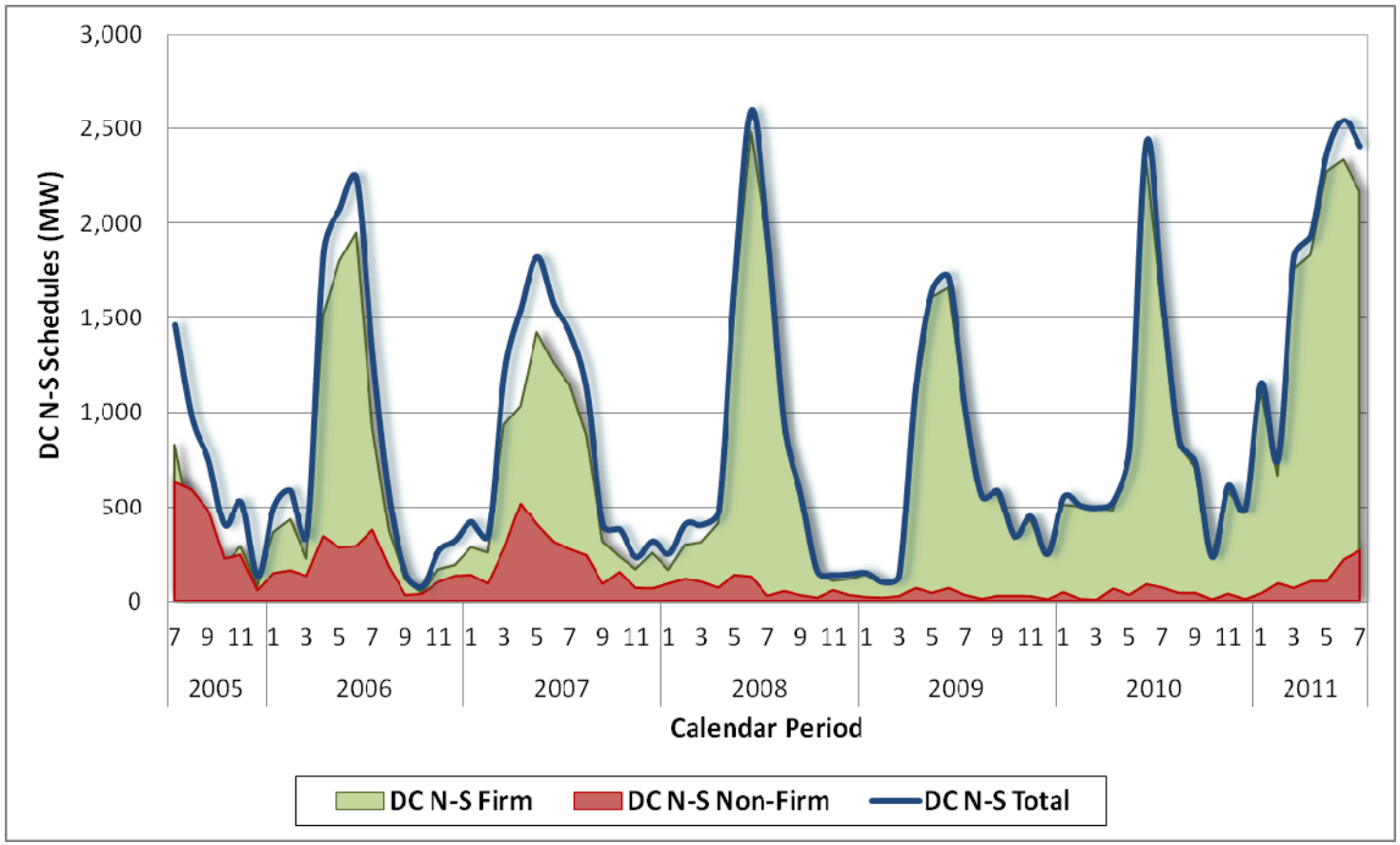
PDCI Upgrade Historical Utilization

Customer Forum 36

October 25, 2012

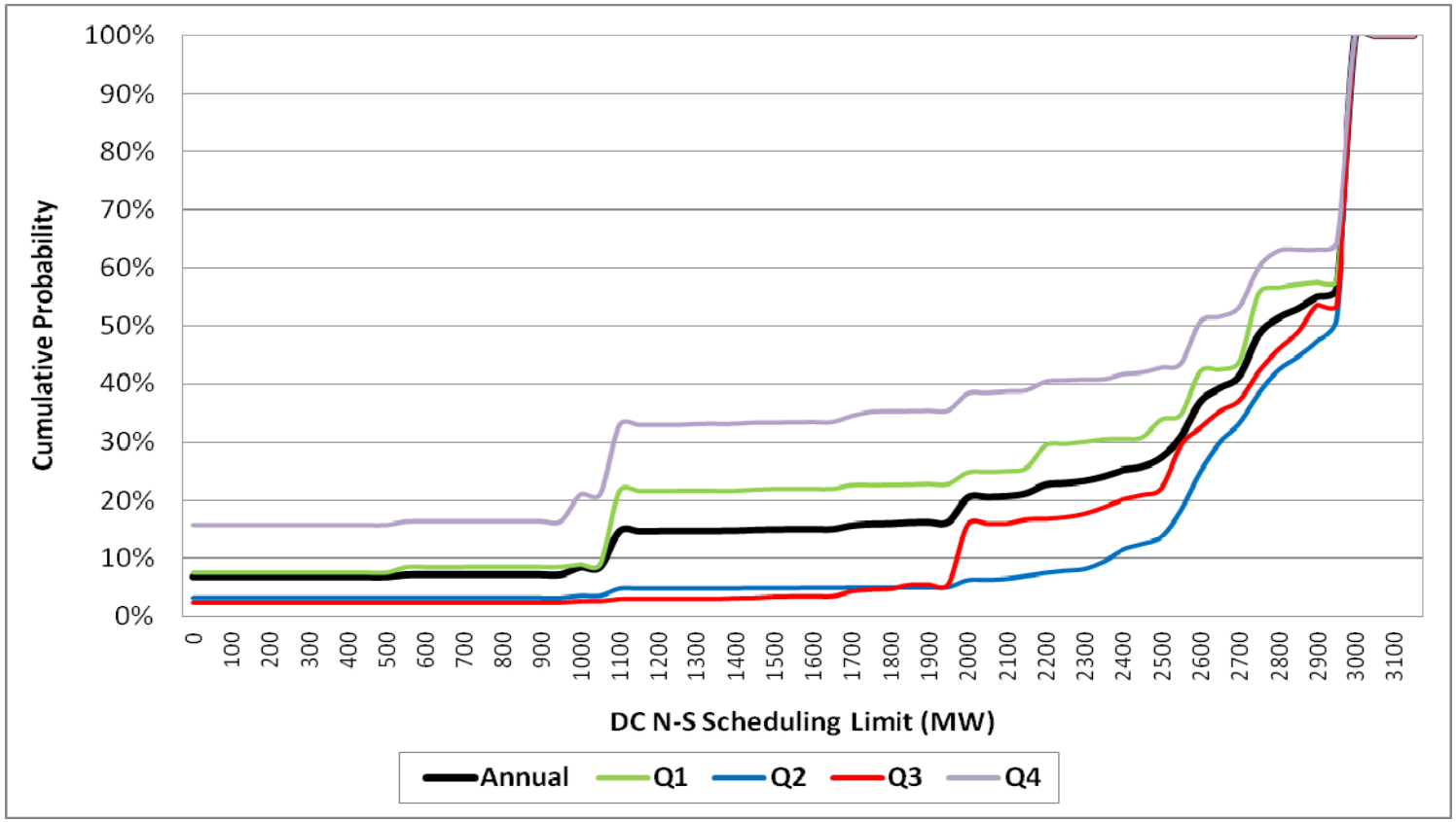
PDCI Firm and Non-Firm Schedules



* Firm schedules include long-term and short-term transmission service

Distribution of PDCI N-S Scheduling Limit

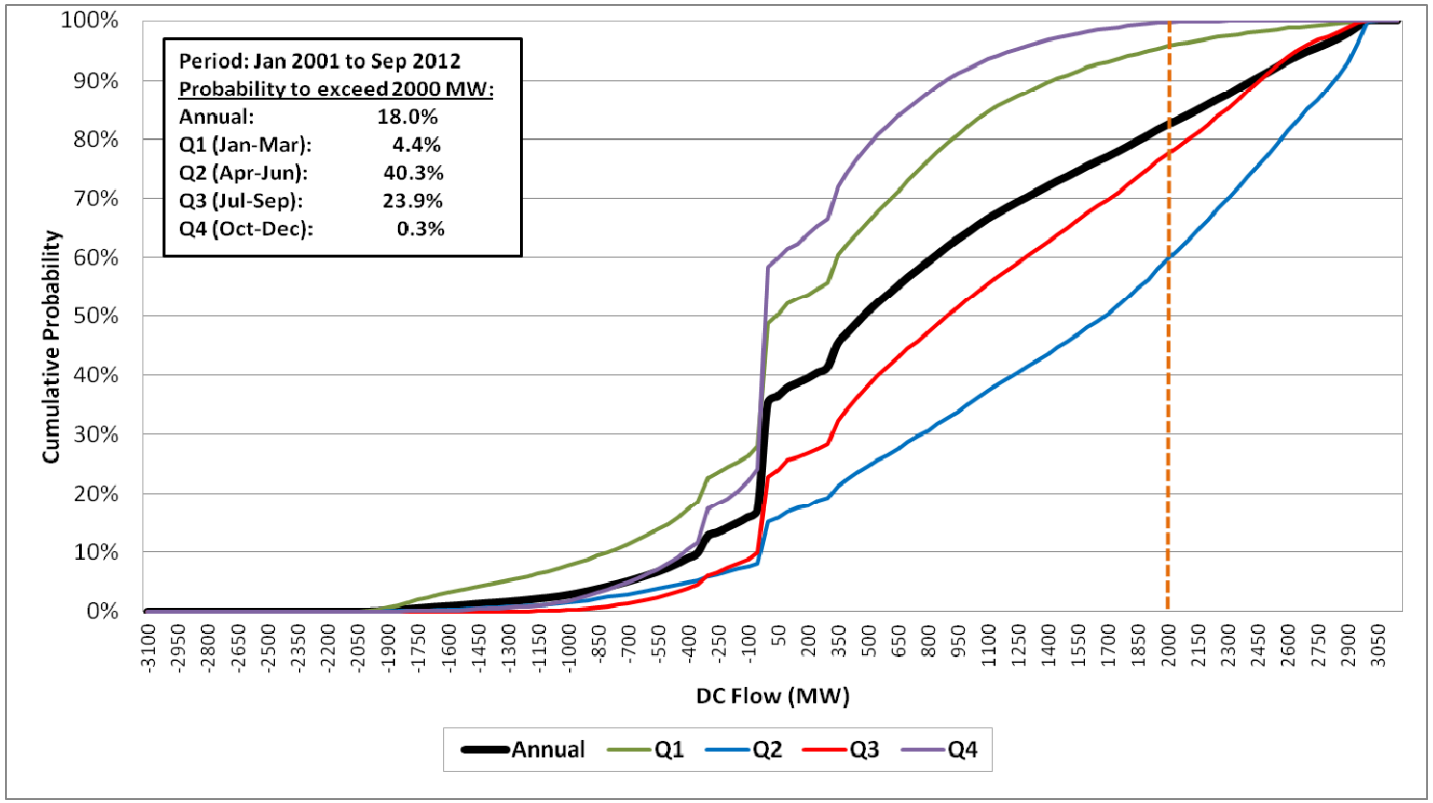
- Historical PDCI N-S Schedule Limit from Jan 2001 through Sep 2012*.
- N-S Schedule Limit is higher than 2000 MW 80% of the time; and 94% of the time in Q2 (Apr-Jun) and 84% of the time in Q3 (Jul-Sep).



* 2003-2004 PDCI upgrade period excluded from calculations

Distribution of PDCI Flows

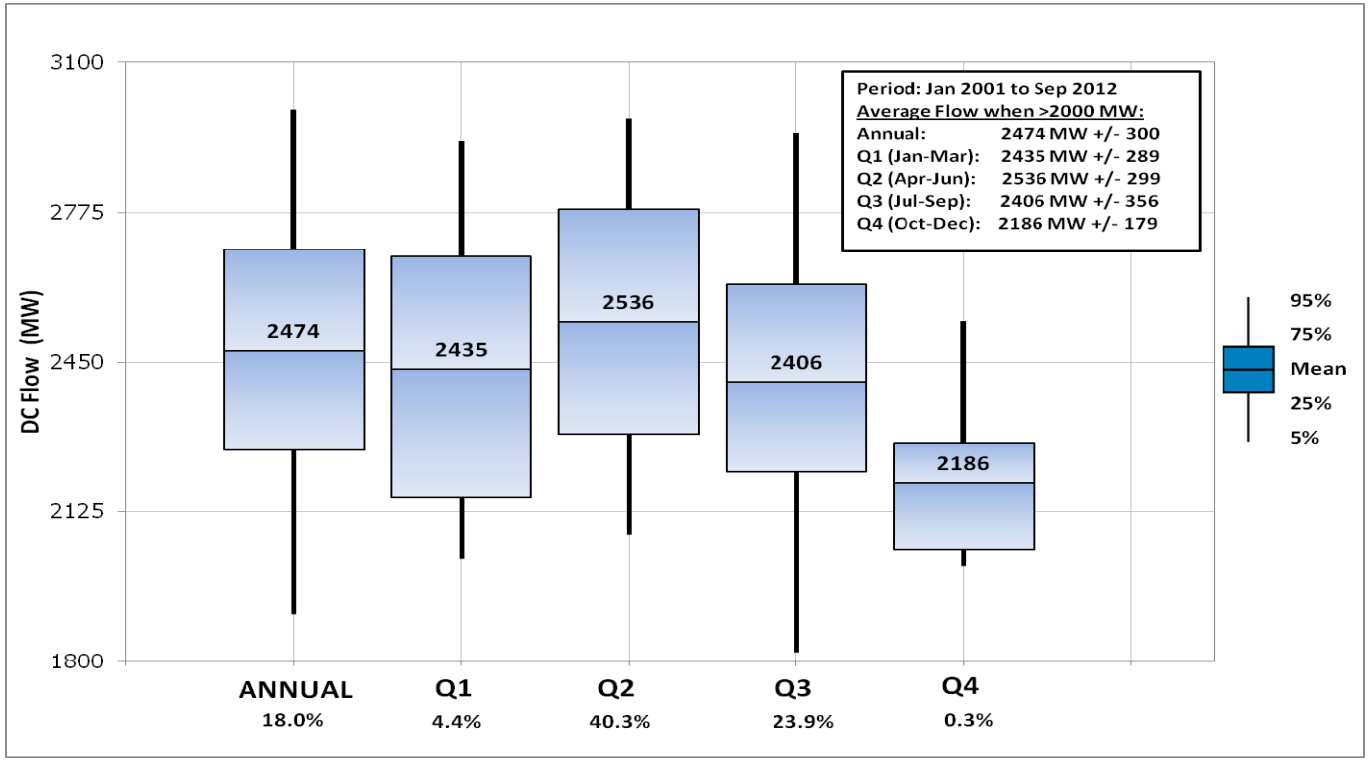
- Historical PDCI flows from Jan 2001 through Sep 2012*.
- Most likely to exceed 2000 MW in flows during Q2 NW hydro run-off (40.3% of hours) and Q3 SW summer loading (23.9% of hours).
- Negligible probability to exceed 2000 MW in S-N direction.



* 2003-2004 PDCI upgrade period excluded from calculations

Average and Variability of PDCI Flows

- The average and standard deviation of PDCI N-S flows ***during the hours that exceed*** 2000 MW.
- Although MW averages above 2000 MW are statistically equivalent, significant frequency occurs only during Q2 and Q3.
- Approximately 300 MW standard deviation in the flows.



* 2003-2004 PDCI upgrade period excluded from calculations

Historical Probability to Exceed 2000 MW

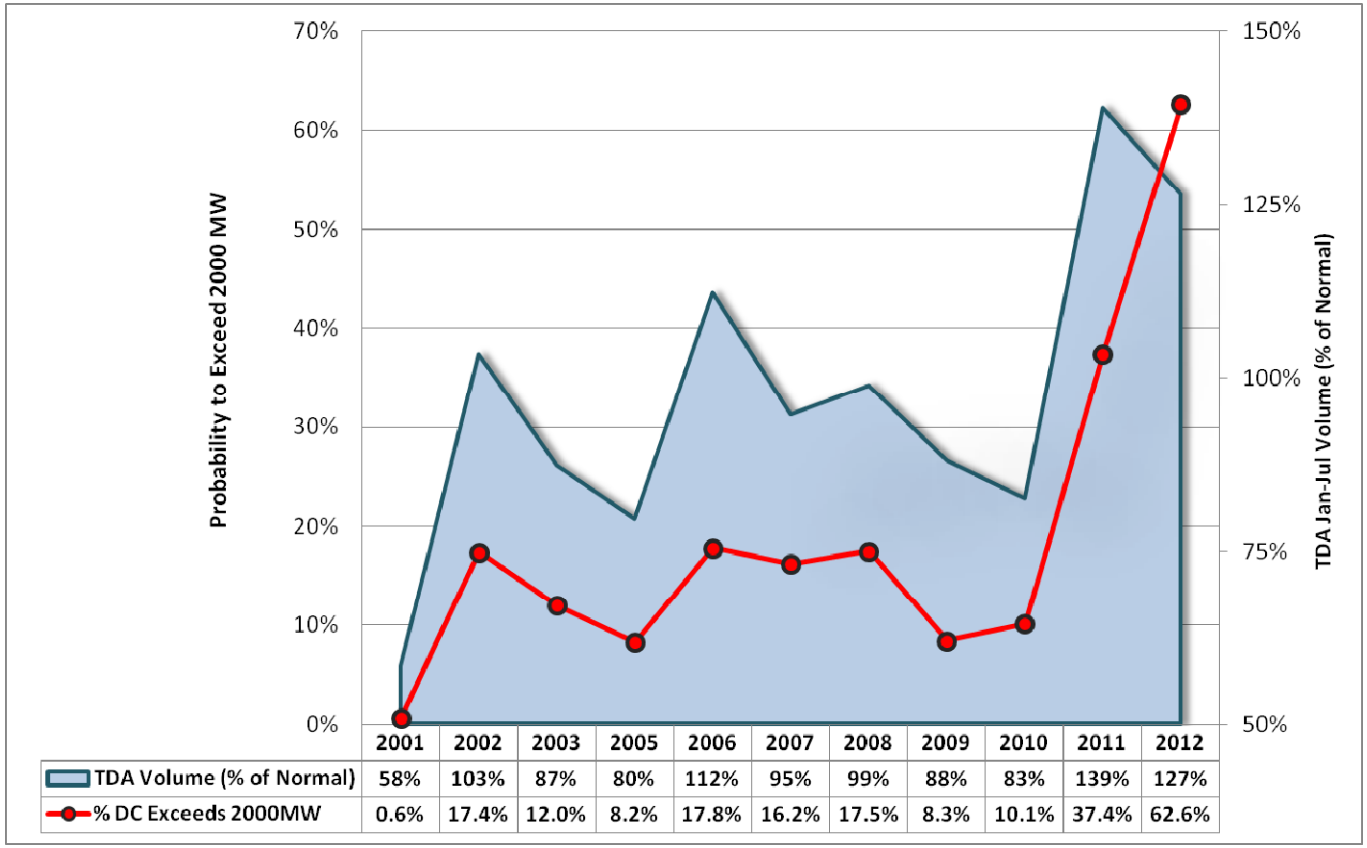
- Historical probability for PDCI flows to exceed 2000 MW by calendar year and calendar quarter.
- Key driver of PDCI utilization is NW hydro as illustrated by the volume at The Dalles Dam.
- Peak wind generation in BPA BAA provided for reference.

	A	B	C	D	E	F	G	H	I	J	K	L	M
	ALL HOURS												
	CAL PERIOD	2001	2002	2003	2005	2006	2007	2008	2009	2010	2011	2012	2001-2012
1	Q1	1.3%	0.1%	2.6%	0.4%	1.3%	**10.3%**	0.1%	0.0%	0.1%	**20.9%**	**11.2%**	**4.4%**
2	Q2	0.2%	**39.3%**	**21.3%**	**16.2%**	**59.6%**	**37.0%**	**44.4%**	**27.4%**	**27.6%**	**73.3%**	**97.3%**	**40.3%**
3	Q3	1.1%	**29.7%**	**12.0%**	**15.3%**	**10.1%**	**17.3%**	**25.5%**	**6.0%**	**12.2%**	**54.3%**	**79.1%**	**23.9%**
4	Q4	0.0%	0.3%		0.9%	0.3%	0.0%	0.0%	0.0%	0.4%	1.0%		**0.3%**
5	ANNUAL	**0.6%**	**17.4%**	**12.0%**	**8.2%**	**17.8%**	**16.2%**	**17.5%**	**8.3%**	**10.1%**	**37.4%**	**62.6%**	**18.0%**
6	HYDRO (TDA) (Jan-Jul Ave Vol in MAF)	**59.9**	**106.1**	**89.6**	**81.7**	**115.2**	**97.1**	**101.4**	**90.3**	**84.7**	**142.6**	**129.8**	**1929-2011 Average = 102.6**
7		**58%**	**103%**	**87%**	**80%**	**112%**	**95%**	**99%**	**88%**	**83%**	**139%**	**127%**	**% of Avg**
8	WIND (Annual Peak Gen in MW)				**387**	**685**	**1170**	**1468**	**2288**	**2874**	**3374**	**4225**	

* 2003-2004 PDCI upgrade period excluded from calculations

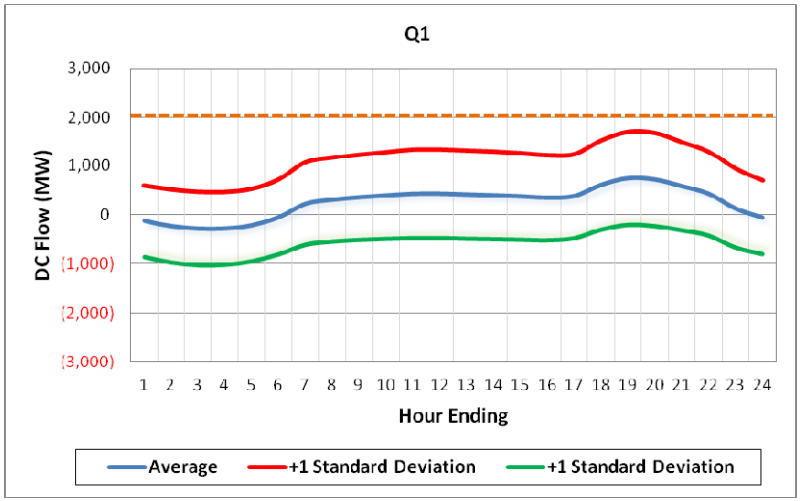
Historical Probability to Exceed 2000 MW

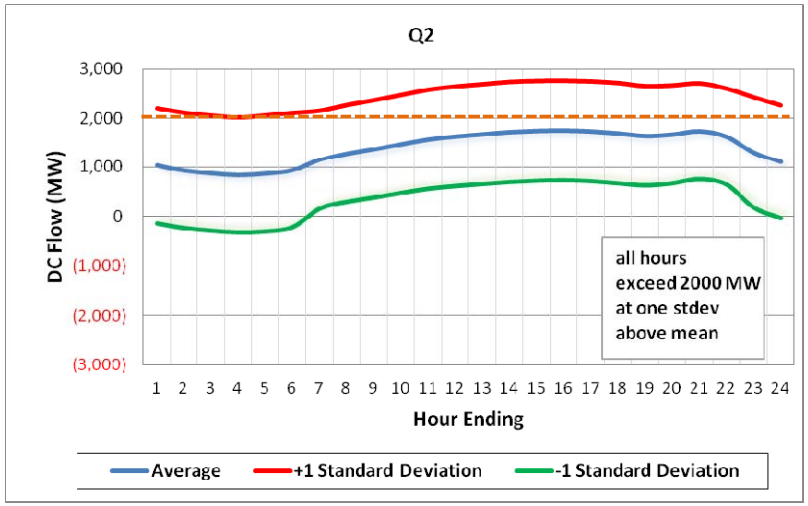
- Graphical representation of the probabilities that PDCI flows exceed 2000 MW largely driven by NW hydro volume at TDA.

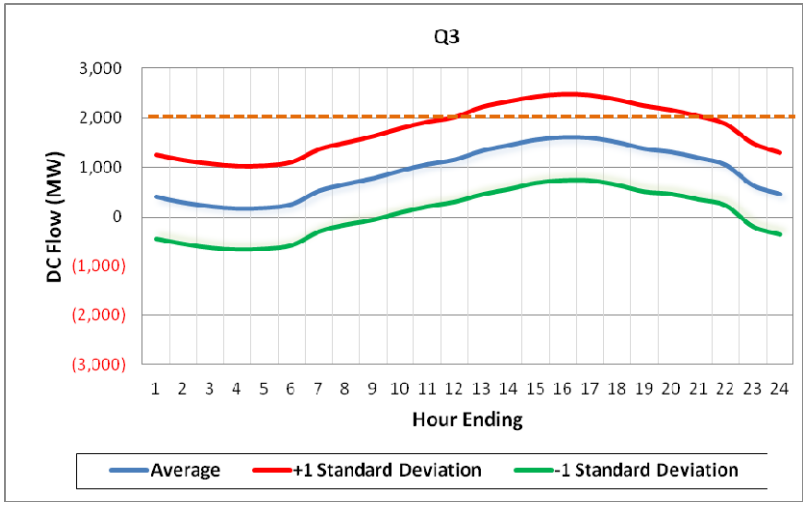


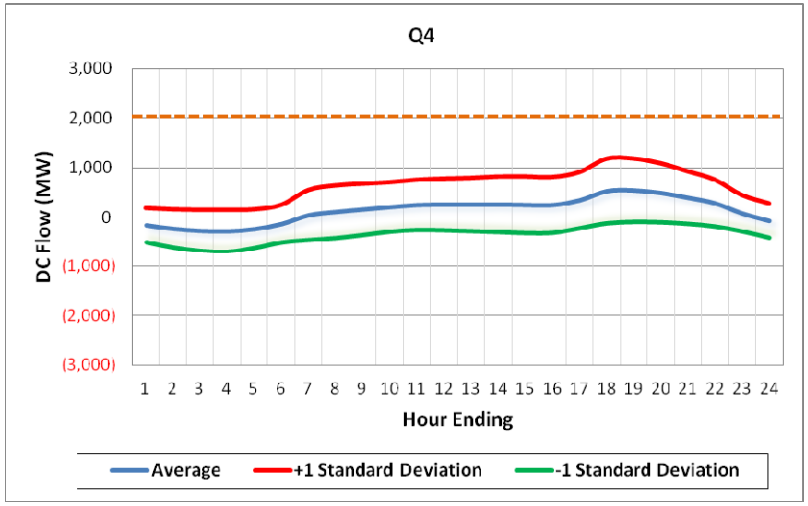
	2001	2002	2003	2005	2006	2007	2008	2009	2010	2011	2012
TDA Volume (% of Normal)	58%	103%	87%	80%	112%	95%	99%	88%	83%	139%	127%
% DC Exceeds 2000MW	0.6%	17.4%	12.0%	8.2%	17.8%	16.2%	17.5%	8.3%	10.1%	37.4%	62.6%

Hourly Profile of PDCI Flows





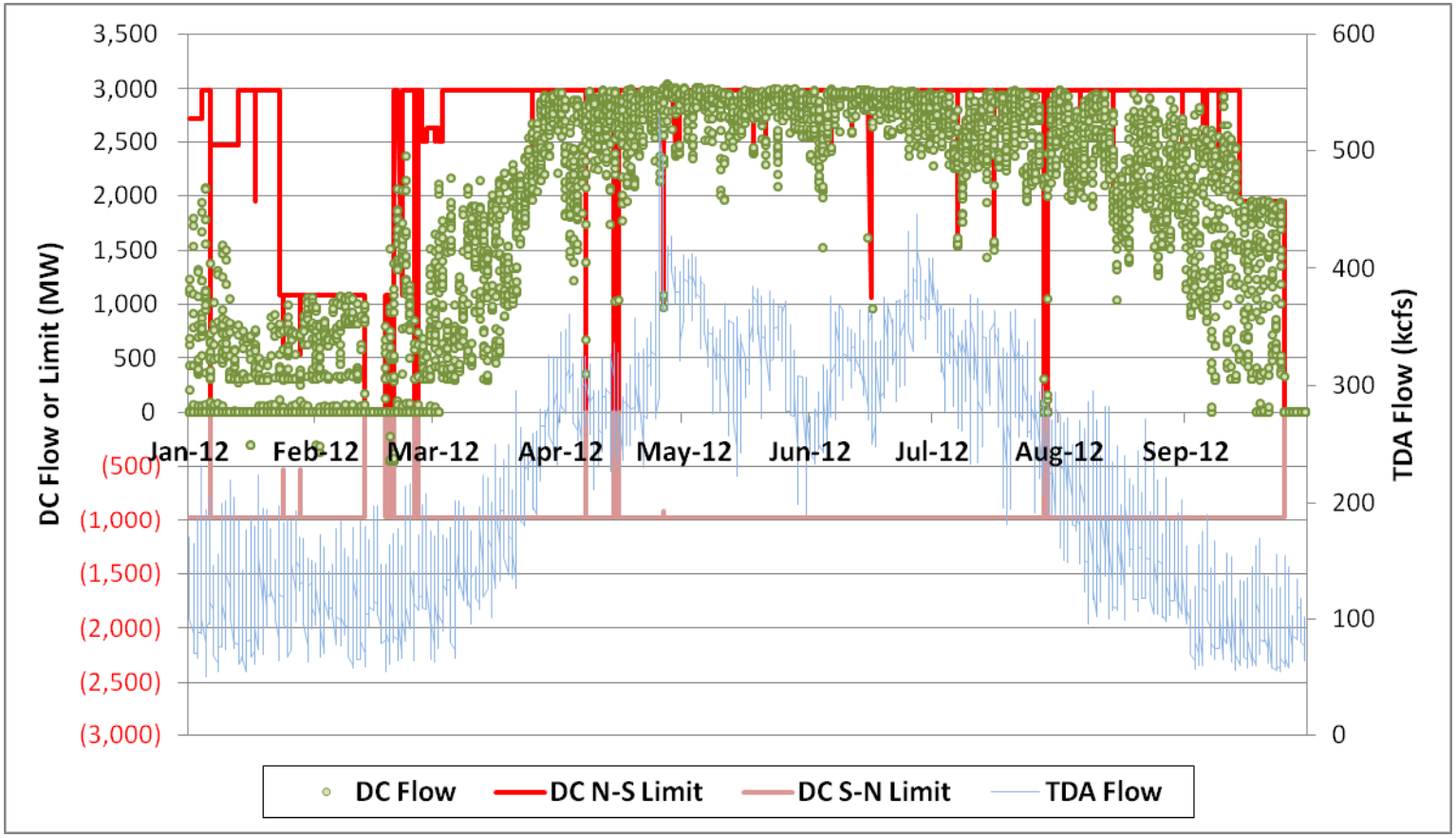




* 2003-2004 PDCI upgrade period excluded from calculations

PDCI TRENDS OF FLOWS AND LIMITS BY CALENDAR YEAR

2012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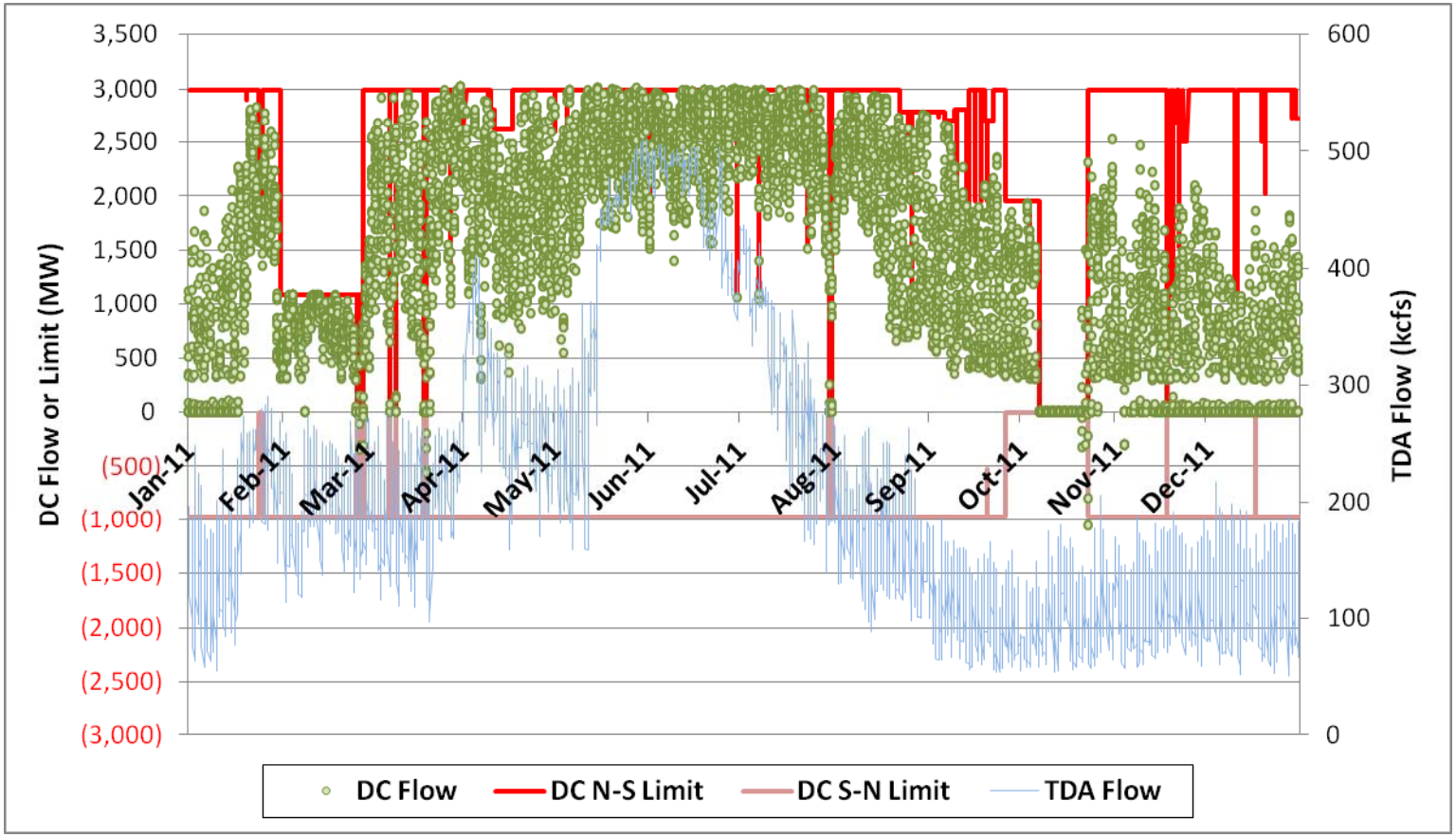
3,000
2,500
2,000
1,500
1,000
500
0
(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
DC Flow or Limit (MW)
600
500
400
300
200
100
0
TDA Flow (kcfs)
Jan-12
Feb-12
Mar-12
Apr-12
May-12
Jun-12
Jul-12
Aug-12
Sep-12
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

2011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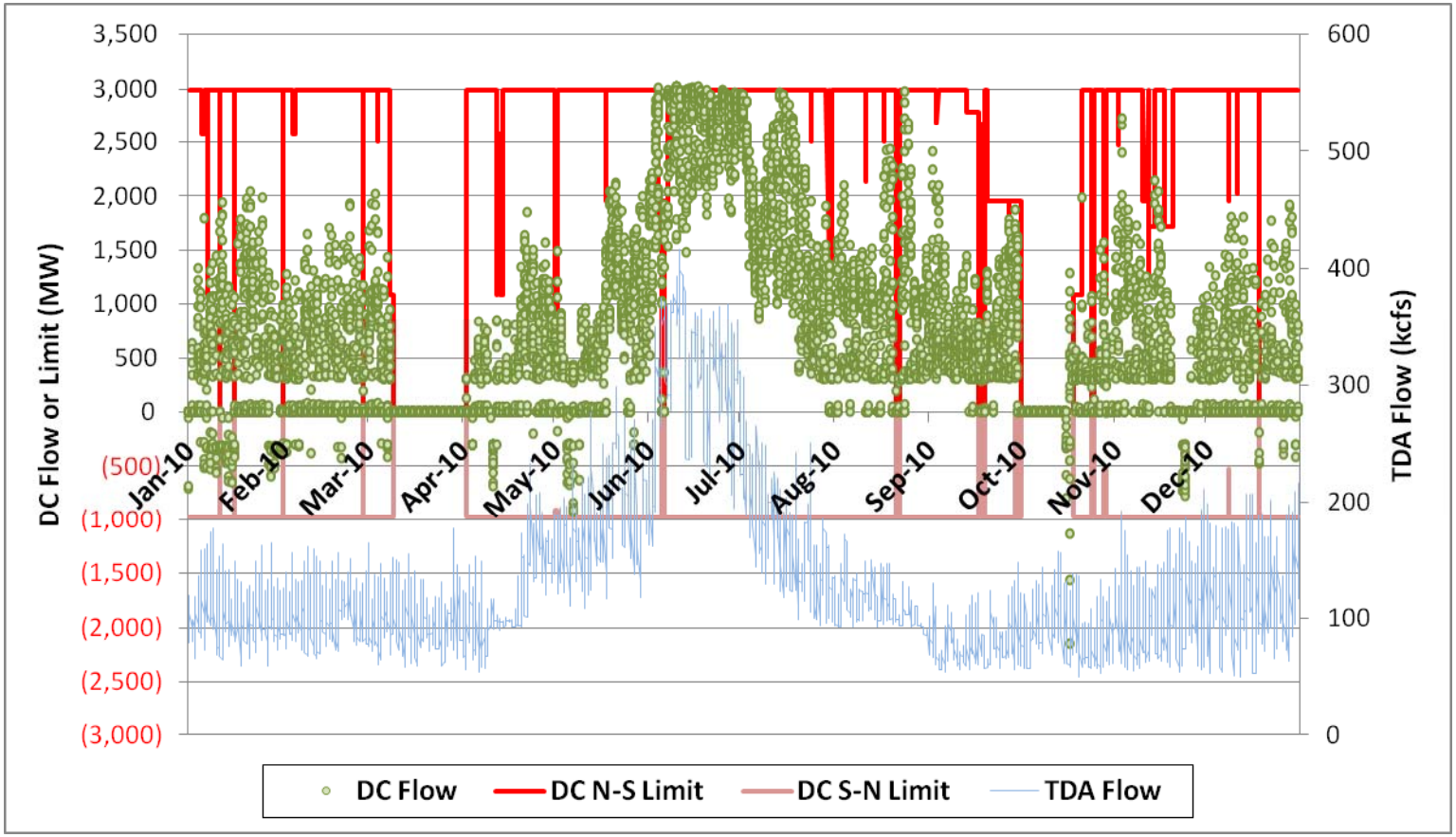
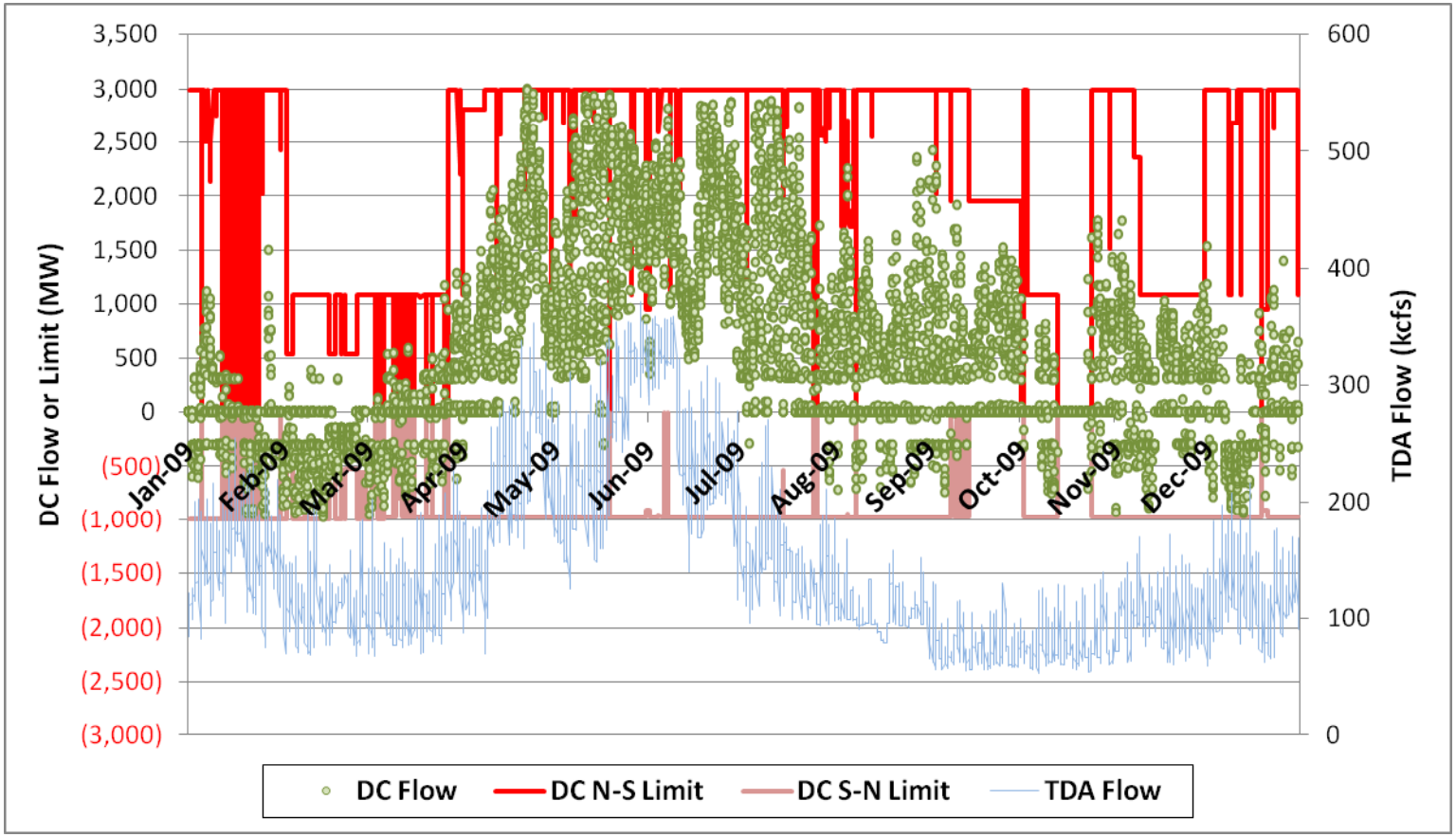
3,000
2,500
2,000
1,500
1,000
500
0
(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
DC Flow or Limit (MW)
600
500
400
300
200
100
0
TDA Flow (kcfs)
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

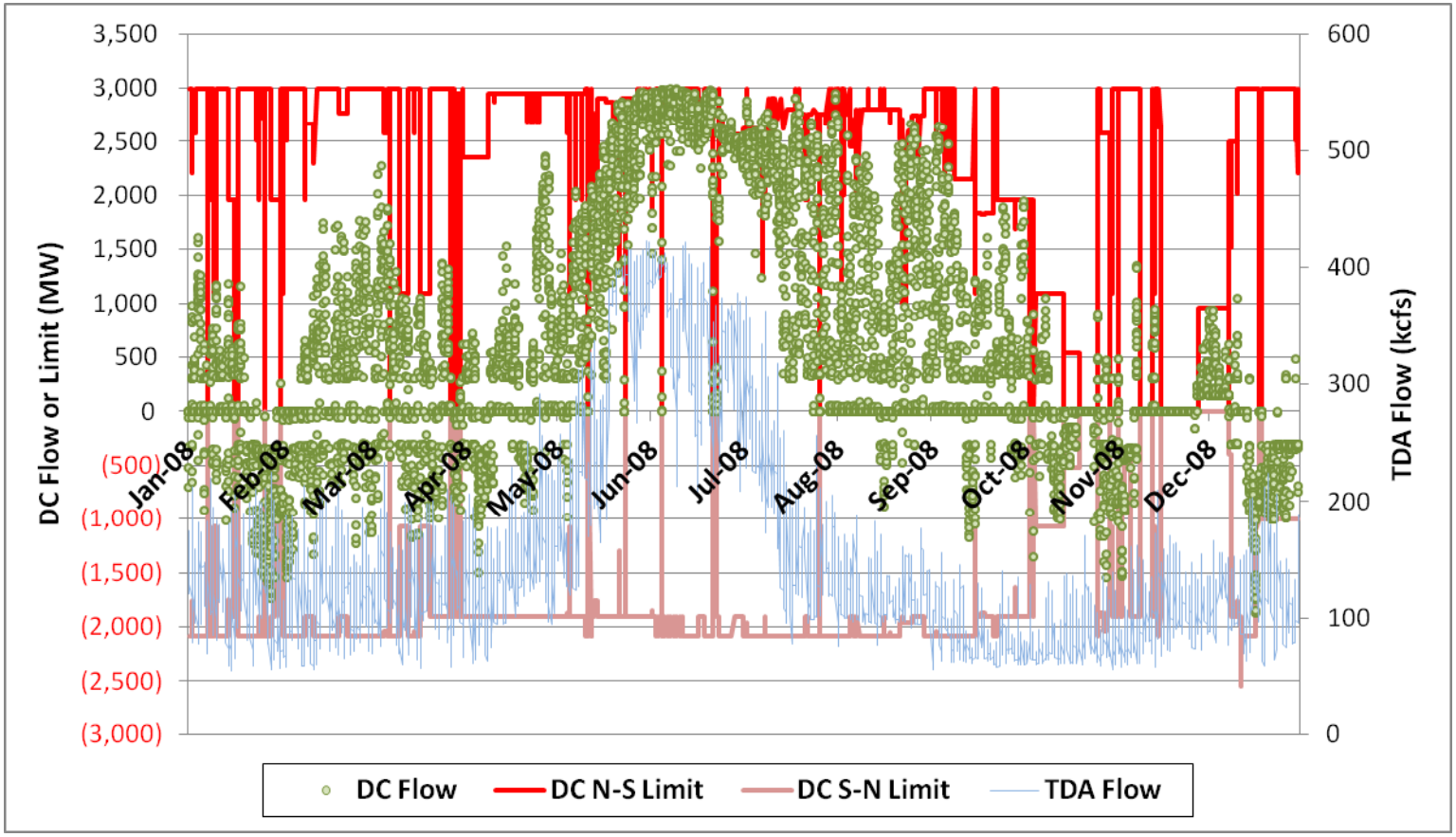
2010


DC Flow or Limit (MW)
TDA Flow (kcfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
600
500
400
300
200
100
0
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Aug-10
Sep-10
Oct-10
Nov-10
Dec-10
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

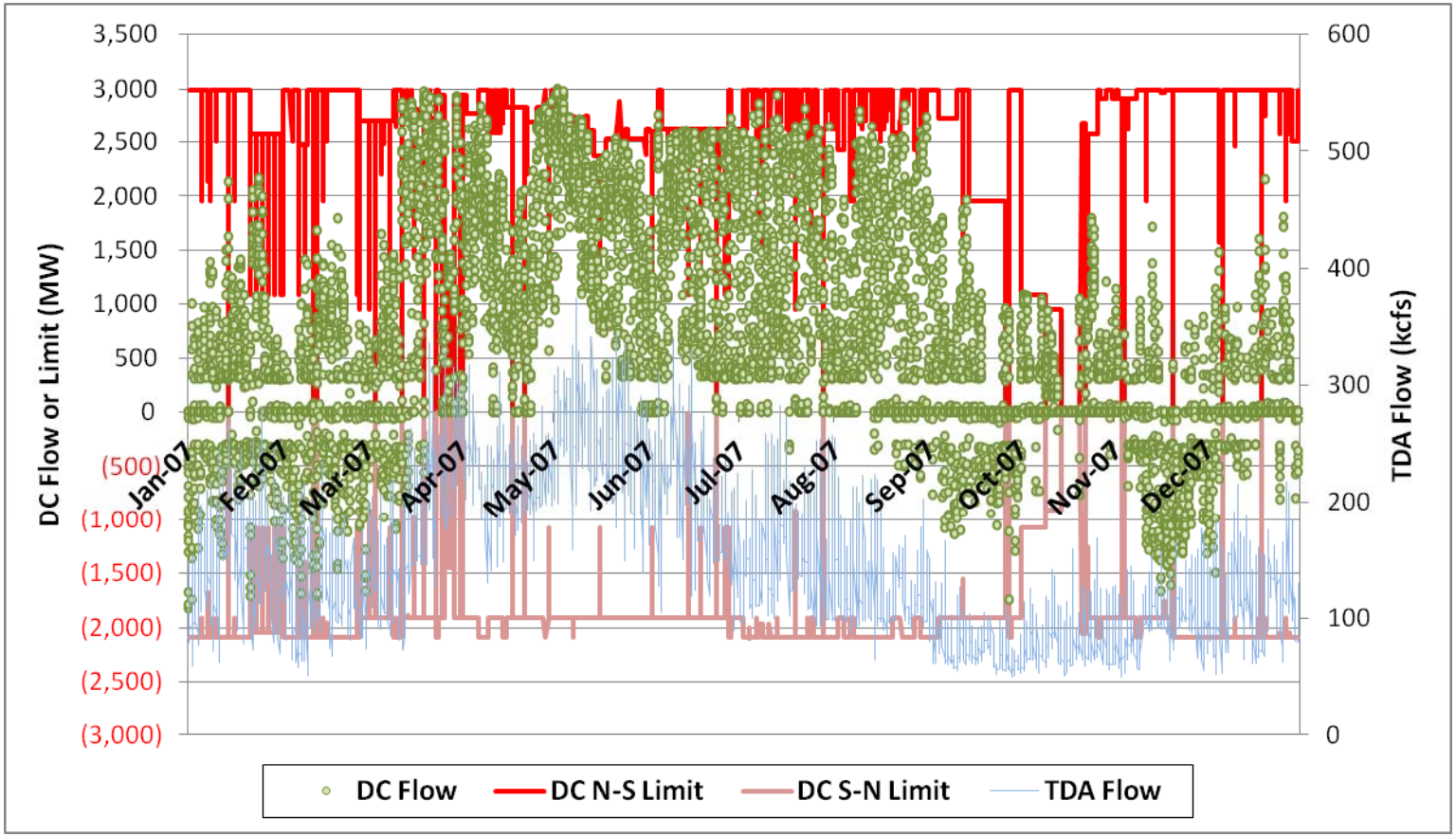
2009


DC Flow or Limit (MW)
TDA Flow (kcfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
600
500
400
300
200
100
0
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

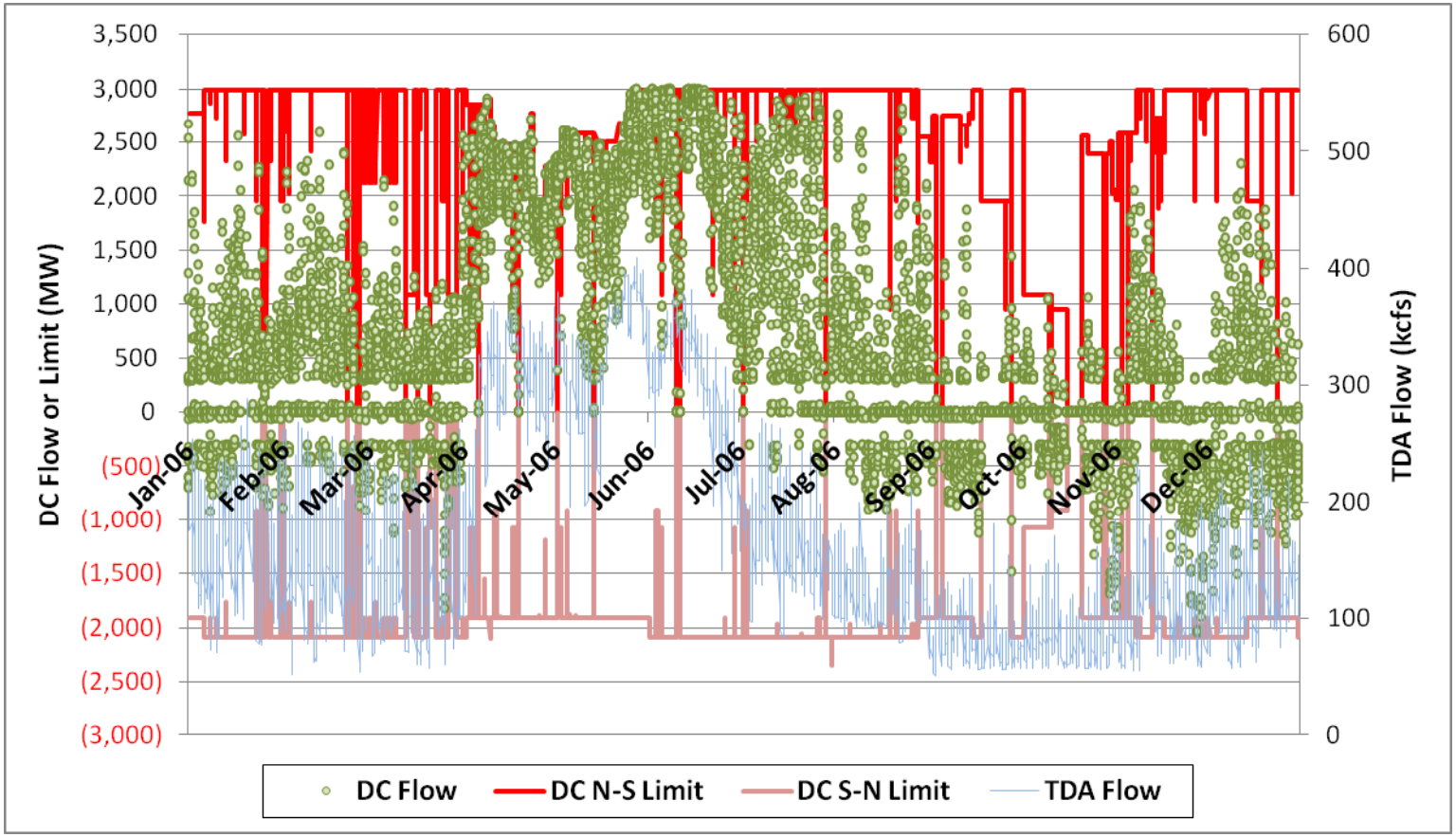
2008


DC Flow or Limit (MW)
TDA Flow (kcfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
600
500
400
300
200
100
0
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

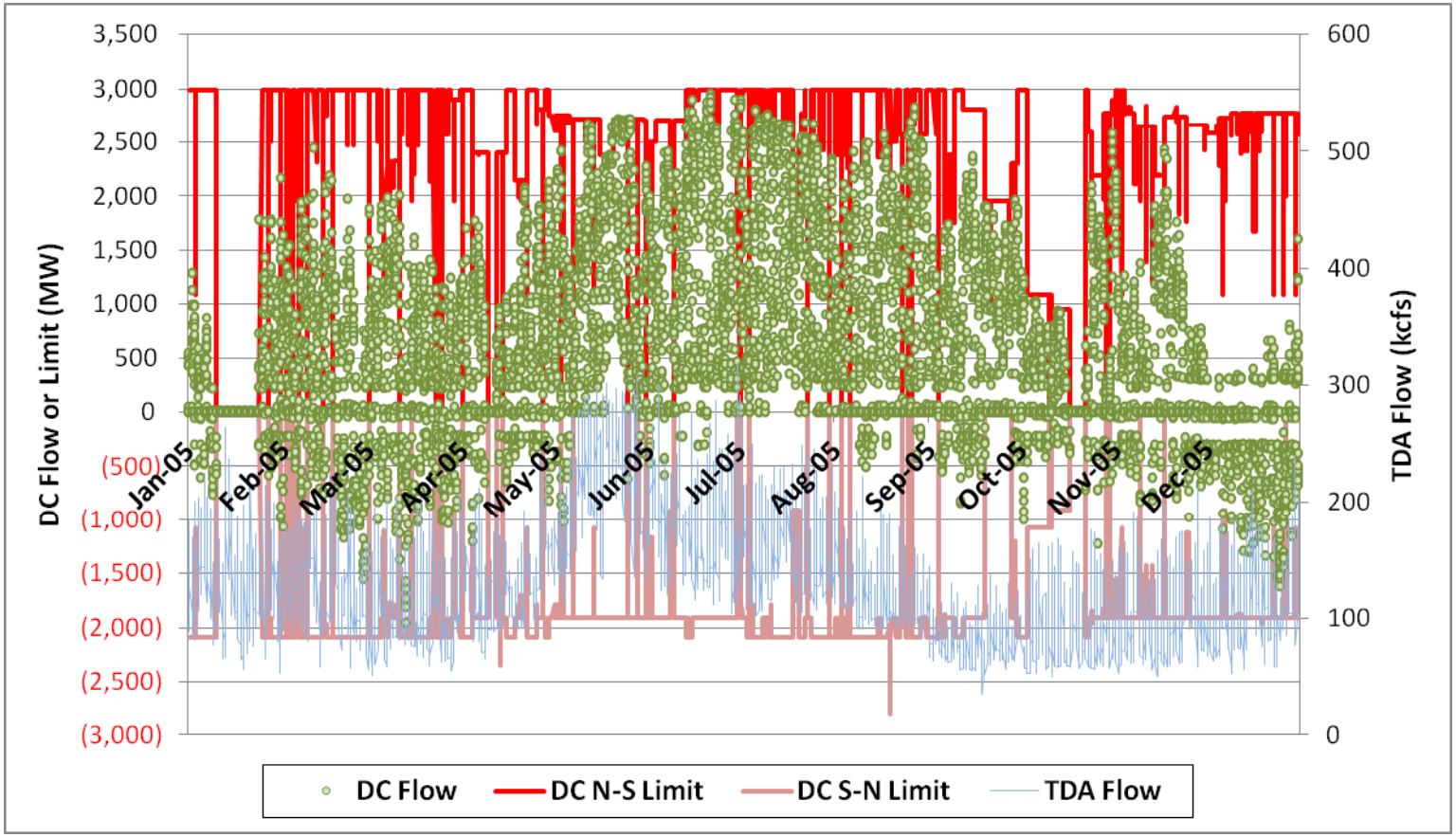
2007


DC Flow or Limit (MW)
TDA Flow (kcfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
600
500
400
300
200
100
0
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

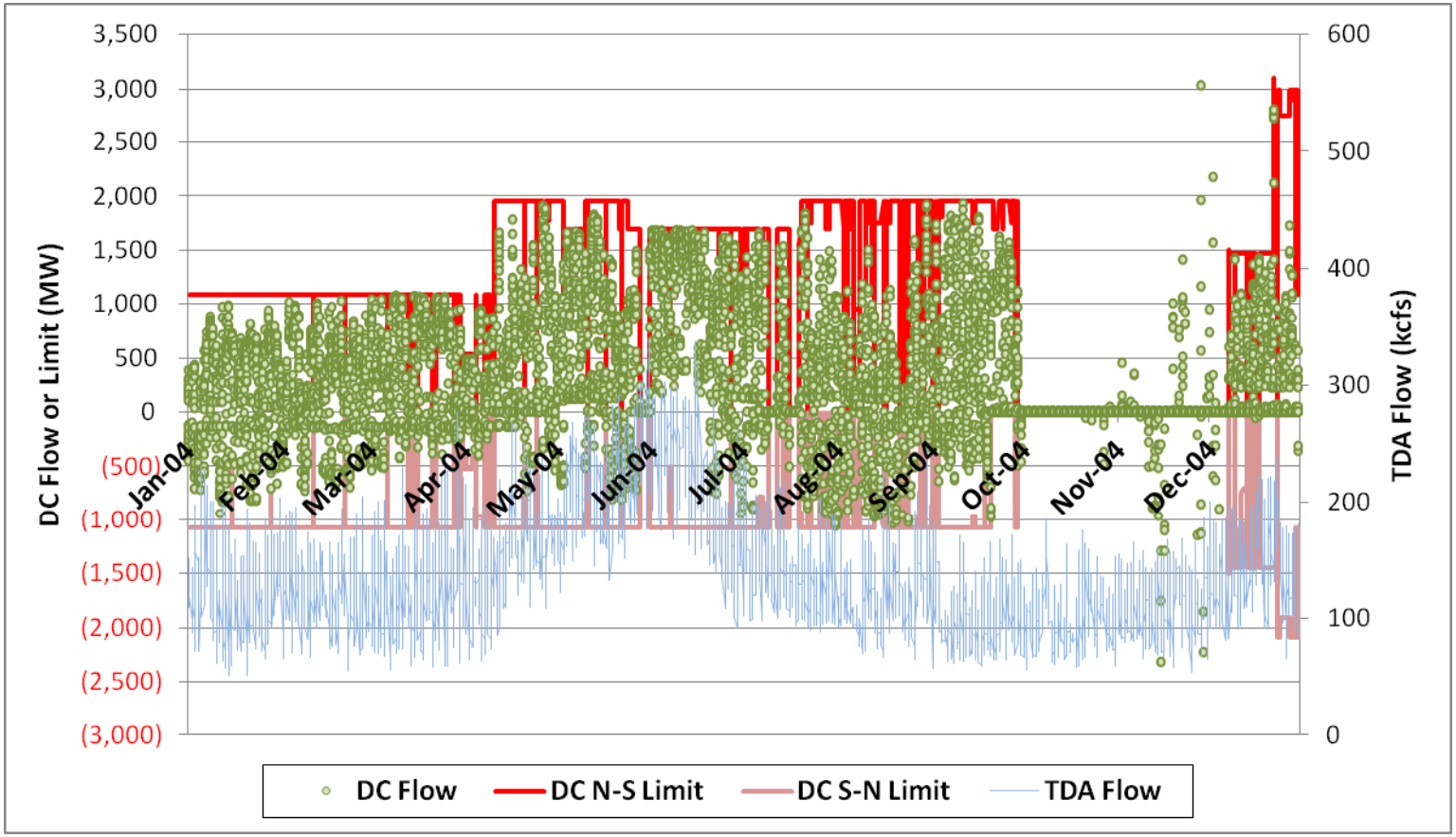
2006


DC Flow or Limit (MW)
TDA Flow (kcfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
600
500
400
300
200
100
0
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

2005


DC Flow or Limit (MW)
TDA Flow (kcfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
600
500
400
300
200
100
0
Jan-05
Feb-05
Mar-05
Apr-05
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

2004


DC Flow or Limit (MW)
TDA Flow (kcfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
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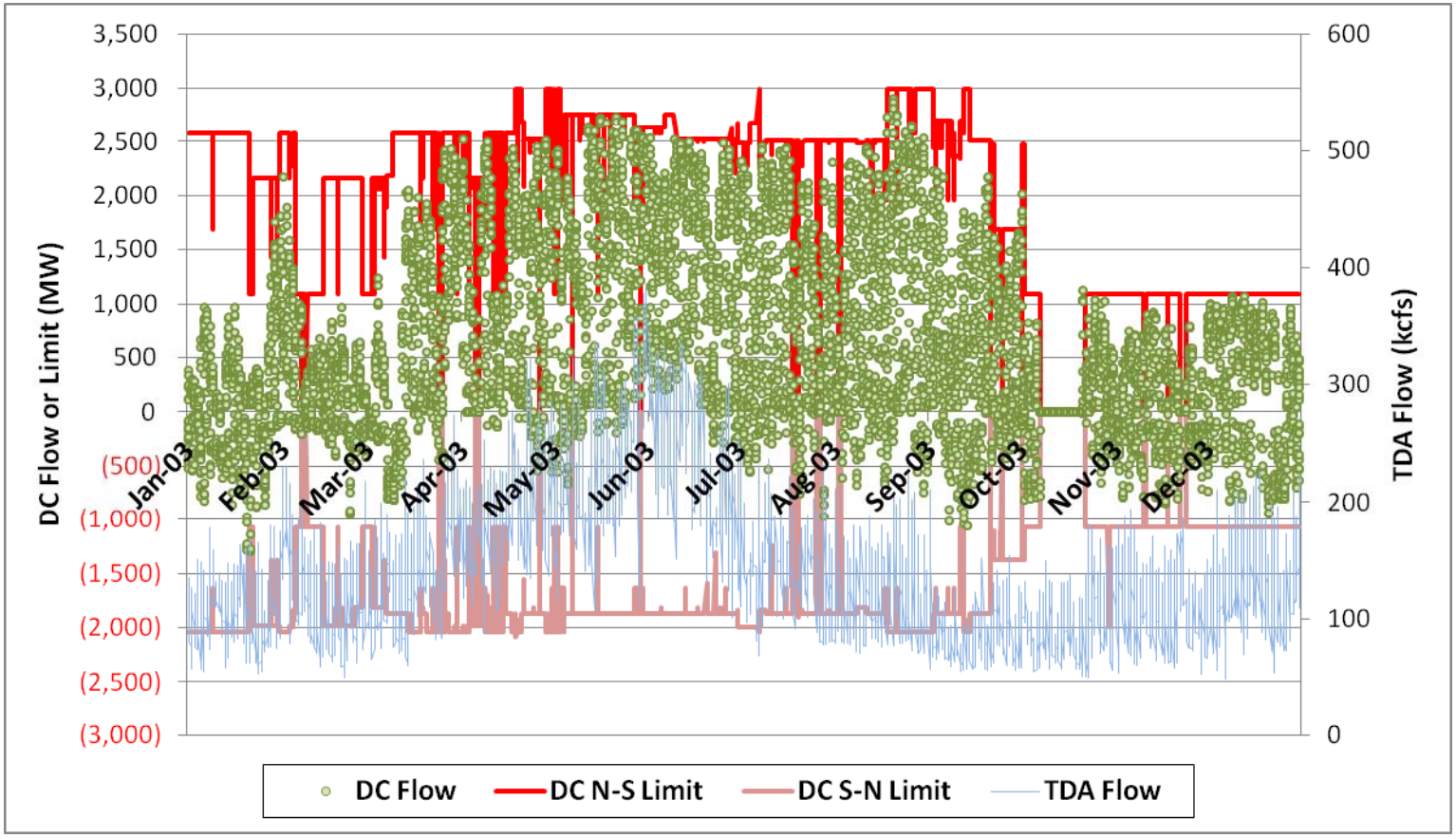
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
600
500
400
300
200
100
0
Jan-04
Feb-04
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

2003


DC Flow or Limit (MW)
TDA Flow (kcfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
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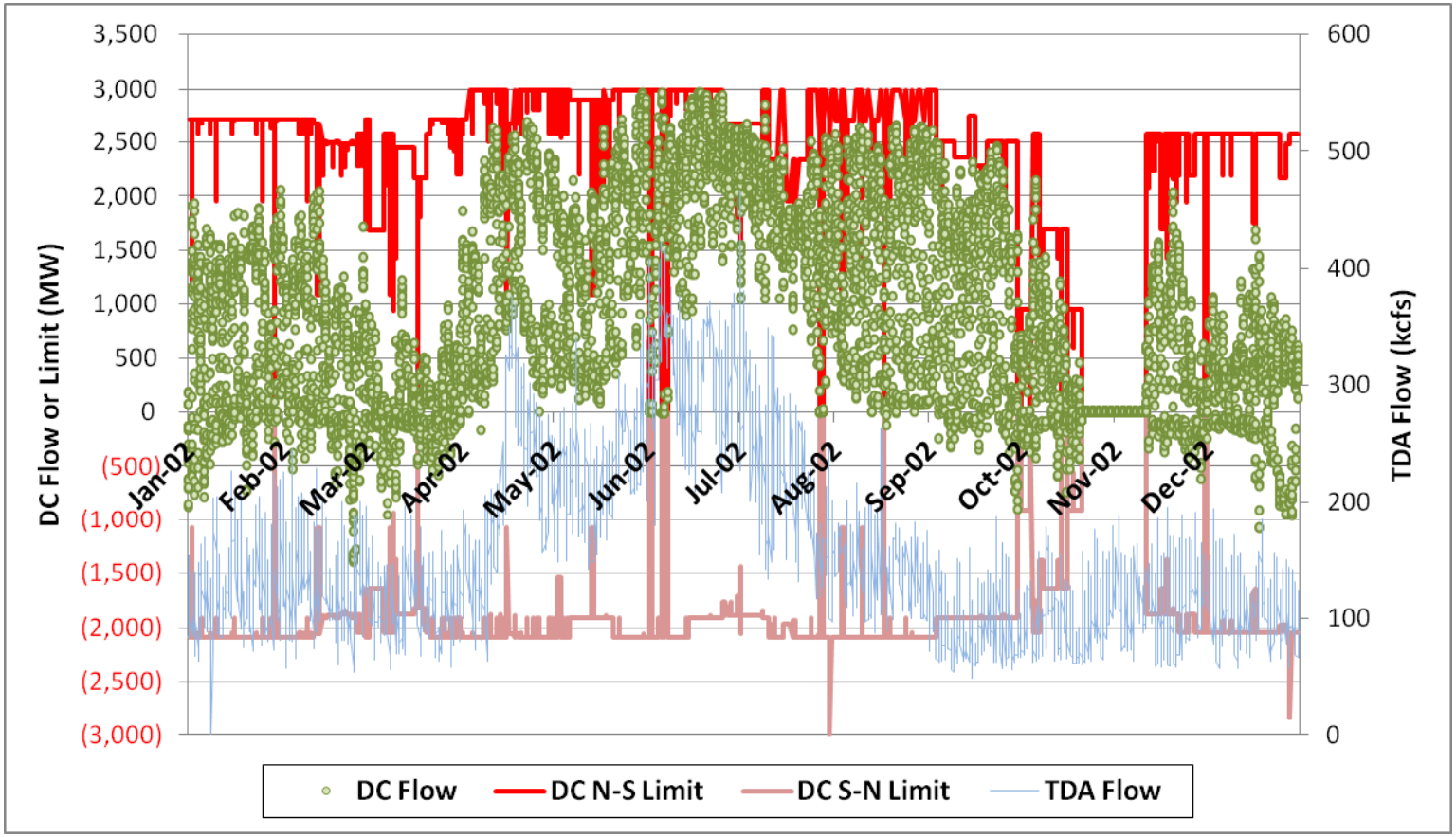
(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
600
500
400
300
200
100
0
Jan-03
Feb-03
Mar-03
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

2002


DC Flow or Limit (MW)
TDA Flow (kcfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
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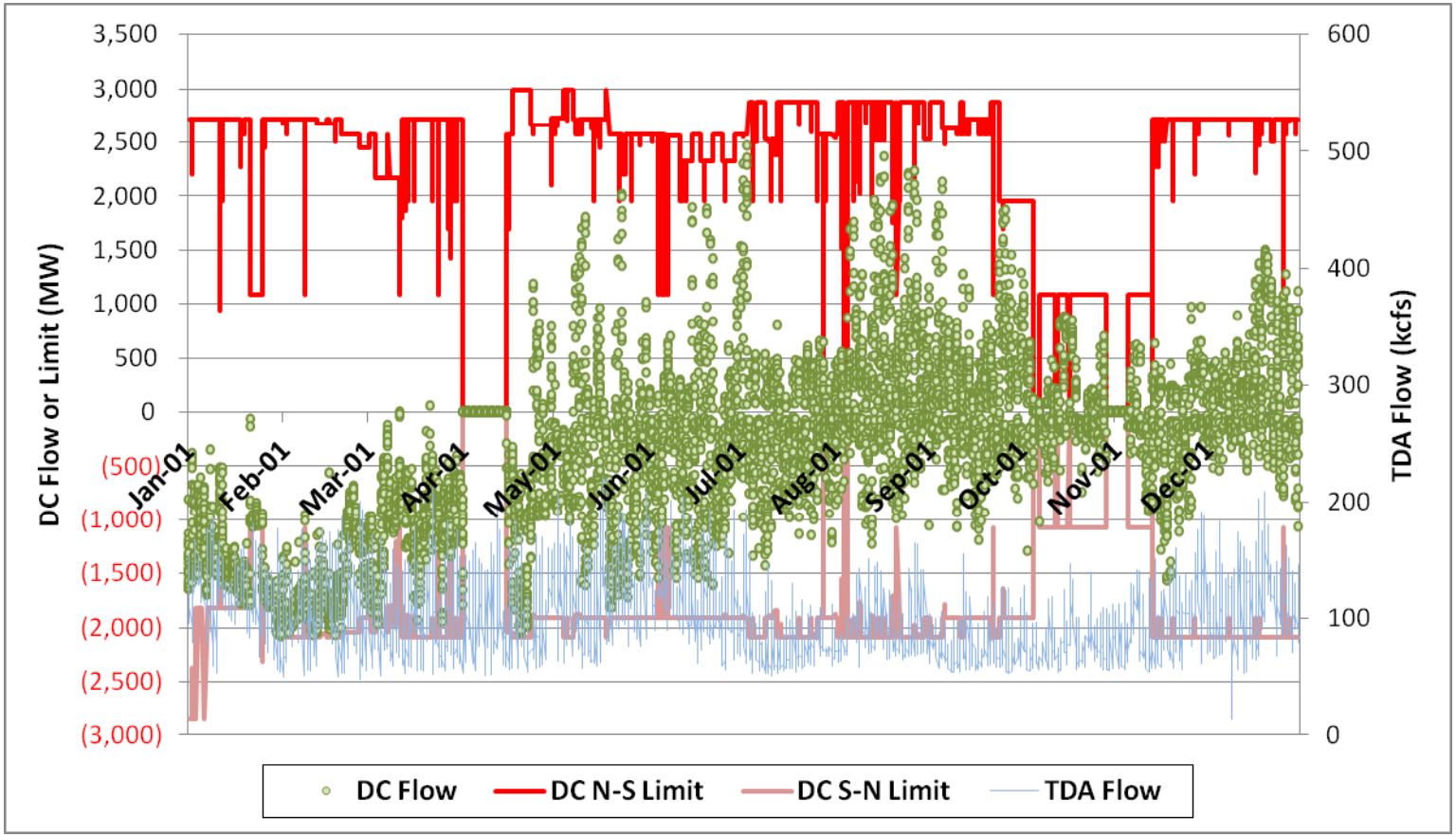
(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
600
500
400
300
200
100
0
Jan-02
Feb-02
Mar-02
Apr-02
May-02
Jun-02
Jul-02
Aug-02
Sep-02
Oct-02
Nov-02
Dec-02
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow

2001


DC Flow or Limit (MW)
TDA Flow (kcfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
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(500)
(1,000)
(1,500)
(2,000)
(2,500)
(3,000)
600
500
400
300
200
100
0
Jan-01
Feb-01
Mar-01
Apr-01
May-01
Jun-01
Jul-01
Aug-01
Sep-01
Oct-01
Nov-01
Dec-01
DC Flow
DC N-S Limit
DC S-N Limit
TDA Flow