

**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: May 19, 2021**

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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.

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## 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 dams<sup>1</sup>  
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 Interconnections<sup>2</sup>), Interties,<sup>3</sup> 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

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<sup>1</sup> 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

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

<sup>3</sup> California-Oregon AC Intertie, Pacific DC Intertie, and Montana Intertie.

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### 29 III. Overview

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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 limited<sup>4</sup> 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)

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<sup>4</sup> 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)

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## 105 **IV. Allocation Processes**

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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)

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## 123 **V. Outages**

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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)

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## 139 VI. Priorities Used to Set TTC

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### 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.

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## 237 VII. Rated System Path Methodology for 1:1 ATC Paths

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238 This section describes in detail how BPA implements the Rated System Path methodology for  
239 the 1:1 ATC Paths listed in Table 1. It addresses all of the Requirements in Standard MOD-  
240 029-2a.

### 241 BPA’s 1:1 ATC Paths

242 The following table shows the 1:1 ATC Paths for which BPA uses the Rated System Path  
243 methodology.

244 **Table 1**

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

245

246

247

BPA will select Rated System Path Methodology if new 1:1 ATC Paths are identified and implemented. Table 1 will be updated to reflect the new 1:1 ATC Paths. (MOD-001 R1)

## 248 **Calculating Total Transfer Capability (TTC)**

### 249 **Data and Assumptions**

250 When calculating TTC for its ATC Paths, BPA uses WECC base cases that utilize data and  
251 assumptions consistent with the time period being studied. (MOD-029 R1.1) In addition to  
252 BPA's TOP area, these WECC base cases model the entire Western Interconnection.  
253 Hence, the WECC base cases include all TOP areas regardless if they are either contiguous  
254 to BPA's TOP area or are linked to BPA's TOP area by a joint operating Agreement. (MOD-  
255 029 R1.1.1.2, R1.1.1.3)

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

- 257 • Avista Corporation (AVA)
- 258 • BC Hydro (BCH)
- 259 • California Independent System Operator (CAISO)
- 260 • City of Tacoma, Department of Public Utilities, Light Division
- 261 • Eugene Water and Electric Board (EWEB)
- 262 • Idaho Power Company (IPCO)
- 263 • Los Angeles Department of Water and Power (LADWP)
- 264 • NorthWestern Energy (NWMT)
- 265 • NV Energy
- 266 • PacifiCorp (PAC)
- 267 • Pend Oreille County Public Utility District No. 1
- 268 • Portland General Electric (PGE)
- 269 • Public Utility District No. 1 of Chelan County
- 270 • Public Utility District No. 1 of Clark County
- 271 • Public Utility District No. 1 of Snohomish County
- 272 • Public Utility District No. 2 of Grant County, Washington
- 273 • PUD No. 1 of Douglas County
- 274 • Puget Sound Energy, Inc. (PSEI)
- 275 • Seattle City Light (SCL)

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

278 BPA models all existing System Elements in their normal operating condition for the  
279 assumed initial conditions, up to the time horizon in which BPA begins modeling  
280 outages (see Section V, "Outages," beginning on p. 6). (MOD-029 R1.1.2)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

324 **Process to Determine TTC**

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

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

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

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

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

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

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

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

350 For paths: Paul-Allston, Raver-Paul, West of McNary, West of Slatt, and West of John Day;  
351 Use the non-RAS TTC as the non-prevailing flow direction TTC

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

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

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

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

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

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

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

389 As described in Section III, "Overview," information regarding TTCs is shared electronically  
390 between the appropriate BPA organizations within seven calendar days of the finalization of  
391 the study report for the TTCs. BPA sends a notice to all TSPs for the ATC Paths listed in Table  
392 1 where there are multiple TSPs *prior* to limitations in TTCs. (MOD-029 R4)

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

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

399 An ATC Path for which BPA does not perform studies to determine the most current value of  
400 TTC is Reno - Alturas NW Sierra (RATS). For RATS, NV Energy determines TTC. The TTC  
401 Ratings are provided to BPA and BPA then sends a Notice of Planned Path Limitation. (MOD-  
402 029 R3)

## 403 Calculating Firm Transmission Service for 1:1 ATC Paths

### 404 Calculating Firm Existing Transmission Commitments (ETC<sub>F</sub>)

405 When calculating ETC<sub>F</sub> for all time periods for its ATC Paths, BPA uses the following  
406 algorithm as specified in MOD-029 R5:

$$407 \quad \text{ETC}_F = \text{NL}_F + \text{NITS}_F + \text{GF}_F + \text{PTP}_F + \text{ROR}_F + \text{OS}_F$$

408 **Where:**

409 **NL<sub>F</sub>** is the firm capacity set aside to serve peak Native Load forecast commitments for the  
410 time period being calculated, to include losses and Load growth not otherwise included in  
411 TRM or CBM.

412 BPA does not use the NL<sub>F</sub> component of the ETC<sub>F</sub> calculation for any of its ATC Paths.  
413 All of BPA's firm Transmission obligations are included in contracts, Agreements and  
414 obligations captured in the NITS<sub>F</sub>, PTP<sub>F</sub> and GF<sub>F</sub> components of this algorithm.  
415 Therefore BPA sets NL<sub>F</sub> at zero for all of its ATC Paths for all time periods.

416 **NITS<sub>F</sub>** is the firm capacity reserved for Network Integration Transmission Service serving  
417 Load, to include losses and Load growth.

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

425 **GF<sub>F</sub>** is the firm capacity set aside for grandfathered Transmission Service and contracts for  
426 energy and/or Transmission Service, where executed prior to the effective date of BPA's  
427 Open Access Transmission Tariff (OATT).

428 The amount of GF<sub>F</sub> BPA sets aside is based on the terms of each individual contract.

429 **PTP<sub>F</sub>** is the firm capacity reserved for confirmed Point-to-Point Transmission Service and  
430 is equal to the sum of the PTP<sub>F</sub> contract Demands.

431 In BPA's calculations, PTP<sub>F</sub> is equal to the sum of the MW Demands of PTP<sub>F</sub>  
432 reservations or schedules. In some cases, BPA has PTP<sub>F</sub> contracts that give customers  
433 the right to schedule between multiple Points of Receipt (PORs) and Points of Delivery  
434 (PODs). However, the customer can only schedule up to the MW amount specified in  
435 their contract. Multiple reservations are created for these special cases to allow BPA  
436 to model each POR-to-POD combination. The amount set aside for these cases does  
437 not exceed the total PTP<sub>F</sub> capacity specified in the contracts.



438 **ROR<sub>F</sub>** is the firm capacity reserved for roll-over rights for contracts granting Transmission  
439 Customers the right of first refusal to take or continue to take Transmission Service when  
440 the Transmission Customer’s Transmission Service contract expires or is eligible for  
441 renewal.

442 BPA assumes that all of its Transmission Service Agreements eligible to roll-over in the  
443 future will be rolled over. Therefore, **ROR<sub>F</sub>** is equal to the sum of the **NITS<sub>F</sub>**, **GF<sub>F</sub>** and  
444 **PTP<sub>F</sub>** obligations that are eligible for roll-over rights. If a Transmission Customer  
445 chooses not to exercise its roll-over rights by the required deadline, BPA no longer  
446 holds out capacity for roll-over rights for that Transmission Customer.

447 **OS<sub>F</sub>** is the firm capacity reserved for any other service(s), contract(s), or Agreement(s) not  
448 specified above using Firm Transmission Service.

449 BPA has no other services beyond those specified above. Therefore BPA sets **OS<sub>F</sub>** at  
450 zero for all of its ATC Paths for all time periods.

451 As a result, BPA calculates **ETC<sub>F</sub>** for its ATC Paths for all time periods as follows:

$$452 \quad \mathbf{ETC_F = NITS_F + GF_F + PTP_F + ROR_F}$$

453 While BPA includes all of the components described above in **ETC<sub>F</sub>**, BPA accounts for **NITS<sub>F</sub>**,  
454 **GF<sub>F</sub>**, **PTP<sub>F</sub>** and **ROR<sub>F</sub>** in its ATC calculations using different variables. Descriptions of the  
455 variables for **ATC<sub>F</sub>** calculations and **ATC<sub>NF</sub>** calculations are found in the sections below.

#### 456 **Calculating Firm Available Transfer Capability (ATC<sub>F</sub>)**

457 When calculating **ATC<sub>F</sub>** for its ATC Paths for all time periods, BPA uses the following  
458 algorithm (MOD-029 R7):

$$459 \quad \mathbf{ATC_F = TTC - ETC_F - CBM - TRM + Postbacks_F + Counterflows_F}$$

460 **Where:**

461 **ATC<sub>F</sub>** is the firm Available Transfer Capability for the ATC Path for that period.

462 **TTC** is the Total Transfer Capability for that ATC Path for that time period.

463 See “Process to Determine TTC” beginning on p. 11, for a description of how BPA  
464 determines **TTC**.

465 **ETC<sub>F</sub>** is the sum of existing firm commitments for that ATC Path during that period.

466 For **ATC<sub>F</sub>** calculations for all time periods, BPA further divides **ETC<sub>F</sub>** into the following  
467 algorithm in order to capture both its firm Long-Term and Short-Term Reservations:

$$468 \quad \mathbf{ETC_F = LRES + SRES + LETC - SAdj/ETC Adjustments}$$

469 **Where:**

470 LRES is the sum of the  $NITS_F$ ,  $PTP_F$ ,  $ROR_F$  and  $GF_F$  Long-Term Reservations.

471 SRES is the sum of the  $PTP_F$  Short-Term Reservations.

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

476 SADJ/ETC Adjustments is the variable BPA uses to make adjustments to  $ETC_F$  not  
477 captured in LRES or SRES.

478 BPA applies one such adjustment to allow for deferral competitions, as required in  
479 Section 17.7 of BPA’s OATT. When a deferral reservation is confirmed, BPA applies  
480 an ETC adjustment to hold out transfer capability for the time period deferred,  
481 starting at the latter of five months out or the service commencement date of the  
482 original reservation, to allow for a competition. At four months out, if no  
483 competition is identified, the ETC adjustment is modified to post back transfer  
484 capability for the fourth month out.

485 Additionally, BPA uses the SADJ/ETC adjustment to account for a portion of the  
486 firm TRM that BPA applies on the NI S>N.

487 BPA also uses SADJ/ETC adjustments to ensure accurate accounting of  $ETC_F$ . These  
488 adjustments may be performed to account for situations such as data modeling  
489 corrections, and will be noted in the descriptions of the adjustments.

490 The following diagram illustrates how the variables used in BPA’s  $ETC_F$  calculations  
491 correspond to the variables contained in the  $ETC_F$  algorithm shown in “Calculating  
492 Firm Existing Transmission Commitments.”

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

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

494 BPA does not maintain CBM. Therefore BPA sets CBM at zero for all of its ATC  
495 Paths for all time periods.

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

497 The description of how BPA implements TRM can be found in BPA's TRMID, which is  
498 posted on BPAs website.

499 **Postbacks<sub>F</sub>** are changes to  $ATC_F$  due to a change in the use of Transmission Service  
500 for that period.

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

505 **Counterflows<sub>F</sub>** are adjustments to  $ATC_F$ .

506 BPA does not include confirmed Transmission reservations, expected interchange  
507 or internal flow counter to the direction of the ATC Path being calculated in its  
508  $ATC_F$  calculations. BPA's rationale is that it does not want to offer firm transfer  
509 capability due to counterflow that may not be scheduled as this could lead to  
510 Curtailments of Firm Transmission Service in the Real-time horizon. (MOD-001  
511 R3.2) Therefore BPA sets  $Counterflows_F$  at zero for all of its ATC Paths for all time  
512 periods.

### 513 **Calculating Non-Firm Transmission Service for 1:1 ATC Paths**

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

- 515 1. **NITS<sub>NF6</sub>**. This is a non-firm Transmission product available only to Transmission  
516 Customers with NITS Agreements. It is the highest quality of Non-Firm Transmission  
517 Service in that it is the last Non-Firm Transmission Service that would be Curtailed, if  
518 necessary.
- 519 2. **PTP<sub>NF5</sub>**. This is a non-firm Transmission product available only to Transmission  
520 Customers with PTP service Agreements.  $PTP_{NF5}$  is the fifth Non-Firm Transmission  
521 Service that would be Curtailed, if necessary.
- 522 3. **PTP<sub>NF4</sub>**. This is a non-firm Transmission product available only to Transmission  
523 Customers with PTP service Agreements.  $PTP_{NF4}$  is the fourth Non-Firm Transmission  
524 Service that would be Curtailed, if necessary.
- 525 4. **PTP<sub>NF3</sub>**. This is a non-firm Transmission product available only to Transmission  
526 Customers with PTP service Agreements.  $PTP_{NF3}$  is the third Non-Firm Transmission  
527 Service that would be Curtailed, if necessary.
- 528 5. **PTP<sub>NF2</sub>**. This is a non-firm Transmission product available only to Transmission  
529 Customers with PTP service Agreements.  $PTP_{NF2}$  is the second Non-Firm Transmission  
530 Service that would be Curtailed, if necessary.
- 531 6. **PTP<sub>NF1</sub>**. This is a non-firm Transmission product available only to Transmission  
532 Customers with PTP service Agreements.  $PTP_{NF1}$  is the first Non-Firm Transmission  
533 Service that would be Curtailed, if necessary (i.e., this Transmission Service has the  
534 highest likelihood of being Curtailed).

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

### 536 **Calculating Non-Firm Existing Transmission Commitments ( $ETC_{NF}$ )**

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

$$539 \quad ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

540 **Where:**

541  $NITS_{NF}$  is the non-firm capacity set aside for Network Integration Transmission Service  
542 serving Load (i.e., secondary service), to include losses and Load growth not otherwise  
543 included in TRM or CBM.

544 In BPA's calculations, this is  $NITS_{NF6}$ . It does not include losses or Load growth, since  
545 losses and Load growth are already set aside as firm capacity in  $NITS_F$ .

546  $GF_{NF}$  is the non-firm capacity set aside for grandfathered Transmission Service and  
547 contracts for energy and/or Transmission Service, where executed prior to the effective  
548 date of BPA's OATT.

549 BPA has no grandfathered Non-Firm Transmission Service obligations. Therefore BPA  
550 sets  $GF_{NF}$  at zero for all of its ATC Paths for all time periods.

551  $PTP_{NF}$  is non-firm capacity reserved or scheduled for confirmed PTP Transmission Service.

552 In BPA's calculations, this includes  $PTP_{NF5}$ ,  $PTP_{NF4}$ ,  $PTP_{NF3}$ ,  $PTP_{NF2}$  and  $PTP_{NF1}$ .

553  $OS_{NF}$  is the non-firm capacity reserved for any other service(s), contract(s), or  
554 Agreement(s) not specified above using Non-Firm Transmission Service.

555 BPA has no other services beyond those specified above. Therefore BPA sets  $OS_{NF}$  at  
556 zero for all of its ATC Paths for all time periods.

557 As a result, BPA calculates  $ETC_{NF}$  for its ATC Paths for all time periods as follows:

$$558 \quad ETC_{NF} = NITS_{NF} + PTP_{NF}$$

559 While BPA includes all of the components described above in  $ETC_{NF}$ , BPA accounts for  $NITS_{NF}$   
560 and  $PTP_{NF}$  in its  $ATC_{NF}$  calculations using different variables as described further in the ATCID.

### 561 **Calculating Non-Firm Available Transfer Capability ( $ATC_{NF}$ )**

562 BPA uses different algorithms to calculate  $ATC_{NF}$ ,  $ETC_F$ ,  $ETC_{NF}$  and  $Postbacks_{NF}$  for two time  
563 horizons for all of its ATC Paths: Real-time and beyond Real-time. The Real-time horizon  
564 begins at 10 p.m. on the pre-schedule day for the 24 hours in the next day.  $ETC_F$  and  $ETC_{NF}$   
565 for the Real-Time horizon are calculated using schedules and reservations that have not yet  
566 been scheduled. The beyond Real-time horizon includes hourly for the hours after those  
567 included in the Real-time period as well as daily and monthly calculations.  $ETC_F$  and  $ETC_{NF}$  for  
568 the time horizon beyond Real-time are calculated using reservations.

569 BPA calculates  $ETC_{NF}$  and  $ATC_{NF}$  for the six non-firm Transmission products associated with  
570 NERC Curtailment priorities (described on p.20) as follows:

- 571 1.  $ATC_{NF6}$ :  $ATC_{NF6}$  is calculated for the  $NITS_{NF6}$  product.  $ETC_{NF}$  in this equation only  
572 includes  $NITS_{NF6}$ .
- 573 2.  $ATC_{NF5}$ :  $ATC_{NF5}$  is calculated for the  $PTP_{NF5}$  product.  $ETC_{NF}$  in this equation includes  
574  $NITS_{NF6}$  and  $PTP_{NF5}$ .
- 575 3.  $ATC_{NF4}$ :  $ATC_{NF4}$  is calculated for the  $PTP_{NF4}$  product.  $ETC_{NF}$  in this equation includes  
576  $NITS_{NF6}$ ,  $PTP_{NF5}$  and  $PTP_{NF4}$ .
- 577 4.  $ATC_{NF3}$ :  $ATC_{NF3}$  is calculated for the  $PTP_{NF3}$  product.  $ETC_{NF}$  in this equation includes  
578  $NITS_{NF6}$ ,  $PTP_{NF5}$ ,  $PTP_{NF4}$ , and  $PTP_{NF3}$ .
- 579 5.  $ATC_{NF2}$ :  $ATC_{NF2}$  is calculated for the  $PTP_{NF2}$  product.  $ETC_{NF}$  in this equation includes  
580  $NITS_{NF6}$ ,  $PTP_{NF5}$ ,  $PTP_{NF4}$ ,  $PTP_{NF3}$  and  $PTP_{NF2}$ .
- 581 6.  $ATC_{NF1}$ :  $ATC_{NF1}$  is calculated for the  $PTP_{NF1}$  product.  $ETC_{NF}$  in this equation includes  
582  $NITS_{NF6}$ ,  $PTP_{NF5}$ ,  $PTP_{NF4}$ ,  $PTP_{NF3}$ ,  $PTP_{NF2}$  and  $PTP_{NF1}$ .

583 The following section describes how BPA calculates  $ATC_{NF}$  for each time period.

584 When calculating  $ATC_{NF}$  for its ATC paths for the two time horizons described above, BPA uses  
585 the following algorithm as specified in MOD-029 R8:

$$586 \quad \mathbf{ATC}_{NF} = \mathbf{TTC} - \mathbf{ETC}_F - \mathbf{ETC}_{NF} - \mathbf{CBM}_S - \mathbf{TRM}_U + \mathbf{Postbacks}_{NF} + \mathbf{Counterflow}_{NF}$$

587 **Where:**

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

589 As previously described, BPA calculates six  $ATC_{NF}$  values, one for each of its six non-firm  
590 Transmission products.

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

592 See “Calculating Total Transfer Capability” beginning on p. 13 for a description of BPA’s  
593 process to determine  $TTC$ .

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

595 BPA uses different algorithms to calculate  $ETC_F$  for all of its ATC Paths for the time  
596 horizon beyond Real-time and the Real-time horizon.

597  **$ETC_F$  for the Time Horizon Beyond Real-Time**

598 For  $ATC_{NF}$  calculations for the time horizon beyond Real-time, BPA further divides  $ETC_F$   
599 into the following algorithm in order to capture both its firm Long-Term and Short-Term  
600 Reservations:

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

602 **Where:**

603 **LRES** is the sum of the NITS<sub>F</sub>, PTP<sub>F</sub>, ROR<sub>F</sub> and GF<sub>F</sub> Long-Term Reservations.

604 **SRES** is the sum of the PTP<sub>F</sub> Short-Term Reservations.

605 **SADJ/ETC Adjustments** is the variable used to make adjustments to ETC<sub>F</sub> not captured in  
606 LRES or SRES.

607 BPA applies one such adjustment to allow for deferral competitions, as required in Section  
608 17.7 of BPA's OATT. When a deferral reservation is confirmed, BPA applies an ETC  
609 adjustment to hold out transfer capability for the time period deferred, starting at the latter  
610 of five months out or the service commencement date of the original reservation, to allow for  
611 a competition. At four months out, if no competition is identified, the ETC adjustment is  
612 modified to add back transfer capability for the fourth month out.

613 BPA also uses SADJ/ETC adjustments to ensure accurate accounting of ETC<sub>F</sub>. These  
614 adjustments may be performed to account for situations such as data modeling corrections,  
615 and will be noted in the descriptions of the adjustments.

616 **LETC** is used to ensure that the amount of NITS<sub>F</sub>, GF<sub>F</sub>, PTP<sub>F</sub> and ROR<sub>F</sub> capacity BPA sets aside in  
617 the LRES variable for contracts where BPA gives customers the right to schedule the capacity  
618 reserved between multiple PORs and PODs does not exceed the total capacity specified in  
619 those contracts.

620 The following diagram illustrates how the variables used in BPA's ETC<sub>F</sub> calculation correspond  
621 to the variables contained in the ETC<sub>F</sub> algorithm shown in "Calculating Firm Existing  
622 Transmission Commitments".  
623

<b>ETC<sub>F</sub> =</b>	<b>NITS<sub>F</sub></b>	<b>+</b>	<b>GF<sub>F</sub></b>	<b>+</b>	<b>PTP<sub>F</sub></b>	<b>+</b>	<b>ROR<sub>F</sub></b>
	↓		↓		↓		↓
	<b>LRES</b>		<b>LRES</b>		<b>LRES</b>		<b>LRES</b>
	<b>+</b>				<b>+</b>		
	<b>SRES</b>				<b>SRES</b>		
	<b>+</b>		<b>+</b>		<b>+</b>		<b>+</b>
	<b>LETC</b>		<b>LETC</b>		<b>LETC</b>		<b>LETC</b>
	<b>-</b>		<b>-</b>		<b>-</b>		<b>-</b>
	<b>SADJ/ETC Adjustments</b>		<b>SADJ/ETC Adjustments</b>		<b>SADJ/ETC Adjustments</b>		<b>SADJ/ETC Adjustments</b>

625 **ETC<sub>F</sub> for the Real-Time Horizon**

626 For ATC<sub>NF</sub> calculations for the Real-time horizon, ETC<sub>F</sub> is expressed as follows:

627 
$$ETC_F = SCH^+_7 + ASC^+_7 + RADJ/ETC \text{ Adjustment}$$

628 **Where:**

629 **SCH<sup>+</sup><sub>7</sub>** is the sum of the positive schedules that reference confirmed NITS<sub>F</sub>, GF<sub>F</sub> and  
 630 PTP<sub>F</sub> reservations for the ATC Path for that period. The energy profile of the schedule  
 631 is used except for the schedule types of Dynamic, Capacity and Pseudo-tie.

632 **ASC<sup>+</sup><sub>7</sub>** is the sum of the positive dynamic schedules that reference confirmed NITS<sub>F</sub>,  
 633 GF<sub>F</sub> and PTP<sub>F</sub> reservations for the ATC Path for that period. The transmission profile of  
 634 the schedule is used for the schedule types of Dynamic, Capacity and Pseudo-tie.

635 **RADJ/ETC Adjustment** BPA uses RADJ/ETC adjustments to ensure accurate accounting of  
 636 ETC<sub>F</sub>. These adjustments may be performed to account for situations such as data modeling  
 637 corrections.

638 The following diagram illustrates how the variables used in BPA’s ETC<sub>F</sub> calculation correspond  
 639 to the variables contained in the ETC<sub>F</sub> algorithm shown in “Calculating Firm Existing  
 640 Transmission Commitments.” ROR<sub>F</sub> is not included in ETC<sub>F</sub> for the Real-time horizon because  
 641 ROR<sub>F</sub> is not relevant for the Real-time horizon.

<b>ETC<sub>F</sub> =</b>	<b>NITS<sub>F</sub></b>	<b>+</b>	<b>GF<sub>F</sub></b>	<b>+</b>	<b>PTP<sub>F</sub></b>
	↓		↓		↓
	<b>SCH<sup>+</sup><sub>7</sub></b>		<b>SCH<sup>+</sup><sub>7</sub></b>		<b>SCH<sup>+</sup><sub>7</sub></b>
	<b>+</b>		<b>+</b>		<b>+</b>
	<b>ASC<sup>+</sup><sub>7</sub></b>		<b>ASC<sup>+</sup><sub>7</sub></b>		<b>ASC<sup>+</sup><sub>7</sub></b>
	<b>+</b>		<b>+</b>		<b>+</b>
	<b>RADJ/ETC Adjustment</b>		<b>RADJ/ETC Adjustment</b>		<b>RADJ/ETC Adjustment</b>

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

643 BPA uses different algorithms to calculate  $ETC_{NF}$  for all of its ATC Paths for the time horizon  
644 beyond Real-time and the Real-time horizon.

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

646 For  $ATC_{NF}$  calculations in the time horizon beyond Real-time,  $ETC_{NF}$  is expressed as  
647 follows:

648 
$$ETC_{NF} = RRES_{6,5,4,3,2,1}$$

649 **Where:**

650  $RRES_{6,5,4,3,2,1}$  is the sum of all confirmed  $NITS_{NF6}$ ,  $PTP_{NF5}$ ,  $PTP_{NF4}$ ,  $PTP_{NF3}$ ,  $PTP_{NF2}$   
651 and  $PTP_{NF1}$  reservations.

652 The following diagram explains how the variables used in BPA’s  $ETC_{NF}$  calculation correspond  
653 to the variables contained in the  $ETC_{NF}$  algorithm shown in “Calculating Non-Firm Existing  
654 Transmission Commitments.”

$ETC_{NF} =$	$NITS_{NF}$	+	$PTP_{NF}$
	↓		↓
	$RRES_{6,5,4,3,2,1}$		$RRES_{6,5,4,3,2,1}$

655  **$ETC_{NF}$  for the Real-Time Horizon**

656 For  $ATC_{NF}$  calculations in the Real-time horizon,  $ETC_{NF}$  is expressed as follows:

657 
$$ETC_{NF} = SCH^+_{6,5,4,3,2,1} + ASC^+_{6,5,4,3,2,1}$$

658 **Where:**

659  $SCH^+_{6,5,4,3,2,1}$  is the sum of the positive impacts of schedules referenced to  
660 confirmed  $NITS_{NF6}$ ,  $PTP_{NF5}$ ,  $PTP_{NF4}$ ,  $PTP_{NF3}$ ,  $PTP_{NF2}$  and  $PTP_{NF1}$  reservations, plus  
661 the sum of the positive impacts of confirmed  $NITS_{NF6}$ ,  $PTP_{NF5}$ ,  $PTP_{NF4}$ ,  $PTP_{NF3}$ ,  
662  $PTP_{NF2}$  and  $PTP_{NF1}$  reservations that have not yet been scheduled. Once these  
663 reservations are scheduled, the schedule is used for  $ETC_{NF}$ , thereby adding back  
664 the difference between the reservation and schedule amounts to  $ATC_{NF}$ . The  
665 energy profile of the schedule is used except for the schedule types of  
666 Dynamic, Capacity and Pseudo-tie.

667  $ASC^+_{6,5,4,3,2,1}$  is the sum of positive impacts of dynamic schedules referenced to  
668 confirmed  $NITS_{NF6}$ ,  $PTP_{NF5}$ ,  $PTP_{NF4}$ ,  $PTP_{NF3}$ ,  $PTP_{NF2}$  and  $PTP_{NF1}$  reservations, plus the  
669 sum of the positive impacts of confirmed  $NITS_{NF6}$ ,  $PTP_{NF5}$ ,  $PTP_{NF4}$ ,  $PTP_{NF3}$ ,  $PTP_{NF2}$   
670 and  $PTP_{NF1}$  reservations that have not yet been scheduled. Once these  
671 reservations are scheduled, the schedule is used for  $ETC_{NF}$ , thereby adding back  
672 the difference between the reservation and schedule amounts to  $ATC_{NF}$ . The  
673 transmission profile of the schedule is used for the schedule types of Dynamic,  
674 Capacity and Pseudo-tie.



675 The following diagram explains how the variables used in BPA’s ETC<sub>NF</sub> calculation correspond  
 676 to the variables contained in the ETC<sub>NF</sub> algorithm shown in “Calculating Non-Firm Existing  
 677 Transmission Commitments.”  
 678

<b>ETC<sub>NF</sub> =</b>	<b>NITS<sub>NF</sub></b>	<b>+</b>	<b>PTP<sub>NF</sub></b>
	↓		↓
	<b>SCH<sup>+</sup><sub>6,5,4,3,2,1</sub></b>		<b>SCH<sup>+</sup><sub>6,5,4,3,2,1</sub></b>
	<b>+</b>		<b>+</b>
	<b>ASC<sup>+</sup><sub>6,5,4,3,2,1</sub></b>		<b>ASC<sup>+</sup><sub>6,5,4,3,2,1</sub></b>

679 **CBM<sub>S</sub>** is the Capacity Benefit Margin that has been scheduled for the ATC Path during that  
 680 period.

681 BPA does not maintain CBM. Therefore BPA sets CBM<sub>S</sub> at zero for all of its ATC Paths for  
 682 all time periods.

683 **TRM<sub>U</sub>** is the Transmission Reliability Margin for the ATC Path that has not been released for  
 684 sale as non-firm capacity during that period.

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

687  
 688 **Postbacks<sub>NF</sub>** are changes to non-firm Available Transfer Capability due to a change in the use  
 689 of Transmission Service for that period.

690 BPA uses different algorithms to calculate Postbacks<sub>NF</sub> for all of its ATC Paths for the time  
 691 horizon beyond Real-time and the Real-time horizon.

692 **Postbacks<sub>NF</sub> for the Time Horizon Beyond Real-time**

693 BPA automatically recalculates ETC<sub>NF</sub> to account for changes to Transmission Service  
 694 Requests (such as request types of Recall and annulments) for the Beyond Real-time  
 695 Horizon. Since these types of changes to Transmission Service Requests are captured  
 696 in ETC<sub>NF</sub>, BPA sets Postbacks<sub>NF</sub> at zero for this horizon.

697 **Postbacks<sub>NF</sub> for the Real-time Horizon**

698 BPA automatically recalculates ETC<sub>NF</sub> to account for changes to Transmission Service  
 699 Requests (such as request types of Recall and annulments) for the Real-time Horizon.  
 700 Since these types of changes to Transmission Service Requests are captured in ETC<sub>NF</sub>,  
 701 BPA sets Postbacks<sub>NF</sub> at zero for this horizon for all paths with the exception of COI  
 702 N>S.

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

707 **Counterflow<sub>NF</sub>** are adjustments to  $ATC_{NF}$ .

708 Since a schedule provides assurance that the transaction will flow, all counterflow  
709 resulting from firm and non-firm Transmission schedules, excluding tag types dynamic  
710 and capacity, are added back to  $ATC_{NF}$  in the  $Counterflows_{NF}$  component. (MOD-001  
711 R3.2)

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

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

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

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## 719 **VIII. Rated System Path Methodology for Flow-Based ATC Paths**

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720 This section describes in detail how BPA implements the Rated System Path Methodology for  
721 its flow-based ATC Paths listed in Table 2. It addresses all of the requirements in Standard  
722 MOD-029-2a.

### 723 **BPA Flow-Based ATC Paths**

724 The following table shows the flow-based ATC Paths for which BPA uses the Rated System  
725 Path Methodology, and the base case used to determine base ETC across each path:

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
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

<b>Flow-based ATC Path</b>	<b>Direction</b>	<b>Transmission Line Components</b>	<b>Case used for base ETC calculation</b>
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

727

728 **Establishing Total Transfer Capability (TTC)**

729 BPA calculates TTC for its flow-based ATC Paths in the manner described in the “Calculating  
730 Total Transfer Capability (TTC)” and “Process to Determine TTC” sections.

731 **Determining Existing Transmission Commitments (ETC) for Flow-Based ATC Paths**

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

733 BPA uses the WECC seasonal base cases and modifies them to calculate the base ETC for  
734 its flow-based ATC Paths. BPA refers to these base cases as ETC Cases. The assumptions  
735 used in these ETC Cases include normal operating conditions and system topology.

736  
737 For BPA’s Balancing Authority, BPA uses a 1-in-2-year heavy load forecast for its heavy  
738 load ETC cases. For the light load ETC cases, the loads in the WECC light load cases are  
739 used.

740  
741 Outside of BPA’s Balancing Authority, BPA uses the heavy and light load forecasts that are  
742 included in the WECC seasonal cases for its heavy and light load ETC cases.

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

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

751 The WECC base cases include generator data in the power flow with generation  
752 maximum (Pmax) reflecting the capability of the units. Under no circumstances is  
753 Pmax greater than the maximum capability of the unit. BPA always uses the power  
754 flow (Pgen) or optimal output of the generator at or within the Pmax and Pmin  
755 Ratings for generators that are in service. Within each base case, the individual  
756 Generator Owners are identified by numeric code.

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

#### 761 **Outages in ETC Calculations**

762 BPA calculates PTDFs by adjusting the WECC base cases to include Transmission outages in  
763 BPA's outage system for BPA's area and any adjacent TSP areas. PTDFs are used in BPA's  
764 ETC calculations. Note that BPA has no executed coordination Agreements with other  
765 TSPs. (MOD-001 R3.6)

#### 766 **Outage Criteria in ETC Calculations**

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

#### 770 **Hourly ETC Calculations**

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

#### 775 **Daily ETC Calculations**

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

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

784           **Monthly ETC Calculations**

785           For its monthly ETC calculations, BPA uses the most recent daily PTFs published for  
786           the first Tuesday of that month. BPA includes Transmission outages in monthly ETC  
787           calculations beyond the 10- to 16-day planned outage study period if the outage is  
788           officially scheduled in BPA’s outage system. (MOD-001 R3.6.2)

789           **PTDF Analysis and *De Minimis***

790           BPA determines the impact of transactions on its flow-based ATC Paths by using PTDF  
791           analysis. PTDF analysis is the fraction of energy (expressed as a percentage or as a  
792           decimal) that will flow across BPA’s monitored flow-based ATC Paths as that energy is  
793           injected at a POR (or source) relative to a slack bus, and withdrawn at a POD (or sink)  
794           relative to a slack bus, for each flow-based ATC Path.

795           Flow-based ATC Path impacts are calculated as per BPA’s Transmission Service Requests  
796           Evaluation business practice. If a reservation’s impact on a flow-based ATC Path is  
797           determined to be *de minimis* per the Transmission Service Requests Evaluation business  
798           practice, then BPA deems the impact of the reservation to be zero when calculating ETC.

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

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

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

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

- 813           • If the source or POR has been identified in the reservation and is discretely  
814           modeled in the WECC base cases, BPA uses the discretely modeled point as  
815           the source.
- 816           • In cases where the source or POR has been identified in the reservation and  
817           the point can be mapped to an “equivalent” or “aggregate” representation in  
818           the WECC base cases, BPA maps the source to the equivalence point in the  
819           WECC base cases. These points are published in the Transmission Service  
820           Contract Points List on BPA’s OASIS home page.
- 821           • If the source or POR has been identified in the reservation and the point  
822           cannot be mapped to a discretely modeled point or an “equivalence”  
823           representation in the WECC base cases, BPA uses the immediately adjacent  
824           BA associated with the TSP from which the power is to be received as the  
825           source.



- 826                   • BPA requires a specified source or POR to be identified for all reservations.
- 827           The sink used in BPA’s flow-based ATC Path ATC calculations of transactions within  
828           BPA’s BAA is obtained from the POD field for Short-Term Reservations and the sink  
829           field for Long-Term Reservations, as shown on the TSR template in OASIS. BPA  
830           represents the impact of Transmission Service using the sink or POD as follows:
- 831                   • If the sink or POD has been identified in the reservation and is discretely  
832                   modeled in the WECC base cases, BPA uses the discretely modeled point as  
833                   the sink or POD.
- 834                   • In cases where the sink or POD has been identified in the reservation and the  
835                   point can be mapped to an “equivalent” or “aggregate” representation in the  
836                   WECC base case, BPA maps the sink or POD to the equivalence points in the  
837                   WECC base cases. These points are published in the Transmission Service  
838                   Contract Points list on BPA’s OASIS home page.
- 839                   • If the sink or POD has been identified in the reservation and the point cannot  
840                   be mapped to a discretely modeled point or an “equivalence” representation  
841                   in the WECC base cases, BPA uses the immediately adjacent BA associated  
842                   with the TSP receiving the power as the sink or POD.
- 843                   • BPA requires a specified sink or POD to be identified for all reservations.

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

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

854           BPA has grouped the generators in its adjacent BAAs based on the primary interface between  
855           each BAA and the generation projects within that BAA (excluding some remote generators  
856           that are scheduled via NERC e-Tag). These groupings are assigned weighted PTFs that  
857           represent how the generators participate in the group and are used to evaluate transactions  
858           within and between adjacent BAAs that do not include BPAT. BPA derives the PTF  
859           weightings for these points from BAA-provided generation estimates or by applying the  
860           generation dispatch determined in the ETC Cases if generation estimates are not available. In  
861           the ETC Cases, these generators are modeled up to the long-term firm Transmission rights  
862           associated with the generators.

863 **Calculating Firm Transmission Service for Flow-Based ATC Paths**

864 **Calculating Firm Existing Transmission Commitments (ETC<sub>F</sub>)**

865 When calculating the impact of ETC<sub>F</sub> for all time periods for a flow-based ATC Path, BPA uses  
866 the following algorithm. (MOD-029 R5)

867 
$$\text{ETC}_F = \text{NL}_F + \text{NITS}_F + \text{GF}_F + \text{PTP}_F + \text{ROR}_F + \text{OS}_F$$

868 **Where:**

869 **NL<sub>F</sub>** is the firm capacity set aside to serve peak Native Load forecast commitments for  
870 the time period being calculated, to include losses, and Native Load growth, not  
871 otherwise included in TRM or CBM.

872 BPA sets the NL<sub>F</sub> at zero for all of its ATC Paths for all time periods. All of BPA's firm  
873 Transmission obligations are captured in the NITS<sub>F</sub>, PTP<sub>F</sub> and GF<sub>F</sub> components of this  
874 algorithm.

875 **NITS<sub>F</sub>** is the firm capacity reserved for Network Integration Transmission Service  
876 serving Load, to include losses, and Load growth, not otherwise included in TRM or  
877 CBM.

878 **GF<sub>F</sub>** is the firm capacity set aside for grandfathered Transmission Service and contracts  
879 for energy and/or Transmission Service, where executed prior to the effective date of  
880 a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor  
881 tariff."

882 **PTP<sub>F</sub>** is the firm capacity reserved for confirmed Point-to-Point Transmission Service.

883 **ROR<sub>F</sub>** is the firm capacity reserved for Roll-over rights for contracts granting  
884 Transmission Customers the right of first refusal to take or continue to take  
885 Transmission Service when the Transmission Customer's Transmission Service contract  
886 expires or is eligible for renewal.

887 BPA assumes that all of its Transmission Service Agreements that are eligible to roll-  
888 over in the future will be rolled over, unless roll-over rights are not exercised by the  
889 required deadline.

890 **OS<sub>F</sub>** is the firm capacity reserved for any other service(s), contract(s), or agreement(s)  
891 not specified above using Firm Transmission Service as specified in the ATCID.

892 BPA has no other firm services beyond those specified above. Therefore BPA sets OS<sub>F</sub>  
893 at zero for all time periods.

894 BPA divides ETC<sub>F</sub> into two components: the base ETC values determined using the ETC Cases,  
895 and interim ETC<sub>F</sub> impacts determined using PTDF analysis. These components are added  
896 together to calculate a final ETC<sub>F</sub>.

897 As described in the “PTDF Analysis and *De Minimis*” section, *de minimis* MW amounts of  
898 reservations that were not modeled in the ETC Cases are deemed to be zero when calculating  
899 ETC<sub>F</sub> using reservations. However, all schedules are accounted for in ETC<sub>F</sub> regardless of their  
900 PTDF analysis impact on BPA’s flow-based ATC Paths when calculating ETC<sub>F</sub> using schedules.

901 While BPA includes all of the components described above in ETC<sub>F</sub>, BPA accounts for NITS<sub>F</sub>,  
902 GF<sub>F</sub>, PTP<sub>F</sub> and ROR<sub>F</sub> in its flow-based ATC Path ATC calculations using different variables. For  
903 descriptions of the variables used, see the “Calculating Firm Available Transfer Capability”  
904 section of this document.

#### 905 **Determining Base ETC for Heavy Load Base Cases**

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

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

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

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

919 • **NITS<sub>F</sub>, PTP<sub>F</sub> and GF<sub>F</sub>:** BPA assumes a 1-in-2 year monthly heavy load forecast in all  
920 its monthly ETC cases

921

#### 922 **Generation:**

923 For the generators in BPA’s Balancing Authority or directly interconnected to BPA,  
924 BPA uses the following generation assumptions:

925 **FCRPS:** For the FCRPS resources serving NITS<sub>F</sub>, PTP<sub>F</sub>, and GF<sub>F</sub> Long-Term  
926 Reservations, generation levels are set using a multiple-step process. For all time  
927 periods studied, BPA uses the following process:

928 • The Columbia Generating Station is assumed to be on-line at full Load in the  
929 ETC cases. Generation levels at the Libby, Hungry Horse, Dworshak, and Albeni  
930 Falls projects are set based on the requirements set forth in the 2000 Biological  
931 Opinion. For November through May ETC cases, the generation levels at the  
932 Willamette Valley projects<sup>5</sup> are set at the minimum levels seen by season  
933 during Calendar Year 2001. For the June through October ETC cases, the  
934 generation levels at the Willamette Valley projects are set at a monthly fleet-  
935 aggregate lower 10th percentile of Heavy Load Hour block generation from the  
936 planning period of record and adjusted as needed to accurately reflect  
937 operations that BPA knows are in place. BPA is transitioning the modeling of  
938 the Willamette Valley projects in its ETC cases to this latter method.  
939 **Nameplate Adjusted Method:** When creating heavy load ETC Cases,  
940 generation levels for all other federal hydro projects<sup>6</sup> are set by first  
941 determining the nameplate for each project and then adjusting such  
942 nameplates by outages forecasted for the particular plants. Next in the month  
943 of August, the Lower Snake plants (Lower Granite, Lower Monumental, Little  
944 Goose, and Ice Harbor) are capped at the observed project outflow over the  
945 past ten Augusts. Then multiple generation scenarios are modelled by stressing  
946 one of three different “zones” of Federal hydro resources to the nameplate  
947 adjusted generation levels described above and scales the generation at the  
948 remaining Federal hydro projects to match the sum of the demands for all  
949 contracts that call out non-specific Federal hydroelectric projects as PORs  
950 after adjusting these demands for the portion served by Columbia Generating  
951 Station, Libby, Hungry Horse, Dworshak, Albeni Falls, and the Willamette  
952 Valley projects. The Federal PTP demands at each project are then added to  
953 this result to obtain the final assumed generation level for each Federal hydro  
954 project. This overall method for modeling the federal resources is referred to  
955 as the “Nameplate Adjusted Method.”

956 **Non-Federal Thermal Generators:** Non-federal thermal generators associated with  
957 PTP<sub>F</sub>, GF<sub>F</sub> and NITS<sub>F</sub> Transmission Service for BPA’s area and all adjacent TSP areas  
958 are set at up to the contract Demand.

959 **Wind Generators:**

960 • **PTP<sub>F</sub>:** Wind generators associated with PTP<sub>F</sub> Long-Term Reservations are set at  
961 the greater of the following:

---

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

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

- 962 ○ Modeled on at 100 percent of the contract demand for the wind
- 963 generator; or
- 964 ○ Modeled off and replaced by the “Balancing Logic Method”.
- 965 • **NITS<sub>F</sub>**: The flow-based ATC Path impacts of wind generators identified as
- 966 designated network resources in NITS<sub>F</sub> contracts or in the NT Resources
- 967 Memorandum of Agreement in BPA’s area are determined on a flow-based ATC
- 968 Path-by-flow-based ATC Path basis and set at the greater of the following:
  - 969 ○ The wind generators modeled on at the designated amount of the wind
  - 970 generators; or,
  - 971 ○ The wind generators modeled off and replaced by increasing the FCRPS
  - 972 generation level by the designated amount of the wind generators using
  - 973 the “Nameplate Adjusted Method” for all ETC cases described above.
- 974 Wind generators designated as network resources in NITS<sub>F</sub> contracts for all
- 975 adjacent TSPs are modeled up to the designated amount.
- 976 • **GF<sub>F</sub>**: BPA and all of BPA’s adjacent TSPs have no GF<sub>F</sub> contracts for wind
- 977 generators.
- 978 **Behind the Meter Generators**: Non-federal resources that do not require
- 979 Transmission Service over the FCRTS and that are behind the meter are set up to
- 980 levels used in BPA’s process for power system planning studies.
- 981 **Mid-Columbia Hydro Projects**: Generation levels at the non-federal Mid-Columbia
- 982 hydro projects are set up to 90 percent of their historical output by season.

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

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

990 In calculating its base ETC values, BPA runs ETC Case Scenarios for three different  
 991 sensitivities: the Canadian Entitlement Return (CER) obligation modeled on or off, wind  
 992 resources designated to serve PTP<sub>F</sub> and NITS<sub>F</sub> on or off, and stressing the three different  
 993 zones of the FCRPS.

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

999 For the CER Scenarios, BPA models the FCRPS generators delivering or not delivering  
 1000 energy to Canada in the amount specified in the Canadian Entitlement Agreement.

1001 In the case where BPA models the FCRPS generators delivering energy to Canada, exports  
 1002 to Canada for the CER and the FCRPS generation level using the “Nameplate Adjusted  
 1003 Method” are increased by the amount specified in the Canadian Entitlement Agreement.

1004 In the case where BPA models the FCRPS generators not delivering energy to Canada,  
1005 exports to Canada for the CER and the FCRPS generation levels using the “Nameplate  
1006 Adjusted Method” are reduced by the MW amount specified in the Canadian Entitlement  
1007 Agreement.

1008 For the wind resource scenarios, see above for a description of the base ETC assumptions  
1009 for wind generators serving PTP<sub>F</sub> and NITS<sub>F</sub>.

1010 Therefore, in its heavy load base ETC sensitivity analysis, BPA models the following 6  
1011 scenarios:

- 1012 1. Wind modeled off/Upper Columbia stressed
- 1013 2. Wind modeled off/Lower Snake stressed
- 1014 3. Wind modeled off/Lower Columbia stressed
- 1015 4. Wind modeled on/Upper Columbia stressed
- 1016 5. Wind modeled on/Lower Snake stressed
- 1017 6. Wind modeled on/Lower Columbia stressed

1018 All scenarios are run for (i) April, May, June, July, August, September and October with  
1019 CER modeled off and (ii) all months with CER modeled on.

1020 BPA uses the highest base ETC value calculated from these scenarios in its firm ATC  
1021 calculations across the flow-based ATC Paths. BPA uses the lowest base ETC value from  
1022 these scenarios in its non-firm ATC calculations across the flow-based ATC Paths. The  
1023 lowest base ETC value is accounted for using an SADJ in the non-firm ATC calculation.

#### 1024 **Determining Base ETC and Sensitivities for Light Load Base Cases**

1025 BPA uses the WECC Winter seasonal light load case as the starting point for its Winter  
1026 seasonal light load ETC base case. The ETC from this case is used as the base ETC for the  
1027 months of November through March.

1028 BPA uses the WECC Summer seasonal light load case as the starting point for its Summer  
1029 light load ETC base case. The ETC from the Summer case is used as the base ETC for the  
1030 months of April through October.

1031 BPA uses the following assumptions in light load ETC base cases:

- 1032 a. System topology: Normal operating conditions are used.
- 1033 b. Generation: BPA uses generation assumptions from historical data. Canadian  
1034 Entitlement is modeled as delivering energy to Canada in the amount specified in  
1035 the Canadian Entitlement Agreement.

1036 There are two sensitivity studies performed for the light load ETC base cases:

- 1037 a. Federal generation east of the path is increased, and a corresponding amount of  
1038 federal generation west of the path is reduced
- 1039 b. Federal generation east of the path is reduced, and a corresponding amount of  
1040 federal generation west of the path is increased

1041 BPA uses the highest base ETC value calculated from these scenarios in its firm ATC  
1042 calculations across the flow-based ATC Paths where light load cases are utilized. BPA uses  
1043 the lowest base ETC value from these scenarios in its non-firm ATC calculations across the  
1044 flow-based ATC Paths where light load cases are utilized. The lowest base ETC value is  
1045 accounted for using an SADJ in the non-firm calculation.

#### 1046 **Determining Interim ETC<sub>F</sub> Using PTDF Analysis**

1047 To calculate the impacts for all NITS<sub>F</sub> and PTP<sub>F</sub> reservations for BPA's area that were not  
1048 modeled in the ETC Cases, BPA uses PTDF analysis on all of the Demand reserved (see  
1049 "PTDF Analysis and *De Minimis*" section). PTDFs are assigned and mapped to individual  
1050 bus points in the WECC base cases (refer to "Source/Sink and POR/POD Identification and  
1051 Mapping" section). The sum of these impacts is referred to as the interim ETC<sub>F</sub> value, and  
1052 is added to the base ETC values to produce a final ETC<sub>F</sub> value for each time period for  
1053 each flow-based ATC Path.

#### 1054 **Calculating Firm Available Transfer Capability (ATC<sub>F</sub>)**

1055 When calculating ATC<sub>F</sub> for its flow-based ATC Paths for all time periods, BPA uses the  
1056 following algorithm. (MOD-029 R7)

$$1057 \quad \text{ATC}_F = \text{TTC} - \text{ETC}_F - \text{CBM} - \text{TRM} + \text{Postbacks}_F + \text{Counterflows}_F$$

1058 **Where:**

1059 **ATC<sub>F</sub>** is the firm Available Transfer Capability for the flow-based ATC Path for that period.

1060 **TTC** is the Total Transfer Capability of the flow-based ATC Path for that period.

1061 See "Establishing Total Transfer Capability" for a discussion of how BPA establishes  
1062 TTCs.

1063 **ETC<sub>F</sub>** is the sum of existing firm commitments for the Flow-based ATC Path during that  
1064 period.

1065 In BPA's calculations, ETC<sub>F</sub> is expressed as follows:

$$1066 \quad \text{ETC}_F = \text{LRES} + \text{SRES} - \text{SADJ/ETC Adjustments} + \text{LETC}$$

1067 **Where:**

1068 **LRES** is the sum of the positive impacts of Long-Term Reservations for BPA's area

1069 **SRES** is the sum of the positive impacts of Short-Term Reservations for BPA's area

1070 **SADJ/ETC Adjustments** is the variable used to make adjustments to  $ETC_F$  not captured  
 1071 in LRES or SRES. One such adjustment is applied to allow BPA to conduct deferral  
 1072 competitions, as required in Section 17.7 of BPA’s OATT. When a deferral reservation  
 1073 is confirmed, BPA applies an ETC adjustment to hold out Transfer Capability for the  
 1074 time period deferred, starting at the latter of five months out or the service  
 1075 commencement date of the original reservation, to allow for a competition. At four  
 1076 months out, if no competition is identified, the ETC adjustment is modified to add  
 1077 back Transfer Capability for the fourth month out.

1078 BPA also uses SADJ/ETC adjustments to ensure accurate accounting of  $ETC_F$ . These  
 1079 adjustments may be performed to account for situations such as data modeling  
 1080 corrections, and will be noted in the descriptions of the adjustments.

1081 LETC is used to align the ETC calculated in the power flow base case with additional  
 1082 PTDF calculations in order to balance to the standard OATI calculation.

1083 This adjustment is derived by comparing two values: a) the impacts of the confirmed  
 1084  $PTP_F$ ,  $GF_F$  and  $NITS_F$  Long-Term Reservations derived from the base ETC Cases and b)  
 1085 the impacts of the same reservations calculated using PTDF Analysis for each flow-  
 1086 based ATC Path. The adjustment for each flow-based ATC Path is equal to the  
 1087 difference of these two values. Conditional firm reservations are not included in the  
 1088 ETC Cases and therefore are also not included in this comparison.

1089 The “PTDF Analysis and *De Minimis*” section details how the *de minimis* MW amounts  
 1090 of reservations that were not included in the ETC Cases are accounted for when  
 1091 calculating  $ETC_F$  using reservations.

1092 The following diagram illustrates how the variables used in BPA’s  $ETC_F$  calculation  
 1093 correspond to the variables contained in the  $ETC_F$  algorithm shown in the “Calculating  
 1094 Firm Existing Transmission Commitments section.

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

1095 **CBM** is the Capacity Benefit Margin on the flow-based ATC Path during that period.

1096 BPA does not maintain CBM. Therefore BPA sets CBM at zero for all of its flow-based  
 1097 ATC Paths for all time periods.



1098 **TRM** is the Transmission Reliability Margin on that flow-based ATC Path during that period.

1099 BPA does not maintain TRM on its flow-based ATC Paths. Therefore BPA sets TRM at  
1100 zero for all of its flow-based ATC Paths for all time periods.

1101 **Postbacks<sub>F</sub>** are changes to **ATC<sub>F</sub>** due to a change in the use of Transmission Service for  
1102 that period

1103 BPA automatically recalculates **ETC<sub>F</sub>** to account for changes to Transmission Service  
1104 Requests (such as request types of Recall and Redirect and annulments). Since these  
1105 types of changes to Transmission Service Requests are captured in **ETC<sub>F</sub>**, BPA sets  
1106 **Postbacks<sub>F</sub>** at zero for all time periods when calculating **ATC<sub>F</sub>**.

1107 **Counterflows<sub>F</sub>** are adjustments to **ATC<sub>F</sub>** as determined by the Transmission Service  
1108 Provider and specified in their ATCID

1109 BPA does not include confirmed Transmission reservations, expected interchange or  
1110 internal flow counter to the direction of the flow-based ATC Path over and above the  
1111 counterflow that is assumed in the ETC Cases. BPA's rationale is that it does not want  
1112 to offer additional firm Transfer Capability due to counterflow that may not be  
1113 scheduled, as it could lead to Curtailments of Firm Transmission Service in Real-time.  
1114 (MOD-001 R3.2) Therefore BPA sets the **Counterflows<sub>F</sub>** component at zero for all of its  
1115 flow-based ATC Paths for all time periods.

1116 As described in the "Determining Base ETC" section, counterflows are modeled in the  
1117 ETC Cases. In instances where the power flow study results in a negative base ETC  
1118 value, BPA uses zero as the base ETC for purposes of calculating **ATC<sub>F</sub>**. This is done to  
1119 ensure that BPA does not make capacity available as a result of counterflows that may  
1120 or may not materialize in real-time.

## 1121 **Calculating Non-Firm Transmission Service for Flow-Based ATC Paths**

1122 BPA sells six non-firm Transmission products. These products are:

- 1123 1. **NITS<sub>NF6</sub>**. This is a non-firm Transmission product available only to Transmission  
1124 Customers with NITS Agreements. It is the highest quality of Non-Firm  
1125 Transmission Service in that it is the last Non-Firm Transmission Service that would  
1126 be Curtailed, if necessary.
- 1127 2. **PTP<sub>NF5</sub>**. This is a non-firm Transmission product available only to Transmission  
1128 Customers with PTP Agreements. **PTP<sub>NF5</sub>** is the fifth Non-Firm Transmission Service  
1129 that would be Curtailed, if necessary.
- 1130 3. **PTP<sub>NF4</sub>**. This is a non-firm Transmission product available only to Transmission  
1131 Customers with PTP Agreements. **PTP<sub>NF4</sub>** is the fourth Non-Firm Transmission  
1132 Service that would be Curtailed, if necessary.
- 1133 4. **PTP<sub>NF3</sub>**. This is a non-firm Transmission product available only to Transmission  
1134 Customers with PTP Agreements. **PTP<sub>NF3</sub>** is the third Non-Firm Transmission Service  
1135 that would be Curtailed, if necessary.

1136 5.  $PTP_{NF2}$ . This is a non-firm Transmission product available only to Transmission  
1137 Customers with PTP Agreements.  $PTP_{NF2}$  is the second Non-Firm Transmission  
1138 Service that would be Curtailed, if necessary.

1139 6.  $PTP_{NF1}$ . This is a non-firm Transmission product available only to Transmission  
1140 Customers with PTP Agreements.  $PTP_{NF1}$  is the first Non-Firm Transmission Service  
1141 that would be Curtailed, if necessary (i.e., this Transmission Service has the  
1142 highest likelihood of being Curtailed).

1143 BPA calculates  $ETC_{NF}$  and  $ATC_{NF}$  for each of these products.

1144 Calculating Non-Firm Existing Transmission Commitments ( $ETC_{NF}$ )

1145 When calculating  $ETC_{NF}$  for all time periods for a flow-based ATC Path, BPA sums the  
1146 positive impacts using PTDF analysis (see “PTDF Analysis and *De Minimis*” section for  
1147 further details). (MOD-029 R6)

1148 
$$ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

1149 **Where:**

1150  $NITS_{NF}$  is the non-firm capacity set aside for Network Integration Transmission Service  
1151 serving Load (i.e., secondary service), to include losses, and Load growth not  
1152 otherwise included in TRM or CBM.

1153 In BPA’s calculations, this is  $NITS_{NF6}$ . BPA’s  $NITS_{NF6}$  calculations do not include losses or  
1154 Load growth, since losses and Load growth are already set aside as firm capacity in  
1155  $NITS_F$ .

1156  $GF_{NF}$  is the non-firm capacity set aside for grandfathered Transmission Service and  
1157 contracts for energy and/or Transmission Service, where executed prior to the  
1158 effective date of a Transmission Service Provider’s Open Access Transmission Tariff or  
1159 “safe harbor tariff.”

1160 BPA does not have any grandfathered non-firm Transmission Service obligations and  
1161 therefore BPA sets  $GF_{NF}$  at zero for all of its flow-based ATC Paths for all time periods.

1162  $PTP_{NF}$  is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

1163 In BPA’s calculations, the  $PTP_{NF}$  component includes  $PTP_{NF5}$ ,  $PTP_{NF4}$ ,  $PTP_{NF3}$ ,  $PTP_{NF2}$  and  
1164  $PTP_{NF1}$ .

1165  $OS_{NF}$  is the non-firm capacity reserved for any other service(s), contract(s), or  
1166 agreement(s) not specified above using non-firm transmission service as specified in  
1167 the ATCID.

1168 BPA has no other non-firm services beyond those specified above. Therefore BPA sets  
1169  $OS_{NF}$  at zero for all of its flow-based ATC Paths for all time periods.

1170 As described in the “PTDF Analysis and *De Minimis*” section, BPA deems *de minimis*  
1171 impacts to be zero when calculating ETC<sub>NF</sub> using reservations. However, all schedules are  
1172 accounted for in ETC<sub>NF</sub> regardless of their PTDF analysis impact on BPA’s flow-based ATC  
1173 Paths when calculating ETC<sub>NF</sub> using schedules.

1174 While BPA includes all of the components described above in ETC<sub>NF</sub>, BPA accounts for  
1175 PTP<sub>NF</sub> and NITS<sub>NF</sub> in its flow-based ATC Path calculations using different variables.

#### 1176 **Calculating Non-Firm Available Transfer Capability (ATC<sub>NF</sub>)**

1177 BPA uses different algorithms to calculate ATC<sub>NF</sub>, ETC<sub>F</sub> and ETC<sub>NF</sub> for two time horizons for  
1178 all of its flow-based ATC Paths: Real-time and beyond Real-time. The Real-time horizon  
1179 begins at 10 p.m. on the pre-schedule day for the 24 hours in the next day. The ETC<sub>F</sub> and  
1180 ETC<sub>NF</sub> for the Real-Time horizon are calculated using schedules and reservations that have  
1181 not yet been scheduled. The time horizon beyond Real-time includes hourly for the hours  
1182 after those included in the Real-time period as well as daily and monthly calculations.  
1183 The ETC<sub>F</sub> and ETC<sub>NF</sub> for the time horizon beyond Real-time is calculated using  
1184 reservations.

1185 BPA calculates ETC<sub>NF</sub> and ATC<sub>NF</sub> for the six non-firm Transmission products associated with  
1186 NERC Curtailment priorities as follows:

- 1187 1. **ATC<sub>NF6</sub>**: ATC<sub>NF6</sub> is calculated for the NITS<sub>NF6</sub> product. ETC<sub>NF</sub> in this equation only  
1188 includes NITS<sub>NF6</sub>.
- 1189 2. **ATC<sub>NF5</sub>**: ATC<sub>NF5</sub> is calculated for the PTP<sub>NF5</sub> product. ETC<sub>NF</sub> in this equation  
1190 includes NITS<sub>NF6</sub> and PTP<sub>NF5</sub>.
- 1191 3. **ATC<sub>NF4</sub>**: ATC<sub>NF4</sub> is calculated for the PTP<sub>NF4</sub> product. ETC<sub>NF</sub> in this equation  
1192 includes NITS<sub>NF6</sub>, PTP<sub>NF5</sub> and PTP<sub>NF4</sub>.
- 1193 4. **ATC<sub>NF3</sub>**: ATC<sub>NF3</sub> is calculated for the PTP<sub>NF3</sub> product. ETC<sub>NF</sub> in this equation  
1194 includes NITS<sub>NF6</sub>, PTP<sub>NF5</sub>, PTP<sub>NF4</sub>, and PTP<sub>NF3</sub>.
- 1195 5. **ATC<sub>NF2</sub>**: ATC<sub>NF2</sub> is calculated for the PTP<sub>NF2</sub> product. ETC<sub>NF</sub> in this equation  
1196 includes NITS<sub>NF6</sub>, PTP<sub>NF5</sub>, PTP<sub>NF4</sub>, PTP<sub>NF3</sub> and PTP<sub>NF2</sub>.
- 1197 6. **ATC<sub>NF1</sub>**: ATC<sub>NF1</sub> is calculated for the PTP<sub>NF1</sub> product. ETC<sub>NF</sub> in this equation  
1198 includes NITS<sub>NF6</sub>, PTP<sub>NF5</sub>, PTP<sub>NF4</sub>, and PTP<sub>NF3</sub>, PTP<sub>NF2</sub> and PTP<sub>NF1</sub>.

1199 BPA calculates ETC<sub>NF</sub> and ATC<sub>NF</sub> for each of these products for each time period.

1200 When calculating ATC<sub>NF</sub> for its flow-based ATC Paths for the two time horizons described  
1201 above, BPA uses the following algorithm. (MOD-029 R8)

$$1202 \quad \text{ATC}_{NF} = \text{TTC} - \text{ETC}_F - \text{ETC}_{NF} - \text{CBM}_S - \text{TRM}_U + \text{Postbacks}_{NF} + \text{Counterflow}_{NF}$$

1203

1204           **Where:**

1205           **ATC<sub>NF</sub>** is the non-firm Available Transfer Capability for the flow-based ATC Path for  
1206           that period.

1207           BPA calculates six ATC<sub>NF</sub> values (as described above), one for each of the six non-  
1208           firm Transmission products.

1209           **TTC** is the Total Transfer Capability of the flow-based ATC Path for that period.

1210           See the “Establishing Total Transfer Capability” section for a description of how  
1211           BPA establishes TTC.

1212           **ETC<sub>F</sub>** is the sum of existing firm commitments for the flow-based ATC Path during that  
1213           period.

1214           BPA uses different algorithms to calculate ETC<sub>F</sub> for all of its flow-based ATC Paths  
1215           for the time horizon beyond Real-time and the Real-time horizon.

1216           **ETC<sub>F</sub> for the Time Horizon Beyond Real-Time**

1217           For flow-based ATC Path ATC<sub>NF</sub> calculations for the time horizon beyond Real-time,  
1218           ETC<sub>F</sub> is expressed as follows:

1219           
$$\text{ETC}_F = \text{LRES} + \text{SRES} - \text{SADJ/ETC Adjustments} + \text{LET C}$$

1220           **Where:**

1221           **LRES** is the sum of the positive impacts of Long-Term Reservations for BPA’s area

1222           **SRES** is the sum of the positive impacts of Short-Term Reservations for BPA’s area

1223           **SADJ/ETC Adjustments** is the variable used to make adjustments to ETC<sub>F</sub> not captured  
1224           in LRES or SRES. One such adjustment is applied to allow BPA to conduct deferral  
1225           competitions, as required in Section 17.7 of BPA’s OATT. When a deferral reservation  
1226           is confirmed, BPA applies an ETC adjustment to hold out Transfer Capability for the  
1227           time period deferred, starting at the latter of five months out or the service  
1228           commencement date of the original reservation, to allow for a competition. At four  
1229           months out, if no competition is identified, the ETC adjustment is modified to add  
1230           back Transfer Capability for the fourth month out.

1231           BPA uses SADJs to properly reflect the lowest base ETC value from its ETC base cases  
1232           in its non-firm ATC calculation.

1233           BPA also uses SADJ/ETC adjustments to ensure accurate accounting of ETC<sub>F</sub>. These  
1234           adjustments may be performed to account for situations such as data modeling  
1235           corrections, and will be noted in the descriptions of the adjustments.

1236           LET C is used to align the ETC calculated in the power flow base case along with  
1237           additional PTDF calculations in order to balance to the standard OATI calculation.

1238 This adjustment is derived by comparing two values: a) the impacts of the PTP<sub>F</sub>, GF<sub>F</sub>  
 1239 and NITS<sub>F</sub> Long-Term Reservations derived from the base ETC Cases and b) the impacts  
 1240 of the same reservations calculated using PTDF Analysis for each flow-based ATC Path.  
 1241 The adjustment for each flow-based ATC Path is equal to the difference of these two  
 1242 values. Conditional firm reservations are not included in the ETC Cases and therefore  
 1243 are also not included in this comparison.

1244 As described in the “PTDF Analysis and *De Minimis*” section, *de minimis* MW amounts  
 1245 of reservations that were not included in the ETC Cases are deemed to be zero when  
 1246 calculating ETC<sub>F</sub>.

1247 The following diagram illustrates how the variables used in BPA’s ETC<sub>F</sub> calculation  
 1248 correspond to the variables contained in the ETC<sub>F</sub> algorithm shown in “Calculating  
 1249 Firm Existing Transmission Commitments” section.

<b>ETC<sub>F</sub> =</b>	<b>NITS<sub>F</sub></b>	<b>+</b>	<b>GF<sub>F</sub></b>	<b>+</b>	<b>PTP<sub>F</sub></b>	<b>+</b>	<b>ROR<sub>F</sub></b>
	↓		↓		↓		↓
	<b>LRES</b>		<b>LRES</b>		<b>LRES</b>		<b>LRES</b>
	<b>+</b>				<b>+</b>		
	<b>SRES</b>				<b>SRES</b>		
	<b>+</b>		<b>+</b>		<b>+</b>		<b>+</b>
	<b>LETC</b>		<b>LETC</b>		<b>LETC</b>		<b>LETC</b>
	<b>-</b>		<b>-</b>		<b>-</b>		<b>-</b>
	<b>SADJ/ETC Adjustments</b>		<b>SADJ/ETC Adjustments</b>		<b>SADJ/ETC Adjustments</b>		<b>SADJ/ETC Adjustments</b>

1250 **ETC<sub>F</sub> for the Real-Time Horizon**

1251 For flow-based ATC Path ATC<sub>NF</sub> calculations in the Real-time horizon, ETC<sub>F</sub> is expressed  
 1252 as follows:

1253 
$$ETC_F = SCH^+_7 + ASC^+_7$$

1254 **Where:**

1255 **SCH<sup>+</sup><sub>7</sub>** is the sum of the positive impacts of schedules referenced to confirmed PTP<sub>F</sub>,  
 1256 GF<sub>F</sub> and NITS<sub>F</sub> reservations for BPA’s area. The energy profile of the schedule is used  
 1257 except for the schedule types of Dynamic, Capacity and Pseudo-tie.

1258 **ASC<sup>+</sup><sub>7</sub>** is the sum of the positive impacts of dynamic schedules that reference  
 1259 confirmed PTP<sub>F</sub>, GF<sub>F</sub> and NITS<sub>F</sub> reservations for BPA’s area. The transmission profile of  
 1260 the schedule is used for the schedule types of Dynamic, Capacity and Pseudo-tie.

1261 The following diagram illustrates how the variables used in BPA’s ETC<sub>F</sub> calculation  
 1262 correspond to the variables contained in the ETC<sub>F</sub> algorithm shown in the “Calculating  
 1263 Firm Existing Transmission Commitments” section. ROR<sub>F</sub> is not included in ETC<sub>F</sub> for  
 1264 the Real-Time Horizon because ROR<sub>F</sub> is not relevant for this time period.

<b>ETC<sub>F</sub> =</b>	<b>NITS<sub>F</sub></b>	<b>+</b>	<b>GF<sub>F</sub></b>	<b>+</b>	<b>PTP<sub>F</sub></b>
	↓		↓		↓
	SCH <sup>+7</sup>		SCH <sup>+7</sup>		SCH <sup>+7</sup>
	<b>+</b>		<b>+</b>		<b>+</b>
	ASC <sup>+7</sup>		ASC <sup>+7</sup>		ASC <sup>+7</sup>

1265 ETC<sub>NF</sub> is the sum existing non-firm Transmission commitments for the flow-based ATC  
 1266 Path during that period.

1267 BPA uses different algorithms to calculate ETC<sub>NF</sub> for all of its flow-based ATC Paths for  
 1268 the time horizon beyond Real-time and the Real-time horizon.

1269 **ETC<sub>NF</sub> for the Time Horizon Beyond Real-time**

1270 For flow-based ATC Path ATC<sub>NF</sub> calculations in the time horizon beyond Real-time,  
 1271 ETC<sub>NF</sub> is expressed as follows:

1272 
$$\mathbf{ETC_{NF} = RRES_{NF}}$$

1273 **Where:**

1274 RRES<sub>NF</sub> is the sum of the positive impacts of all confirmed PTP<sub>NF5</sub>, PTP<sub>NF4</sub>, PTP<sub>NF3</sub>, PTP<sub>NF2</sub>,  
 1275 PTP<sub>NF1</sub> and NITS<sub>NF6</sub> reservations for BPA’s area

1276 As described in the “PTDF Analysis and *De Minimis*” section, *de minimis* MW amounts are  
 1277 deemed to be zero when calculating ETC<sub>NF</sub> using reservations.

1278 The following diagram explains how the variables used in BPA’s ETC<sub>NF</sub> calculation correspond  
 1279 to the variables contained in the ETC<sub>NF</sub> algorithm shown in “Calculating Non-Firm Existing  
 1280 Transmission Commitments”.

<b>ETC<sub>NF</sub> =</b>	<b>NITS<sub>NF</sub></b>	<b>+</b>	<b>PTP<sub>NF</sub></b>
	↓		↓
	RRES <sub>NF</sub>		RRES <sub>NF</sub>

1281 **ETC<sub>NF</sub> for the Real-time Horizon**

1282 For flow-based ATC Path ATC<sub>NF</sub> calculations in the Real-time horizon, ETC<sub>NF</sub> is  
 1283 expressed as follows:

1284 
$$\mathbf{ETC_{NF} = SCH^{+6,5,4,3,2,1} + ASC^{+6,5,4,3,2,1}}$$

1285

1286 **Where:**

1287 **SCH**<sup>6,5,4,3,2,1</sup> is the sum of the positive impacts of schedules referenced to confirmed  
1288 NITS<sub>NF6</sub>, PTP<sub>NF5</sub>, PTP<sub>NF4</sub>, PTP<sub>NF3</sub>, PTP<sub>NF2</sub> and PTP<sub>NF1</sub> reservations, plus the sum of the  
1289 positive impacts of confirmed NITS<sub>NF6</sub>, PTP<sub>NF5</sub>, PTP<sub>NF4</sub>, PTP<sub>NF3</sub>, PTP<sub>NF2</sub> and PTP<sub>NF1</sub>  
1290 reservations that have not yet been scheduled. Once these reservations are  
1291 scheduled, the schedule is used for ETC<sub>NF</sub>, thereby adding back the difference  
1292 between the reservation and schedule amounts to ATC<sub>NF</sub>. The energy profile of the  
1293 schedule is used except for the schedule types of Dynamic, Capacity and Pseudo-tie.

1294 **ASC**<sup>6,5,4,3,2,1</sup> is the sum of positive impacts of dynamic schedules referenced to  
1295 confirmed PTP<sub>NF2</sub>, PTP<sub>NF1</sub> and NITS<sub>NF6</sub> reservations for BPA's area, plus the sum of the  
1296 positive impacts of confirmed NITS<sub>NF6</sub>, PTP<sub>NF5</sub>, PTP<sub>NF4</sub>, PTP<sub>NF3</sub>, PTP<sub>NF2</sub> and PTP<sub>NF1</sub>  
1297 reservations that have not yet been scheduled. Once these reservations are  
1298 scheduled, the schedule is used for ETC<sub>NF</sub>, thereby adding back the difference  
1299 between the reservation and schedule amounts to ATC<sub>NF</sub>. The transmission profile of  
1300 the schedule is used for the schedule types of Dynamic, Capacity and Pseudo-tie.

1301 The following diagram illustrates how the variables used in BPA's ETC<sub>F</sub> calculation correspond  
1302 to the variables contained in the ETC<sub>F</sub> algorithm shown in "Calculating Non-Firm Existing  
1303 Transmission Commitments."

1304

ETC <sub>NF</sub> =	NITS <sub>NF</sub>	+	PTP <sub>NF</sub>
	↓		↓
	SCH <sup>6,5,4,3,2,1</sup>		SCH <sup>6,5,4,3,2,1</sup>
	+		+
	ASC <sup>6,5,4,3,2,1</sup>		ASC <sup>6,5,4,3,2,1</sup>

1305 **CBM**<sub>s</sub> is the Capacity Benefit Margin for the flow-based ATC Path that has been  
1306 scheduled during that period.

1307 BPA does not maintain CBM. Therefore BPA sets CBM<sub>s</sub> at zero for all of its flow-  
1308 based ATC Paths for all time periods.

1309 **TRM**<sub>U</sub> is Transmission Reliability Margin for the flow-based ATC Path that has not been  
1310 released for sale (unreleased) as non-firm capacity by the Transmission Service  
1311 Provider during that period.

1312 BPA does not maintain TRM on its flow-based ATC Paths. Therefore BPA sets TRM<sub>U</sub>  
1313 at zero for all of its flow-based ATC Paths for all time periods.

1314 **Postbacks**<sub>NF</sub> are changes to non-firm Available Transfer Capability due to a change in  
1315 the use of Transmission Service for that period.

1316 BPA automatically recalculates  $ETC_{NF}$  to account for changes to Transmission  
1317 Service Requests (such as request types of Recall and annulments) for both the  
1318 Beyond Real-time and Real-time Horizons. Since these types of changes to  
1319 Transmission Service Requests are captured in  $ETC_{NF}$ , BPA sets  $Postbacks_{NF}$  at zero  
1320 for both horizons when calculating  $ATC_{NF}$ .

1321 **Counterflows<sub>NF</sub>** are adjustments to non-firm Available Transfer Capability as  
1322 determined by the Transmission Service Provider and specified in its ATCID.

1323 Counterflows resulting from firm and non-firm Transmission schedules, excluding  
1324 dynamic schedules, are added back to  $ATC_{NF}$  in the  $Counterflows_{NF}$  component.

1325  $Counterflows_{NF}$  is the sum of the negative impacts of schedules referenced to  
1326 confirmed firm and non-firm reservations in BPA's area. In BPA's calculations,  
1327  $Counterflows_{NF}$  is expressed as  $SCH_{7,6,5,4,3,2,1}$ .

1328 As described in the "Determining Base ETC" section, counterflows are modeled in the  
1329 ETC Cases used to determine  $ETC_F$ . In instances where the power flow study results in  
1330 a negative base ETC value, BPA uses zero as the base ETC for purposes of calculating  
1331  $ATC_{NF}$ . This is done to ensure that BPA does not make capacity available as a result of  
1332 counterflows that may or may not materialize in real-time.

1333 In some cases, the amount of  $Counterflows_{NF}$  exceeds the sum of the  $ETC_F$  and  $ETC_{NF}$ ,  
1334 which, when added to TTC, results in  $ATC_{NF}$  greater than TTC.

### 1335 **Adjustments to flow-based ATC Path ATC Values**

1336 There may be instances where BPA needs to perform testing in the production environment of  
1337 the systems that manage BPA's ATC calculations. In these instances, BPA may adjust its ATC  
1338 values across the flow-based ATC Paths to ensure that Hourly requests are not declined due to  
1339 lack of ATC across the flow-based paths. BPA will issue a notice to customers with the details  
1340 prior to performing this testing.

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## 1341 **IX. Data Sources and Recipients**

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1342 BPA receives data for use in its ATC calculations, and provides data for use in calculating 1:1  
1343 and flow-based ATC Path capabilities through the WECC base case process described  
1344 beginning on p. 2. BPA also directly receives and provides data, such as outage information  
1345 and specific Transmission commitments, from and to the following Transmission Service  
1346 Providers and Transmission Operators: (MOD-001 R3.3, R3.4)

- 1347 • Avista Corporation
- 1348 • BC Hydro
- 1349 • California Independent System Operator
- 1350 • City of Tacoma, Department of Public Utilities, Light Division
- 1351 • Eugene Water and Electric Board
- 1352 • Fortis BC
- 1353 • Idaho Power Company



- 1354 • Los Angeles Department of Water and Power
- 1355 • NV Energy
- 1356 • NorthWestern Energy
- 1357 • Pacific Gas & Electric
- 1358 • PacifiCorp
- 1359 • Pend Oreille County Public Utility District No. 1
- 1360 • Portland General Electric
- 1361 • Public Utility District No. 1 of Chelan County
- 1362 • Public Utility District No. 1 of Clark County
- 1363 • Public Utility District No. 1 of Douglas County
- 1364 • Public Utility District No. 2 of Grant County, Washington
- 1365 • Public Utility District No. 1 of Snohomish County
- 1366 • Puget Sound Energy, Inc.
- 1367 • Sacramento Municipal Utility District
- 1368 • Seattle City Light
- 1369 • Southern California Edison
- 1370 • Transmission Agency of Northern California
- 1371 • Western Area Power Administration - Sierra Nevada Region
- 1372 • California Independent System Operator

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## 1373 **X. Responding to Data Requests**

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1374 Upon official request from any Transmission Service Provider, Planning Coordinator,  
 1375 Reliability Coordinator, or Transmission Operator for any data from the list below, solely for  
 1376 use in the requestor’s ATC or AFC calculations, BPA will begin to make the data available  
 1377 within 30 calendar days of receiving the request.

- 1378 • Expected generation and Transmission outages, additions, and retirements
- 1379 • Load forecasts
- 1380 • Unit commitments and order of dispatch, to include all designated resources (BPA does
- 1381 not have resources that are committed or have the legal obligation to run)
- 1382 • Firm NITS and non-firm NITS (i.e. Secondary Service)
- 1383 • Firm and non-firm Transmission reservations
- 1384 • Grandfathered obligations
- 1385 • Firm roll-over rights
- 1386 • Any firm and non-firm adjustments applied by BPA to reflect parallel path impacts
- 1387 • Power flow models and underlying assumptions
- 1388 • Contingencies, provided in one or more of the following formats:
- 1389 ○ A list of Elements
- 1390 ○ A list of flow-based ATC Paths

- 1391 ○ A set of selection criteria that can be applied to the WECC base cases used by
- 1392 BPA
- 1393 ● Facility Ratings
- 1394 ● Any other service that impact ETCs
- 1395 ● Values of CBM and TRM for all ATC Paths
- 1396 ● Values of TTC and ATC for all ATC Paths
- 1397 ● Source and sink identification and mapping to the WECC base cases

1398 BPA will make this data available on the schedule specified by the requestor (but no more  
 1399 frequently than once per hour, unless mutually agreed to by the requestor and Bonneville).

1400 For a Transmission Service Provider, Planning Coordinator, Reliability Coordinator, or  
 1401 Transmission Operator to officially request data to use in ATC or AFC calculations, the  
 1402 requestor must fill out the **Data Request Form** (MOD-001 R9) found on BPA’s website  
 1403 <https://www.bpa.gov/transmission/Doing%20Business/ATCMethodology/Pages/default.aspx>.  
 1404 The completed request form must be sent to [nercatcstandards@bpa.gov](mailto:nercatcstandards@bpa.gov) with **Data request**  
 1405 **Form** (MOD-001 R9) in the subject line. (MOD-001 R9)

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1406 **XI. ATCID Revisions**

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1407 BPA will notify the entities contained in ATCID TP Distribution List when implementing a new  
 1408 or revised ATCID and make its current ATCID available. (MOD-001 R4, R5)

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1409 **XII. Version History**

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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. 7 line 114: Revised frequency of hourly calculations from at least three times per hour to at least once per hour.	L Trolese

### ATCID Revision History

		<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&gt;W and W&gt;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<sub>NF</sub>.</p> <p>P. 20 line 531; P. 22 ETC<sub>F</sub> variable diagram, P. 25 line 669, P. 26 ETC<sub>F</sub> variable diagram, P. 47 line 1324, P. 49 ETC<sub>F</sub> variable diagram, P. 53 line 1493 and P. 54 ETC<sub>F</sub> variable diagram: Corrected ETC<sub>F</sub> formula to subtract SADJ/ETC Adjustments instead of add it.</p> <p>P. 27 lines 724-726 and P. 55 lines 1549-1551: Updated reason for why ROR<sub>F</sub> 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<sub>Fi</sub>.</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>	
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ATCID Revision History			
		<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 <sub>F</sub> 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
6.0	11/1/2011	<p>P.31 Table 2 BPA Flowgates: Added the McNary - John Day #2 500 kV line to the West of McNary Flowgate definition.</p> <p>Appendix C: Updated the SOL Methodology.</p>	L Beckman
7.0	11/10/2011	P. 40 line 1103 and P.41 line 1118: Changed effective date from November 8 <sup>th</sup> 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>P. 5, P. 22, P. 29: Defined BPA's TRM practice for the Northern Intertie S&gt;N Path.</p> <p>P. 20 line 528 and P. 23 line 597: Replaced NI Holdout in the ATC<sub>F</sub> formula with TRM.</p>	L Beckman

ATCID Revision History			
10.0	02/14/2012	<p>P.30-31 Table 2 BPA Flowgates: Corrected the following flowgate definitions:            South of Allston Flowgate: replaced Astoria-Seaside 115kV; and Lewis &amp; 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.</p>	L Beckman
11.0	02/22/2012	<p>P. 8 line 166: Removed reference to Northwest Power Pool (NWPP) Outage Coordination Processes, dated 01/29/09.</p>	L Beckman
12.0	03/01/2012	<p>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.</p>	L Beckman
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. 4 line 52: Moved MOD 008-01 to the Methodologies Selected section.</p>	L Beckman
14.0	04/11/2012	<p>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.</p>	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. 40 lines 1084-1093: Added generation estimates as the source of the PTDF weightings.</p>	L Beckman  L Trolese

ATCID Revision History			
		<p>P. 42 lines 1157-1159 and P. 51 lines 1433-1436: Added description of how BPA accounts for schedules in ETC<sub>Fi</sub>.</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>	
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&gt;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
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>P. 32 Table 2 BPA Flowgates: Added the South of Boundary Flowgate and Transmission Line Components.</p> <p>P. 33 Figure 3 BPA Network Flowgate Map: Added the South of Boundary Flowgate.</p>	L Beckman
21.0	11/14/2012	<p>P. 8, lines 159-167: Updated BPA’s allocation processes for the Columbia Injection (N&gt;S) and Wanapum Injection (N&gt;S) flowgates.</p> <p>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>	L Beckman

ATCID Revision History			
		<p>P. 31-33 Table 2 BPA Flowgates: Added the North of Hanford (S&gt;N), South of Allston (S&gt;N), Columbia Injection (N&gt;S), Wanapum Injection (N&gt;S) and West of Lower Monumental (E&gt;W) Flowgates in Transmission Line Components, effective Nov. 30, 2012.</p> <p>P. 45 and 46, lines 1245-1248, 1286-1288 and 1318: Added documentation describing ETC calculation practices for light load ETC Cases.</p> <p>P. 55 and 56, lines 1564, 1574-1576 and 1580: Added RETC variable and definition to calculation formula for ETCFi for the Real-Time Horizon.</p>	
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>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&gt;N Path, effective Feb. 13, 2013.</p> <p>P. 31-33 Table 2 BPA Flowgates: Added the North of Echo Lake (S&gt;N) and South of Custer (N&gt;S) Flowgates and removed the Monroe-Echo Lake Flowgate in Transmission Line Components, effective Feb. 13, 2013.</p> <p>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> <p>P.33 Figure 3 BPA Network Flowgate Map: Updated location of the North of Echo Lake (S&gt;N) and South of Custer (N&gt;S) Flowgates.</p>	L Wickizer
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>P.32 Table 2 BPA Flowgates: Updated flowgate names on OASIS.</p> <p>P. 41 lines 1102-1112: Added documentation for Mid-Columbia generators in the weighted PTDF description.</p>	L Wickizer

ATCID Revision History			
27.0	05/01/2013	<p>P. 38-39 lines 993-1002: Updated BPA's process for mapping and incorporating outages into the WECC base case.</p> <p>Appendix A: Updated Avista's West of Hatwai Ownership Agreement number.</p>	L Wickizer
28.0	05/15/2014	<p>P. 7-8 lines 123-127, 131-134, 142-143, 149-150: Language clarification in Limiting Assumptions section.</p> <p>P. 9 lines 178-203: Updated BPA's process for outage planning.</p> <p>P. 10 lines 209 - 222: Language clarification on Daily and Hourly TTC and TFC Calculations.</p> <p>P. 10-11 lines 238 - 272: Language clarification on SOL Priorities Used to Set TTC and TFC.</p> <p>P. 37, lines 884-885, 892: Language clarification on SOL study process.</p> <p>P. 38, lines 952-953: Language clarification on SOL study process.</p> <p>P. 39, line 965: Language clarification on TFC calculation.</p> <p>Appendix C: Updated the SOL Methodology.</p>	M Olczak
29.0	05/31/2014	<p>P. 33 Table 2 BPA Flowgates: Added outage conditions flowgate definition for West of McNary.</p>	M Olczak
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>P. 33 Table 2 BPA Flowgates: Updated West of McNary flowgate definition during outages.</p>	J Ofstead



ATCID Revision History			
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 (<a href="http://www.oatioasis.com/bpat/index.html">http://www.oatioasis.com/bpat/index.html</a>) (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> <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>	L. Proctor

### ATCID Revision History

		<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> <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>	
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ATCID Revision History			
		<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> <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 “interties, 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>	L. Proctor

### ATCID Revision History

		<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> <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>	
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### ATCID Revision History

		<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> <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>	
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### ATCID Revision History

		<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> <p>P. 46: replaced “Flowgate” with “Network Path” in lines 1309 and 1330; deleted “as described in MOD-030 R7” in line1311; 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>	
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ATCID Revision History			
		<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> <p>P. 59: replaced “Flowgates” with “Network Path” in line 1762; deleted “and Flowgates” in line 1766; and deleted line 1767</p>	
36.0	8/28/15	<p>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:  <a href="http://www.bpa.gov/transmission/Doing%20Business/Pages/default.aspx">http://www.bpa.gov/transmission/Doing%20Business/Pages/default.aspx</a> under the ATC Methodology.</p>	L. Proctor

ATCID Revision History			
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 <a href="http://www.oatioasis.com/bpat/index.html">http://www.oatioasis.com/bpat/index.html</a> to <a href="http://www.gpa.gov/transmission/Reports/Pages/Proposed-Outages.aspx">http://www.gpa.gov/transmission/Reports/Pages/Proposed-Outages.aspx</a> ; 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
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&gt;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&gt;N once testing of the additional TRM value is complete and it is implemented."</p>	L. Proctor



ATCID Revision History			
		<p>p. 21, lines 564-569: Added “In addition, BPA uses SADJ adjustments on the Northern Intertie Path 3 S&gt;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 and additional 450MW TRM value for this path. BPA will stop using SADJ for this purpose on NI S&gt;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&gt;N as non-firm capacity.”</p>	
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&gt;N as non-firm capacity, but does not release the remaining TRM as non-firm capacity”</p>	L. Proctor
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 &amp; #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>	L. Proctor

## ATCID Revision History

		<p>p. 36-37, lines 967-1001: Replaced “90<sup>th</sup> Percentile Method” with “Nameplate Adjusted Method”; replaced “each project’s 90<sup>th</sup> 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 “90<sup>th</sup> 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 “90<sup>th</sup> Percentile” with “Balancing Logic”</p> <p>p. 38, lines 1039-1041: Deleted lines</p> <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 “90<sup>th</sup> 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>	
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ATCID Revision History			
		<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> <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>	A. Heredia
45.0	9/19/2017	<p>p. 11, Added lines 335-336</p> <p>p. 12, line 339: Added “When modeling contingencies”</p>	L. Proctor

ATCID Revision History			
		<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 <a href="https://www.peakrc.org">https://www.peakrc.org</a>.”.</p>	
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 SQL 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> <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, line 1179: Deleted “June”.</p> <p>p. 46, line 1366: Deleted “June”.</p>	L. Proctor
47.0	10/12/2018	<p>p. 23, lines 711-713: Minor simplification of language for clarity.</p>	M. Olczak

ATCID Revision History			
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&gt;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 PTDFs at least once per day for hourly ETC calculations</p> <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>	M. Olczak
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&gt;W and the maximum value from the relevant studies to set the seasonal TTC of the Path W&gt;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>	M. Olczak

ATCID Revision History			
		<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>	
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<sub>Fi</sub> for each path.</p> <p>p. 33, line 932: BPA has renamed this section “Determining Base ETC<sub>Fi</sub> 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<sub>Fi</sub> 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<sub>Fi</sub> studies for West of Hatwai and the adjustments are therefore no longer needed.</p>	M. Olczak

ATCID Revision History			
		<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<sub>Fi</sub> 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> <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<sub>Fi</sub> 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<sub>Fi</sub>, GFF<sub>Fi</sub> and PTP<sub>Fi</sub> Long-Term Reservations, as well as those of its adjacent TSPs, active at the time the ETC Cases are produced.</p>	M. Olczak

ATCID Revision History			
		<p>To model the impact of PTPFi long-term reservations for all of its adjacent TSPs, BPA queries a list of PTPFi long-term reservations from the OASIS of its adjacent TSPs. To model the impact of GFFi and NITSFi long-term obligations for all of BPA's adjacent TSPs, BPA contacts its adjacent TSPs and requests a list of their GFFi obligations and a list of their NITSFi with a list of designated network resources with the MW amounts designated to serve Network Service and Native Load.</p> <p>BPA models the NITSFi, GFFi and PTPFi 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<sub>Fi</sub>” section for a description of how BPA develops its ETC Cases”</p> <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>	M. Olczak



ATCID Revision History			
		<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 SADJs for the commercial uncertainty margin, as this process has been discontinued</p> <p>p.44, SADJ/ETC Adjustment section: removed references to SADJs 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> <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>	M. Olczak

### ATCID Revision History

		<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> <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 <math>SCH^+_{7}</math> and <math>ASC^+_{7}</math> to account for the elimination of adjacent TSP impact functionality in OATI</p> <p>p.44, lines 1279-1280: updated definition for <math>RRES_{NF}</math> to account for the elimination of adjacent TSP impact functionality in OATI</p>	
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ATCID Revision History			
		<p>p.44, lines 1291-1294: updated definitions for <b>SCH<sup>+</sup><sub>6,5,4,3,2,1</sub></b> and <b>ASC<sup>+</sup><sub>6,5,4,3,2,1</sub></b> to account for the elimination of adjacent TSP impact functionality in OATI</p> <p>p.45, lines 1322-1324: updated definition for <b>Counterflows<sub>NF</sub></b> 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<sub>FI</sub> to PTP<sub>F</sub>) 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> <p>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.</p>	M. Olczak
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>	M. Olczak

ATCID Revision History			
		p.42, line 1240: language describing the LETC variable has been clarified	
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>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.</p> <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>	M. Olczak

### ATCID Revision History

		<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> <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>	
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ATCID Revision History			
		<p>p.41, lines 1231-1232: change to reflect that the CER PTFDF 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> <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>	M. Olczak

ATCID Revision History			
62.0	04/08/2021	<p>p.15, lines 490-491: added clarification that BPA uses SADJ across NI S&gt;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 <math>NITS_F</math>, <math>GF_F</math>, <math>PTP_F</math> and <math>ROR_F</math> in the <math>ETC_F</math> 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 <math>NITS_F</math>, <math>GF_F</math>, <math>PTP_F</math> and <math>ROR_F</math> in the <math>ETC_F</math> 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
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>	M. Olczak

ATCID Revision History			
		<p>p.30, lines 848-853: added specificity that the weighted FCRPS PTFD 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 PTFD</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>	

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