Deleted reference to Appendix D, which has been deleted.</p> <p>P. 63-64, line 1745 and chart: Deleted ATCID TP distribution list chart and updated language in line 1745 to reflect ATCID TP Distribution List.</p> <p>Appendix A: Updated chart listing contracts and specific paths with shared ownership, specifically Montana-NW/West of Garrison and added Montana Intertie and La Grande.</p> <p>Appendix B: Deleted - Significant Equipment Operating Bulletin 19.</p> <p>Appendix D: Deleted BPA NITS, GF and PTP Agreements list from 2011.</p> <p>Appendix E: Deleted DSO 319</p>	
35.0	08/10/2015	<p>Language updated to reflect completion of the bulk MOD-030 Mitigation Plan.</p> <p>P. 3, lines 7-8: Deleted “or Available Flowgate Capability (AFC)”</p>	L. Proctor

ATCID Revision History

		<p>P. 4, lines 29-36: Deleted “MOD-001-1, MOD-004-1, MOD-008-1, MOD-028-1, MOD-029-1, and MOD-030-02 variously apply to the Transmission Operator (TOP) and Transmission Service Provider (TSP)”, “Transmission Operator”, and deleted lines 34-36; added “Transmission Operator”, Transmission Service Provider” and “among other registrations”; added “a” to line 38; lines 39-47: deleted “described in NERC Standard as its methodology”, “determine” and “inerties, External interconnections and some Paths internal to BPA’s Network”; added “calculate”, “ATC Paths”, “for these paths” and “VIII, and IX”; deleted lines 44-47; line 50: deleted “in its ATC calculation”; line 53: “in its ATC and AFC calculations” and “or Flowgates”; line 54: deleted “Not Selected”; line 55 deleted; lines 56-59: deleted “has elected”, “to”, “described in NERC Standard MOD-028-1 as its methodology to determine ATC for any of its ATC Paths” and “MOD-028-01”, added “does”, “(MOD-028-2), the Flowgate Methodology (MOD-030-2), or a Capacity Benefit Margin (CBM) (MOD-004-1)” and “these standards are”; deleted lines 60-63</p> <p>P. 5: lines 64, 65, 66, 69, 72, 75, 77, 78, 79 and 84: deleted “and AFC”; line 66 deleted “and Flowgate”; line 79-80 “MOD-030-R10”; line 81 deleted “MOD-030 R10.1”; line 82 deleted “MOD-030 R10.2”; line 83 deleted “MOD-030 R10.3”; line 84 deleted “or TFC”; lines 88-89 deleted “The studied assumptions are also used in determining the”, “for ATC purposes” and “and the TFC for AFC purposes”; added to line 89 “BPA uses these SOLs as the”; added to lines 97-100 “BPA may use more recent system condition information in its SOL calculations when the studies are updated after the ETC Cases are performed. However, this is not considered a difference in assumptions.”</p> <p>P. 6: lines 102-120 deleted; deleted “Flowgate” in lines 122-140; added “Network Paths” to lines 130, 134 and 136; added “Transfer” to line 133</p> <p>P. 7: lines 144, 147, 150, 152, 161, 178, and 186 deleted “and TFC”; deleted “or Flowgate” in line 173, 178 and 186; added “Network Paths” in line 174</p> <p>P. 8: deleted “and TFCs” in lines 188, 194, 198; replaced “TFC” with “TTC” in lines 193 and 200; added “Network Path” in line 201; added “for the Paths listed in Table 1” in lines 207-208; deleted line 212</p> <p>P. 11: added “NV Energy” in line 243, and deleted “Sierra Pacific Power Company (SPPC) in line 254</p>	
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ATCID Revision History

		<p>P. 12: line 284 deleted “MOD-029”</p> <p>P. 25: lines 693, 697, 698, 701 and in chart replaced “Flowgate” with “Network Path”; line 694 and 698-699 replaced “Flowgate” with “Rated System Path”; line 696 replaced “30” with “29” and “02” with “1a”</p> <p>P. 26, 27 and 28: replaced “Flowgate” with “Network Path” in chart</p> <p>P. 28: replaced “Flowgate” with “Network Path” in lines 703 and 706; changed “Figure 1” to “Figure 2”; deleted lines 708-712</p> <p>P. 30: deleted lines 713-723 and chart</p> <p>P. 31: deleted lines 724-766</p> <p>P. 32: deleted lines 767-796; replaced “Flowgate” with “Transfer” in line 797 and “TFC” with “TTC”; added lines 798-801; deleted line 801-802 beginning with “BPA establishes.....”; deleted lines 803-806</p> <p>P. 32: deleted lines 807-820; added “(ETC)” to line 821; replaced “AFC” with “ATC” I lines 824 and “Flowgates” with “Network Paths”; deleted “(MOD-030 R5.1) in lines 824; added “base” to line 825; added lines 825-829 beginning with “The assumptions...”; added “to” in line 835; deleted “(MOD-030 R5-2) in line 836; deleted “(MOD 030 R3.1)” in line 843; and deleted “(MOD 030 R3.4)” in line 847</p> <p>P. 33: added “therefore does not” to line 848; deleted “(MOD 030 R3.5)” in line 849-850; replaced “AFC” with “ATC” in lines 853 and 858; deleted “(MOD 303 R3.2)” in line 855; deleted “(MOD 030 R3.3)” in lines 860; added “base” to line 863; and deleted “(MOD 303 R5.2)” in lines 867 and 872</p> <p>P. 34: replaced “Flowgates” with “Network Paths” in lines 900, 902, 904, 906, 907 and 090; added “Network Path” to lines 914 and replaced “AFC” with “ATC”; and deleted “(MOD-030 R1.2.3)” in lines 922</p> <p>P. 35: added “Network Path” and replaced “AFC” with “ATC: in lines 923, 926, 945 and 948; deleted “MOD” reference in lines 928, 932, 937, 942, 944, 950, 954, 959, 963 and 965</p>	
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ATCID Revision History

		<p>P. 36: deleted “MOD” references in lines 975-976, 983, 992 and 1003; replaced “Flowgate” with “Network Path” in lines 995; deleted “as described in” in line 996 and replaced “MOD-030 R6” with “(MOD-030 R5) in line 996</p> <p>P. 37: deleted references to MOD in lines 1008, 1010, 1012, 1030, 1033, 1035, 1037, 1040 and 1041-1042; and replaced “Flowgates” with “Network Paths” in lines 1017-1018, 1027 and 1040</p> <p>P. 38: replaced “Flowgates” with “Network Paths” in lines 1043, 1053 and 1063; added “Network Path” and replaced “AFC” with “ATC” in line 1056; added “base” to line 1064; and deleted MOD references in lines 1066 and 1075</p> <p>P. 39: replaced “Flowgates” with “Network Paths” in line 1082; deleted MOD references in lines 1082 and 1085-1086; deleted “power flow” from line 1093 and added “ETC”</p> <p>P. 40: replaced “Flowgates” with “Network Paths” in lines 1127 and 1129-113-; deleted MOD references in lines 1121-1122, 1126, 113601137, 1141, 1144-1145 and 1147-1149</p> <p>P. 41: added “base” in lines 1151, 1154 and 1157; replaced “Flowgates” with “Network Paths” in lines 1181 and 1183; added “Network Path” in line 1182 and replaced “AFC” with “ATC”; and changed “Table 4” to “Table 3” in line 1187</p> <p>P. 42: replaced “Flowgates” with “Network Paths” in lines 1197, 1200, 1204 and 1206; deleted references to MOD in lines 1198 and 1206; added “Transfer” in lines 1199, 1204 and 1206; replaced “AFC” with “ATC” in lines 1199, 1200, 1202 and 1204; added “(MOD-029 R7) in line 1201</p> <p>P. 43: replaced “Flowgate” with “Transfer” in lines 1208, 1220, 1225, 1229 and 1233; replaced “TFC” with “TTC” in line 1209; replaced “Flowgates” with “Network Path” in lines 1210-1211; and deleted “base” I line 1219</p> <p>P, 44: replaced “Flowgate” with “Network Path” in lines 1246, 1247, 1256, 1258-1259, 1260, 1262, 1263, 1267-1269 and 1269; deleted MOD reference in 1255’ changed “AFC” to “ATC” in line 1264 and 1267</p> <p>P. 45: changed “AFC” to “ATC” in lines 1271, 1278, 1280, 1283 and 1307; replaced “Flowgate” with “Network Path” in lines 1272, 1277, 1278 and 1282; replaced “Flowgate” with “Transfer” in line 1274</p>	
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ATCID Revision History

		<p>P. 46: replaced “Flowgate” with “Network Path” in lines 1309 and 1330; deleted “as described in MOD-030 R7” in line 1311; added “(MOD-029 R6)” to line 1311; and deleted references to MODs in lines 1316, 1322, 1325, 1327, 1337 and 1343</p> <p>P. 47: replaced “Flowgate” with “Network Path” in lines 1346, 1348, 1353-1354 and 1360; removed “(MOD-030 R7.7)” in line 1345; added “Network Path” to line 1356 and replaced “AFC” with “ATC”; replaced “Flowgate” with “Transfer” in line 1358; replaced “AFC” with “ATC” in lines 1358, 1359, 1367, 1369, 1377, 1379 and 1381</p> <p>P. 48: replaced “AFC” with “ATC” in lines 1382, 1385, 1387, 1389 and 1400; replaced “Flowgate” with “Network Path” in lines 1382, 1387-1388, 1391, 1396, 1397-1398; replaced “TFC” with “TTC” in line 1385; replaced “Flowgate” with “Transfer” in lines 1387, 1391, 1393, 1409 and 1414; added “Network Path” to line 1400; and deleted “base” from line 1413</p> <p>P. 49: replaced “Flowgate” with “Transfer” in lines 1418 and 1422; replaced “Flowgate” with “Network Path” in lines 1435 and 1436</p> <p>P. 50: added “Network Path” in lines 1445 and 1467 and changed “AFC” to “ATC”; deleted MOD reference in line 1451; replaced “Flowgate” with “Network Path” in lines 1463 and 1464</p> <p>P. 51: added “Network Path” to line 1481 and replaced “AFC” with “ATC”; and replaced “Flowgate” with “Network Path” in line 1497</p> <p>P. 52: replaced “Flowgate” with “Network Path” in lines 1498, 1499, 1501, 1502, 1507, 1508, 1510, 1519 and 1524; replaced “Flowgate” with “Transfer” in lines 1503 and 1512; replaced “AFC” with “ATC” in lines 1507, 1514, 1519, 1521, 1525, 1527; replaced “TFC” with “TTC” in lines 1521, 1525, 1526 and 1527; and deleted lines 1528-1532</p> <p>P. 53-57: added lines 1339-1516</p> <p>P. 58: deleted “and AFC” in line 1713; changed “Nevada Power” to “NV Energy” in line 1726; deleted “(PAC)” from line 1729; and deleted “Sierra Pacific Power Company” from line 1740</p>	
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ATCID Revision History			
		P. 59: replaced “Flowgates” with “Network Path” in line 1762; deleted “and Flowgates” in line 1766; and deleted line 1767	
36.0	8/28/15	Moved Appendix B: System Operating Limit Methodology for the Operations Horizon; Appendix 1 - TPL-001-0.1 System Performance Under Normal Conditions; and Appendix 2 - TPL-001-WECC-RBP-2.1 into a separate document titled “System Operating Limit Methodology for the Operations Horizon “ and posted on the same website as the ATCID at: http://www.bpa.gov/transmission/Doing%20Business/Pages/default.aspx under the ATC Methodology.	L. Proctor
37.0	9/29/15	Deleted reference to the Appendix B SOL in line 253 and added the SOL website address on BPA’s ATC Methodology website in lines 255-257; deleted lines 258-263 regarding prevailing and non-prevailing directions of flow (MOD-029 R2.2) and inserted new language; removed reference to Appendix B: SOL in line 253 and added link to the SOL in line 25; and deleted in Appendix A for the COI, under the Contract Party Seattle City Light “EDF Trading North America LLC and Southern California Edison Company (Effective 1/31/2013)”, under Contract Number deleted “13ZZ-15826 (formerly)” and added under Contract Description, Consent Agreement, Contract Party “Under consent agreement and EDF Trading North American LLC”.	L. Proctor
38.0	11/02/15	Removed reference to Appendix B in line 298 and added link to SOL; updated Table 2, BPA Network Paths table beginning on line 656 for the North of John Day On OASIS: NOJDAY path changed from Wautoma-Ostrander to Wautoma-Knight and the Cross Cascades South on OASIS: C-CACS_S changed from Wautoma-Ostrander to Knight-Ostrander and deleted in Appendix A the Contract Party Seattle City Light Consent Agreement Contract Number 10TX-15107 from the COI path.	L. Proctor
39.0	12/07/15	Updated Outage Plan website link in line 104-105 from OASIS http://www.oatioasis.com/bpat/index.html to http://www.gpa.gov/transmission/Reports/Pages/Proposed-Outages.aspx ; moved “(MOD-001 R3.6.1) (MOD-001 R.3.6.2)” to line 115; and added outage language in lines 106-115.	L. Proctor

ATCID Revision History			
40.0	1/03/16	<p>p. 12, lines 241-255: Replaced “beyond two weeks” with “from the next day and beyond” and “periods within the next two weeks” with “the Real-time horizon” and added “On West of Garrison” and “On Northern Intertie South to North, for the seasons or time periods in which the seasonal studies have not been completed, the last year’s seasonal study results will be used for setting the TTC for the relevant Path. ”</p> <p>p. 17, lines 430-435: Added “BPA also uses SADJ adjustments on the Northern Intertie Path 3 S>N. These adjustments are used to account for uncertainties on the path caused by simultaneous interaction with paths COI and NOH. The SADJ is being used temporarily while BPA tests and implements an additional 450MW TRM value for this path. BPA will stop using SADJ for this purpose on NI S>N once testing of the additional TRM value is complete and it is implemented.”</p> <p>p. 21, lines 564-569: Added “In addition, BPA uses SADJ adjustments on the Northern Intertie Path 3 S>N. These adjustments are used to account for uncertainties on the path caused by simultaneous interaction with paths COI/NOH. The SADJ is being used temporarily while BPA tests and implements an additional 450MW TRM value for this path. BPA will stop using SADJ for this purpose on NI S>N once testing of the additional TRM value is complete and it is implemented.”</p> <p>p. 24, lines 647-649: Added “50 MW “ and “However, BPA does release the additional 450 MW TRM for the Northern Intertie Path S>N as non-firm capacity.”</p>	L. Proctor
41.0	9/06/2016	<p>p. 11, line 243: Added “On West of Garrison,”; line 249: Added “On Northern Intertie South to North,”; lines 252-253: Added “from the next day and beyond.” and “the Real-time horizon”</p> <p>p. 16, line 430-431: Added “SADJ” and “reflect the TRM across this path that”; deleted lines 433-436</p> <p>p. 20, line 565: Added “SADJ”, “reflect the TRM across this path that” and “and”; deleted lines 567-570</p> <p>p. 23, Deleted lines 648-650; added in lines 650-652: “BPA does not release the TRM Due to simultaneous path interactions for the Northern Intertie Path S>N as non-firm capacity, but does not release the remaining TRM as non-firm capacity”</p>	L. Proctor

ATCID Revision History

42.0	11/01/2016	<p>Table of Contents: Deleted section IX. BA to BA Interconnection Methodology per BPA decision to no longer utilize this methodology</p> <p>p. 26, Table 2, BPA Network Paths starting on line 693: Added to Paul-Allston on OASIS: PAUL_ALSN, column Transmission Line Components “During outage conditions of the Paul-Allston #2 500kV line with either of the Paul-Napavine #1 or Napavine-Allston #1 500kV lines, the following lines are monitored: Napavine-Allston #1 500kV; Paul-Allston #2 500kV; Longview-Chehalis #1 & #3 230kV; Holcomb-Naselle #1 115kV</p> <p>p.34, lines 930-931: Deleted “and light load ETC Cases for the month of January”</p> <p>p. 36-37, lines 967-1001: Replaced “90th Percentile Method” with “Nameplate Adjusted Method”; replaced “each project’s 90th percentile of historic generation by project and month” with “the nameplate for each project and then adjusting such nameplates by outages forecasted for the particular plants. Next in the month of August, the Lower Snake plants (Lower Granite, Lower Monumental, Little Goose and Ice Harbor) are capped at the observed project outflow over the past ten Augusts.”; deleted lines 975-986; added lines 986-995; deleted lines 998-1001</p> <p>p. 37, lines 1007-1011: Replaced “modeled at up to 80 percent of the wind generators’ contract Demands for BPA’s area and all adjacent TSP area” with “set at the greater of the following: Modeled on the 100 percent of the contract demand for the wind generator; or Modeled off and replaced by the “Balancing Logic Method”</p> <p>p. 37, line1020: Replaced “90th Percentile” with “Nameplate Adjusted” and “on p. 35” with “above</p> <p>p. 37, lines 1032-1035: Deleted “the Mid-Columbia Hydro Projects by 50 percent of the excess generation and FCRPS generation by the other 50 percent of the; added “Prorata, except for the stress FCRPS zone, see below”; and replaced “90th Percentile” with “Balancing Logic”</p> <p>p. 38, lines 1039-1041: Deleted lines</p>	L. Proctor
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ATCID Revision History			
		<p>p. 38, 1043-1051: Replaced “two” with “three”; replaced “NITSfi” with “PTPfi and NITSfi” and “and stressing the three different zones of the FCRPS. For the FCRPS scenarios, the three “zones” that are stressed individually in the scenarios are made up of the following projects: (i) Upper Columbia zone includes Grand Coulee and Chief Joseph; (ii) Lower Snake zone includes Lower Monumental, Lower Granite, Little Goose, and Ice Harbor; and (iii) Lower Columbia zone includes McNary, John Day, The Dalles, Bonneville.</p> <p>p. 38, lines 1055-1056 and lines 1059-1060: Replaced “90th Percentile” with “Nameplate Adjusted”</p> <p>p. 38, lines 1062-1063: Deleted “NITSfi” and replaced “p. 39” with “above”</p> <p>p. 38-39, lines 1064-1086: Replaced “four” with “12”; updated scenarios on lines 1066-1077; deleted lines 1078-1080; added language starting in line 1080-1086; deleted line 1092</p> <p>p. 41, Added lines 1135-1142</p> <p>p. 46, Added lines 1322-1329</p> <p>p. 49-53, lines 1376-1553: Deleted section IX. BA to BA Interconnection Methodology per BPA decision to no longer utilize this methodology.</p>	
43.0	11/14/2016	<p>p. 9, lines 185-192: Deleted language regarding the tracking and monitoring of issuance of gen limits. Modified language in regards to adding new ATC paths to be more general.</p> <p>p. 9. Lines 190-192: Added “if new” and “are identified and implemented. Table 1 will be updated to reflect the new ATC Paths.”</p> <p>p.34, lines 925-926: Added “and light load ETC Cases for the month of January”:</p>	L. Proctor
44.0	4/1/2017	<p>p.7, Line 136: Remove “and TFC,” to correct an oversight when changes were made in version 35 to remove all references to flowgates, TFCs and AFCs.</p>	A. Heredia

ATCID Revision History			
		<p>pps. i, 5 - 9, 14-16, 27: All other modifications are made to incorporate changes to align the ATCID with changes resulting from 1) revisions to Peak Reliability’s SOL Methodology v.8.1; and 2) changes in TOP and IROL standards that are effective April 1, 2017. As of April 1, 2017, BPA will continue to use SOLs as TTCs for ATC calculations for stability limited paths; various system conditions will be used to develop TTCs for thermally limited paths.</p> <p>Appendix A: Removed.</p>	
45.0	9/19/2017	<p>p. 11, Added lines 335-336</p> <p>p. 12, line 339: Added “When modeling contingencies”</p> <p>p. 12, lines 343-349: Added “When modeling contingencies” and “until flows exceed emergency Facility Ratings or voltages fall outside emergency system voltage limits (i.e., the post-Contingency state) and deleted “one of the following reliability constraints is encountered: 1) In the pre-Contingency state, flows exceed normal Facility Ratings or voltages fall outside normal system voltage limits; or (2) In the post-Contingency state, flows exceed emerging Facility Ratings or voltages fall outside emergency system voltage limits.” and “The contingencies studied to determine the post-Contingency state are posted on Peak Reliability’s secure website https://www.peakrc.org.”.</p>	L. Proctor
46.0	4/01/2018	<p>p. 4, line 111: Deleted “See Appendix A for a list of contracts and specified Paths with shared ownership.”</p> <p>p. 11, lines 308-312: Deleted “BPA uses the minimum SOL from the relevant seasonal studies to set the TTC of the Path for periods beyond two weeks.”; “within the next two weeks”; “maximum”; “mw”; “SOL”; and “seasonal” from “seasonal studies”. Added “all time”; “MW”; “value” and “seasonal” to “seasonal TTC”. Line 332 deleted “always credible”.</p> <p>p. 34, line 999: Removed “June”.</p>	L. Proctor

ATCID Revision History			
		<p>p. 38-39, lines 1111-1136: Changed “12” to “6”. Removed “CER modeled one/” from lines 1113-1118; Deleted lines 1119-1124; Deleted “two seasonal groupings” and “Early and”. Added “with CER modeled off” and “with CER modeled on for the last 3 scenarios”. Lines 1127, 1128 and 1130: Replaced “24” with “15”. Table, row month June, under “Base ETC Values Used” column, changed “June” to “May”.</p> <p>p. 40, line1179: Deleted “June”.</p> <p>p. 46, line 1366: Deleted “June”.</p>	
47.0	10/12/2018	p. 23, lines 711-713: Minor simplification of language for clarity.	M. Olczak
48.0	10/31/2018	p.16 and p.20, removed references to TRM values being accounted for as SADJ. BPAT will no longer use SADJs to account for TRM beginning 11/1//2018.	M. Olczak
49.0	06/01/2019	p. 49, lines 1460 – 1465: added a section on adjustments to ATC values on Network Paths when testing in BPA’s production systems is necessary.	M. Olczak
50.0	08/14/2019	<p>P.16, line 505 and P.23, line 701 – detail of how BPA implements TRM has been removed from the ATCID. See the TRMID for TRM information.</p> <p>p.23, line 712 – BPA has updated its “PostbacksNF for the Real-time Horizon” section. BPA will no longer be using a Miles City postback, due to the implementation of the TRM across West of Garrison E>W.</p> <p>BPA is discontinuing the use of RETC in BPA’s ETC calculation. References to the RETC variable have been removed from the document.</p>	M. Olczak
51.0	09/10/2019	<p>p.29 – removed references to BPA’s Outage to Base Case Mapping document. The mapping of outages to the WECC base case is contained in BPA’s Transmission Reference Entity Data system.</p> <p>p.30, line 802 – specifies that BPA updates its Hourly PTFDs at least once per day for hourly ETC calculations</p>	M. Olczak

ATCID Revision History			
		<p>p.30, line 808 – clarifies that BPA uses Daily PTDFs published for hour ending 11 of each day in its Daily ETC calculations</p> <p>p.30, lines 812 – 814 and 816 – 819 – clarifies which generation and transmission outages are included in BPA's daily and monthly ETC calculations</p>	
52.0	11/01/2019	<p>p.11: deleted the statement related to West of Garrison that read "For all time periods, when there are no studied outages, BPA uses a TTC of 2000 MW E>W and the maximum value from the relevant studies to set the seasonal TTC of the Path W>E." This statement is no longer applicable as of 8/14/2019. Please see OASIS for TTC values.</p> <p>p.12, lines 333 – 335 and 342, p.13, lines 388-393: changed Peak RC references to RC West</p> <p>p.13, lines 377 – 387: clarification on study process for ATC Paths with Ratings that were established, known and used in operation since January 1, 1994</p> <p>p.15, Calculating Firm Available Transmission Capability section: removed ATC Firm formulas from end of section since the formula is already stated in line 465</p> <p>p.18, Calculating Non-Firm Available Transfer Capability section: removed ATC Non-Firm formulas from end of section since the formula is already stated in line 601</p> <p>p.29, lines 774 – 777: removed references to Peak RC from this section and clarified the modeling data included in the WECC base cases</p>	M. Olczak
53.0	11/13/2019	<p>ATCID has been updated to reflect that BPA will be calculating base ETC for West of Hatwai using flow-based studies. As such, the following changes have been made:</p> <p>p. 7, removed West of Hatwai from Table 1</p> <p>p. 24, added West of Hatwai to Table 2</p> <p>p. 24, added column to Table 2 entitled "Case used for base ETC calculation." This column identifies whether BPA is using heavy or light load studies to establish base ETC_{F1} for each path.</p>	M. Olczak

ATCID Revision History			
		<p>p. 33, line 932: BPA has renamed this section “Determining Base ETC_{Fi} for Heavy Load Base Cases.” All information on light load cases has been removed from the section.</p> <p>p. 35, line 1018: BPA has renamed this section “Sensitivity Studies for Heavy Load Base Cases” to clarify that these sensitivity studies only apply to heavy load cases.</p> <p>p. 37, line 1059: BPA has added a section entitled “Determining Base ETC_{Fi} and Sensitivities for Light Load Base Cases.” This section provides information on the assumptions and sensitivities for BPA’s light load case studies.</p> <p>BPA has removed references to adjustments that BPA had been making for West of Hatwai to hold out NITS capacity for the Western Montana hydro projects; these obligations are now included in BPA’s base ETC_{Fi} studies for West of Hatwai and the adjustments are therefore no longer needed.</p> <p>Maps of BPA paths have been removed from the ATCID.</p> <p>Upon evaluation, BPA has determined that the SADJ/ETC adjustments across the West of Garrison path are no longer appropriate. BPA has removed references to these adjustments throughout the document.</p> <p>p. 36, lines 1052-1053: clarification that the difference between the highest and lowest seasonal base ETC_{Fi} values is used to establish a commercial uncertainty margin.</p>	
54.0	01/28/2020	<p>p.12, line 396: corrected email address</p> <p>p.13, line 399: corrected link</p> <p>p.27, lines 716-717 and lines 720-721: simplified wording</p> <p>p.27 – 28: deleted the following language in the “Use of WECC Base Cases to Determine ETC” section, as the language does not reflect BPA’s current process:</p> <p>“BPA updates the relevant WECC base cases with equipment outages which are known and mapped to the WECC base case, as well as newly-energized generation and Transmission for ATC calculations at least once per day for intra-day, next day and days two through 30.</p>	M. Olczak

ATCID Revision History

		<p>BPA updates the relevant WECC base cases with equipment outages which are known and mapped to the WECC base case, as well as newly-energized generation and Transmission for ATC calculations at least once per month for months two through 13.”</p> <p>p.29: In the “PTDF Analysis and De Minimis” section, deleted the sentence reading “Ten percent is the percentage used to curtail in the Western Interconnection-wide congestion management procedure.” This is a simplification of this section and does not impact the methodology related to this topic.</p> <p>p.32: deleted the following language in the “Determining Base ETC_{Fi} for Heavy Load Base Cases” section, as the language does not reflect BPA’s current process:</p> <p>“In ETC Cases, BPA models all of its own NITS_{Fi}, GFF_{Fi} and PTP_{Fi} Long-Term Reservations, as well as those of its adjacent TSPs, active at the time the ETC Cases are produced.</p> <p>To model the impact of PTP_{Fi} long-term reservations for all of its adjacent TSPs, BPA queries a list of PTP_{Fi} long-term reservations from the OASIS of its adjacent TSPs. To model the impact of GFF_{Fi} and NITS_{Fi} long-term obligations for all of BPA’s adjacent TSPs, BPA contacts its adjacent TSPs and requests a list of their GFF_{Fi} obligations and a list of their NITS_{Fi} with a list of designated network resources with the MW amounts designated to serve Network Service and Native Load.</p> <p>BPA models the NITS_{Fi}, GFF_{Fi} and PTP_{Fi} Long-Term obligations of all of its adjacent TSPs to the extent that there are sufficient firm Transmission rights on BPA’s or its adjacent TSPs’ Transmission Systems to serve the Load.”</p> <p>p.49, line 1480: corrected link</p>	
55.0	03/24/2020	<p>p.27, line 720: added the word “seasonal” to clarify which WECC cases BPA uses for its ETC studies</p> <p>p.27, lines 722-724: clarified which load forecasts BPA is using in its ETC studies</p> <p>p.28: streamlined section with removal of sentence stating “See “Determining Base ETC_{Fi}” section for a description of how BPA develops its ETC Cases”</p>	M. Olczak

ATCID Revision History			
		<p>p.32, section titled “Determining Base ETC for Heavy Load Base Cases”: changes throughout the section to reflect BPA’s transition to monthly base ETC studies</p> <p>p.35, lines 1013-1017: removed references to seasonal cases to support BPA’s transition to monthly base ETC studies</p> <p>p.35, lines 1028-1029: changed wording to reflect BPA’s transition to monthly base ETC studies</p> <p>p.35, lines 1030-1033: changes to reflect that BPA uses the highest base ETC to calculate firm ATC and lowest base ETC to calculate non-firm ATC; reference to commercial uncertainty margin removed</p> <p>p.35-36, lines 1034-1039: changes to reflect BPA’s transition to monthly base ETC studies</p> <p>p.36, lines 1041-1047: changes to reflect BPA’s transition to monthly base ETC studies</p> <p>p.37, lines 1060-1064: change to reflect that BPA uses the highest base ETC to calculate firm ATC and lowest base ETC to calculate non-firm ATC; reference to commercial uncertainty margin removed</p> <p>p.38, SAdj/ETC Adjustments section: removed references to SAdj for the commercial uncertainty margin, as this process has been discontinued</p> <p>p.44, SAdj/ETC Adjustment section: removed references to SAdj for the commercial uncertainty margin, as this process has been discontinued and clarified that an SAdj is used to account for BPA’s use of the lowest base ETC in the non-firm ATC calculation.</p>	
56.0	05/20/2020	<p>p.1, lines 23-26: modified the “Long-Term Reservation” and “Short-Term Reservation” definitions to clarify that all requests (including Network Integration) fall into each definition based on duration</p> <p>p.27, lines 721-728: clarification on load and generation forecasts used in BPA’s ETC cases</p> <p>p. 28, lines 750-751: slight rewording to clarify PTDF calculation process</p>	M. Olczak

ATCID Revision History

		<p>p.29: removed sentence reading “The source used in BPA’s Network Path ATC calculations of transactions for all adjacent TSPs is obtained from the source field if a source is identified, or the POR field if only the POR is identified.” This no longer applies with the elimination of adjacent TSP impact functionality in OATI.</p> <p>p.30: removed sentence reading “The sink used in BPA’s Network Path ATC calculations of transactions for all adjacent TSPs is obtained from the sink field if a sink is identified, or the POD field if only the POD is identified.” This no longer applies with the elimination of adjacent TSP impact functionality in OATI.</p> <p>p.30: removed section on the weighted PTDF for FCRPS generation in the Idaho Power Company BAA. This no longer applies with the elimination of adjacent TSP impact functionality in OATI.</p> <p>p.31, line 855: conformed the formulas/definitions in the “Calculating Firm Existing Transmission Commitments” section to MOD-029 (section referenced MOD-030 formulas/definitions, which BPA no longer uses). References to calculations of adjacent TSP impacts have been deleted, due to elimination of adjacent TSP impact functionality in OATI.</p> <p>p.32, lines 896-897, 905-906, and 911-912: revised to reflect BPA has transitioned from Summer seasonal ETC study to monthly ETC studies for June through October.</p> <p>p.35, line 1002: revised to reflect BPA has transitioned from Summer seasonal ETC study to monthly ETC studies for June through October</p> <p>p.35-36, Table 3: revised to reflect BPA has transitioned from Summer seasonal ETC study to monthly ETC studies for June through October</p> <p>p.36, lines 1040-1041: removed reference to adjacent TSPs from section. This no longer applies with the elimination of adjacent TSP impact functionality in OATI.</p> <p>p.37, lines 1060-1061: Simplification of LRES and SRES definitions, to account for the elimination of adjacent TSP impact functionality in OATI</p> <p>p.39, lines 1116-1120: documentation that BPA will use zero as the base ETC when the ETC cases result in a negative base ETC value.</p>	
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ATCID Revision History			
		<p>p.40, line 1145: conformed the formulas/definitions in the “Calculating Non-Firm Existing Transmission Commitments” section to MOD-029 (section referenced MOD-030 formulas/definitions, which BPA no longer uses). References to calculations of adjacent TSP impacts have been deleted, due to elimination of adjacent TSP impact functionality in OATI.</p> <p>p.42, lines 1221-1222: Simplification of LRES and SRES definitions, to account for the elimination of adjacent TSP impact functionality in OATI</p> <p>p.43, lines 1262-1265: updated definitions for SCH⁺⁷ and ASC⁺⁷ to account for the elimination of adjacent TSP impact functionality in OATI</p> <p>p.44, lines 1279-1280: updated definition for RRES_{NF} to account for the elimination of adjacent TSP impact functionality in OATI</p> <p>p.44, lines 1291-1294: updated definitions for SCH^{+6,5,4,3,2,1} and ASC^{+6,5,4,3,2,1} to account for the elimination of adjacent TSP impact functionality in OATI</p> <p>p.45, lines 1322-1324: updated definition for Counterflows_{NF} to account for the elimination of adjacent TSP impact functionality in OATI</p> <p>p.45-46, lines 1325-1331: documentation that BPA will use zero as the base ETC when the ETC cases result in a negative base ETC value.</p> <p>Throughout the document: conformed ETC and AFC formula terms and definitions from MOD-030 to MOD-029 (i.e. PTP_{FI} to PTP_F) and replaced any references to “flowgates” with the term “network paths.”</p>	
57.0	09/16/2020	<p>p.2, line 38: added Satsop Injection to the list of ATC Paths for which BPA has a TRM</p> <p>p.7-8, Table 1: Added Satsop Injection to the table of BPA's 1:1 ATC Paths</p> <p>p.7, line 235: clarified that this section applies to BPA's 1:1 ATC Paths. Paths listed in this section will be referenced by BPA as 1:1 ATC Paths going forward. References to these paths have been conformed to this new naming convention throughout the ATCID.</p>	M. Olczak

ATCID Revision History			
		p.23, line 708: clarified that this section applies to BPA's Flow-Based ATC Paths. Paths listed in this section will be referenced by BPA as Flow-Based ATC Paths going forward. References to these paths have been conformed to this new naming convention throughout the ATCID.	
58.0	09/30/2020	<p>Throughout document, changed references from MOD-029-1a to MOD-029-2a to match current effective NERC standard.</p> <p>p.27: moved some of the language pertaining to how BPA models generation in its ETC base cases from "Use of WECC Base Cases to Determine ETC" section to p.32, lines 916-917. Language has been modified to better reflect process that BPA uses (process has not changed; this is a documentation change only).</p> <p>p.37, line 1081: language describing the LETC variable has been clarified</p> <p>p.42, line 1240: language describing the LETC variable has been clarified</p>	M. Olczak
59.0	10/21/2020	<p>p.9, line 263: Updated name to match NERC registry</p> <p>p.27, lines 727-735: Added information on loads used in BPA's Winter light load ETC base cases for both BPA's Balancing Authority and outside of BPA's Balancing Authority</p> <p>p.32, lines 905-921: revised to reflect BPA has transitioned from a Winter seasonal ETC study to monthly ETC studies for November through February.</p> <p>p.35, line 1013-1024: revised to reflect BPA has transitioned from a Winter seasonal ETC study to monthly ETC studies for November through February.</p> <p>p.36, "Determining Base ETC and Sensitivities for Light Load Base Cases" section: removed outdated verbiage regarding the balancing of the case.</p>	M. Olczak
60.0	02/17/2021	p.1, lines 6-9: purpose statement has been revised to clarify that BPA's ATCID also documents BPA's Postback Methodology, as required by the NAESB Wholesale Electric Quadrant business practice standards.	M. Olczak

ATCID Revision History

		<p>p.14, line 460: removed page number references to streamline document</p> <p>p.15, line 495: removed page number reference to streamline document</p> <p>p.16, lines 504-507: slight rewording to better align with the NAESB Postback Methodology requirements in the Wholesale Electric Quadrant business practice standards; there has not been a change to BPA's Postback Methodology.</p> <p>p.17, line 563: removed page number reference to streamline document</p> <p>p.20, line 640: removed page number reference to streamline document</p> <p>p.21, line 654: removed page number reference to streamline document</p> <p>p.21, line 670: removed page reference to streamline document</p> <p>p.22, lines 684-698: slight rewording to better align with the NAESB Postback Methodology requirements in the Wholesale Electric Quadrant business practice standards; there has not been a change to BPA's Postback Methodology.</p> <p>p.27, lines 731-732: clarifies that BPA uses the loads in the WECC light load cases for BPA's Balancing Authority</p> <p>p.27, lines 734-735: clarifies that BPA uses the loads in the WECC light load and heavy load cases outside of BPA's Balancing Authority</p> <p>p.32, line 905: revised to reflect that BPA has fully transitioned to monthly base ETC cases.</p> <p>p.32, lines 911-14: revised to reflect that BPA has fully transitioned to monthly base ETC cases.</p> <p>p.35, lines 1012-1013: revised to reflect expanded scenarios for March through May</p> <p>p.35, Table 3: Table 3 has been deleted; Table 3 is no longer applicable as BPA has fully transitioned to monthly base ETC cases</p>	
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ATCID Revision History			
		<p>p.35, lines 1022-1024: documents the starting point for BPA's Summer light load cases and that the Summer light load ETC case is used to set the base ETC for April through October.</p> <p>p.37, lines 1074-1075: change to reflect that the CER PTDF adjustment is only being used for June through October</p> <p>p.38, lines 1101-1104: slight rewording to better align with the NAESB Postback Methodology requirements in the Wholesale Electric Quadrant business practice standards; there has not been a change to BPA's Postback Methodology.</p> <p>p.40, line 1174: removed page number reference to streamline document</p> <p>p.41, lines 1231-1232: change to reflect that the CER PTDF adjustment is only being used for June through October</p> <p>p.44, lines 1302-1306: slight rewording to better align with the NAESB Postback Methodology requirements in the Wholesale Electric Quadrant business practice standards; there has not been a change to BPA's Postback Methodology.</p>	
61.0	02/26/2021	<p>p.20, lines 631-636: clarification of the SCH and ASC variables, and where energy versus transmission profiles are used</p> <p>p.20-21, lines 661-676: clarification of the SCH and ASC variables, and where energy versus transmission profiles are used</p> <p>p.29, lines 801-804: removed reservation evaluation and de minimis criteria from the ATCID, and added reference to the Transmission Service Requests Evaluation business practice, which now defines BPA's processes for evaluating Transmission Service Requests.</p> <p>p.32, lines 904-905: clarifies that BPA deems de minimis impacts to be zero when calculating firm ETC using reservations.</p> <p>p.37, lines 1094-1096: minor clarification to language</p> <p>p.40, lines 1175-1178: clarifies that BPA deems de minimis impacts to be zero when calculating non-firm ETC using reservations.</p>	M. Olczak

ATCID Revision History			
		<p>p.42, lines 1253-1254: clarifies that BPA deems de minimis impacts to be zero when calculating firm ETC using reservations.</p> <p>p.42, lines 1264-1268: clarification of the SCH and ASC variables, and where energy versus transmission profiles are used</p> <p>p.43, lines 1284-1285: clarifies that BPA deems de minimis impacts to be zero when calculating non-firm ETC using reservations.</p> <p>p.44, lines 1295-1308: clarification of the SCH and ASC variables, and where energy versus transmission profiles are used</p>	
62.0	04/08/2021	<p>p.15, lines 490-491: added clarification that BPA uses SADJ across NI S>N to account for a portion of the firm TRM across this path. This is a process clarification and not a change to how the TRM or ATC calculations are performed.</p> <p>p.15, lines 477-480: clarified that the LETC variable is used for $NITS_F$, GF_F, PTP_F and ROR_F in the ETC_F calculation. This is a clarification and not a change to BPA's process.</p> <p>p.15, Table between lines 497 and 498: aligned ETC variables with the OATI variables. This is a formula clarification and not a change to how the ETC calculation is performed.</p> <p>p.19, lines 621-624: clarified that the LETC variable is used for $NITS_F$, GF_F, PTP_F and ROR_F in the ETC_F calculation. This is a clarification and not a change to BPA's process.</p> <p>p.20, Table between lines 629 and 630: aligned ETC variables with the OATI variables. This is a formula clarification and not a change to how the ETC calculation is performed.</p> <p>p.42, Table between lines 1260 and 1261: aligned ETC variables with the OATI variables. This is a formula clarification and not a change to how the ETC calculation is performed.</p>	M.Olczak

ATCID Revision History			
63.0	05/12/2021	<p>p.3, footnote: removed reference to North of John Day, as this path has been de-activated; also matched up the names of the paths listed in the footnote to those used in Table 2 on Page 24</p> <p>p.11, line 347 and content previously found between lines 351-352: deleted references to North of John Day, as this path has been de-activated</p> <p>p.24, Table 2: removed North of John Day from table, as this path has been de-activated</p>	M. Olczak
64.0	05/19/2021	<p>p.28, "Outages in ETC Calculations" section: deleted sentences on generation outages in ETC calculations; BPA does not include generation outages in its ETC calculations</p> <p>p.30, lines 848-853: added specificity that the weighted FCRPS PTDF calculation is based on the stress scenario per path, and clarified the time frame for which generation forecasts are used in the calculation of this PTDF</p> <p>p.33, lines 931-939: revised to explain BPA's transition to a new methodology for modeling the Willamette Valley projects in its ETC cases</p> <p>p.35, line 1019: revised to reflect the scenarios BPA is currently running in the heavy base ETC cases</p> <p>p.37 and p.41: deleted references to CER SADJs, as these SADJs have been replaced by additional base ETC scenarios</p>	M. Olczak
65.0	09/15/2021	Extensive re-organization of the ATCID to combine the 1:1 and Flow-based ATCID sections into one.	M. Olczak

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