Report on the Appropriateness of the Three Pivotal Supplier Test and Alternative Competitive Screens

James Bushnell, Member
Scott M. Harvey, Member
Benjamin F. Hobbs, Chairman
Shmuel S. Oren, Member
Member of the California ISO Market Surveillance Committee

Folsom, California

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FERC CHARGE

"the CAISO's market surveillance committee is hereby directed to report its findings regarding the appropriateness of the three-pivotal-supplier test and whether an alternative competitive screen to identify market power opportunities for generation in load pockets is necessary by May 1, 2013." [138 FERC ¶ 61,154, UNITED STATES OF AMERICA, FEDERAL ENERGY REGULATORY COMMISSION Docket ER12-423-000, ORDER ACCEPTING TARIFF REVISIONS (Issued March 1, 2012).]

The role of LMPM in a Short Term Bid Based Short Term Electricity Market

- Define conditions under which the ISO or market monitor mitigates the offers of some or all suppliers to their estimated competitive level (Default Energy Bids –DEBs).
- Strike a balance between over and under mitigation
  - **Over Mitigation $\Rightarrow$ False positives**

    Bids are adjusted by a LMPM procedure to levels that subsequently result in market inefficiencies
  - **Under Mitigation $\Rightarrow$ False Negatives**

    Bids that should have been mitigated are not, resulting in prices that are not just and , reasonable, unjustified wealth transfers from consumers to producers, and possible market inefficiencies

The Current DMM LMPM

- Apply structural screen for concentration in supply of counterflow (including virtual bids) on constrained paths (Dynamic CPA)
  - Identify constrained paths in the RTPD run
  - Apply three joint pivotal supplier (3PS) screen to constrained paths (can withdrawal of three bids cause infeasibility on the path?)
- If a path fails the 3PS screen all bids that supply counterflow on that path are mitigated to their DEB.
- We focus here on the question of the 3 PS standard
  - Note that with dynamic CPA, the nature and frequency of mitigation has changed quite a bit.

Approaches to Analysis: Some Empirical Questions

- Is mitigation triggered mostly by random errors in the DEB?
  - When actual costs fluctuate upward is the “tail” truncated by the DEB?
- If high bids contain strategic behavior, is it notably different at different levels of RSI?
  - Is there more market power at 2 PS than 3PS, or 3PS than 4PS?
- How would mitigation have behaved if 2 PS were in effect during 2012?

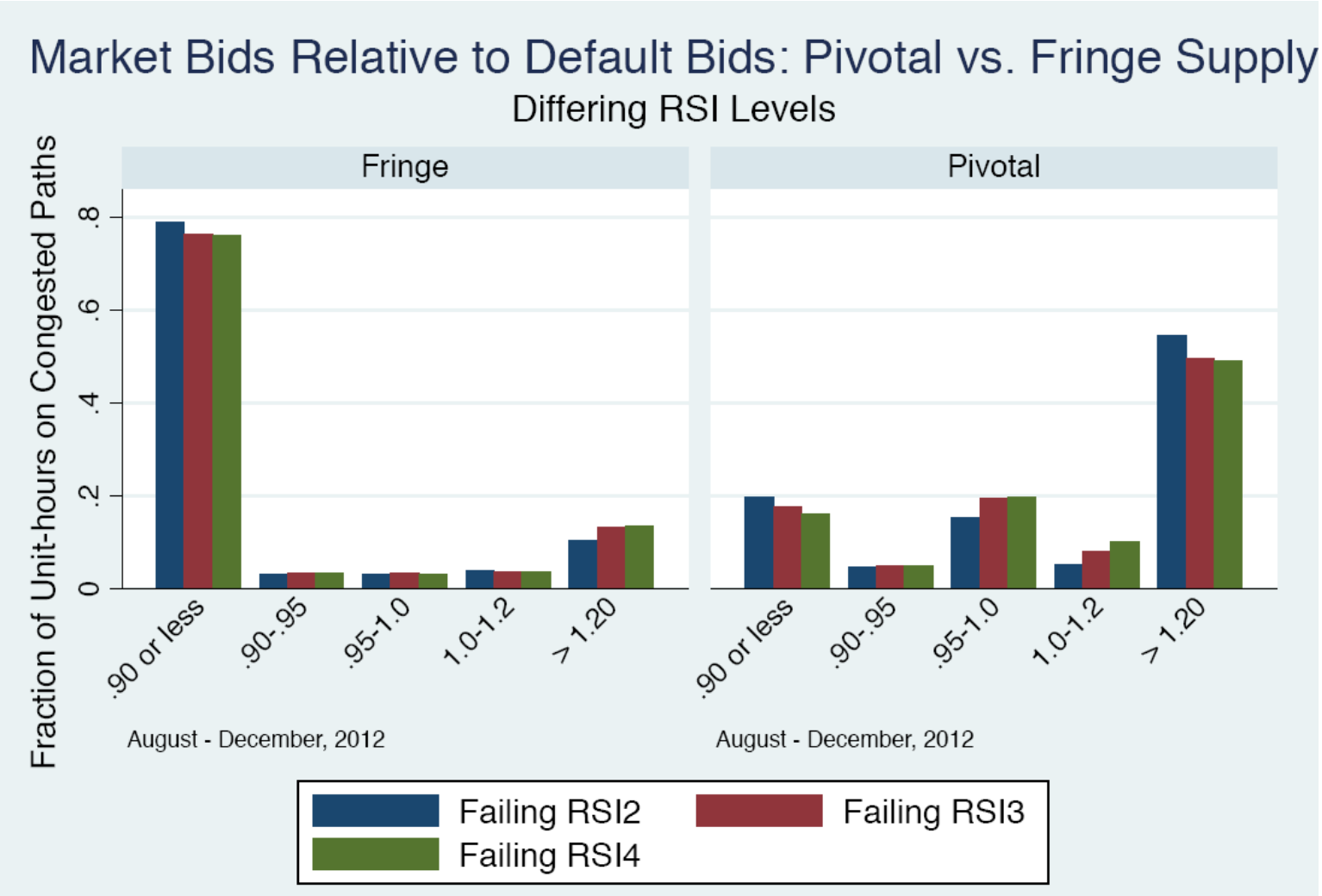
Paths of Interest:
Table 1: Usually Uncompetitive Paths

Flowgate Name	Total Hours of Congestion	Hours Failing RSI 2 Test	Hours Failing RSI 3 Test	Hours Failing RSI 4 Test
22342_HDWSH_500_22536_N.GILA_500_BR_1_1	455	447	453	455
22569_NCMTGTAP_138_22264_ESCNDO50_138_BR_1_	201	192	192	192
24301_BIGCRK1_230_24235_RECTOR_230_BR_1_1	19	19	19	19
33514_MANTECA_115_33526_KASSONJ1_115_BR_1_1	19	19	19	19
33541_AEC_TP1_115_33540_TESLA_115_BR_1_1	13	13	13	13
33542_LEPRINO_115_33546_TRACYJC_115_BR_1_1	44	44	44	44
33543_AEC_TP2_115_33540_TESLA_115_BR_1_1	29	29	29	29
34112_EXCHEQUR_115_34116_LEGRAND_115_BR_1_1	39	39	39	39
37650_TESLATP_115_33544_ELLSGTY_115_BR_1_1	29	29	29	29
SLIC2025712DRUM-RIOOSO_2FL1	12	12	12	12
T-165SOL-12_NG_SUM	70	68	68	68
T-167SOL1_NG_SUM	51	51	51	51

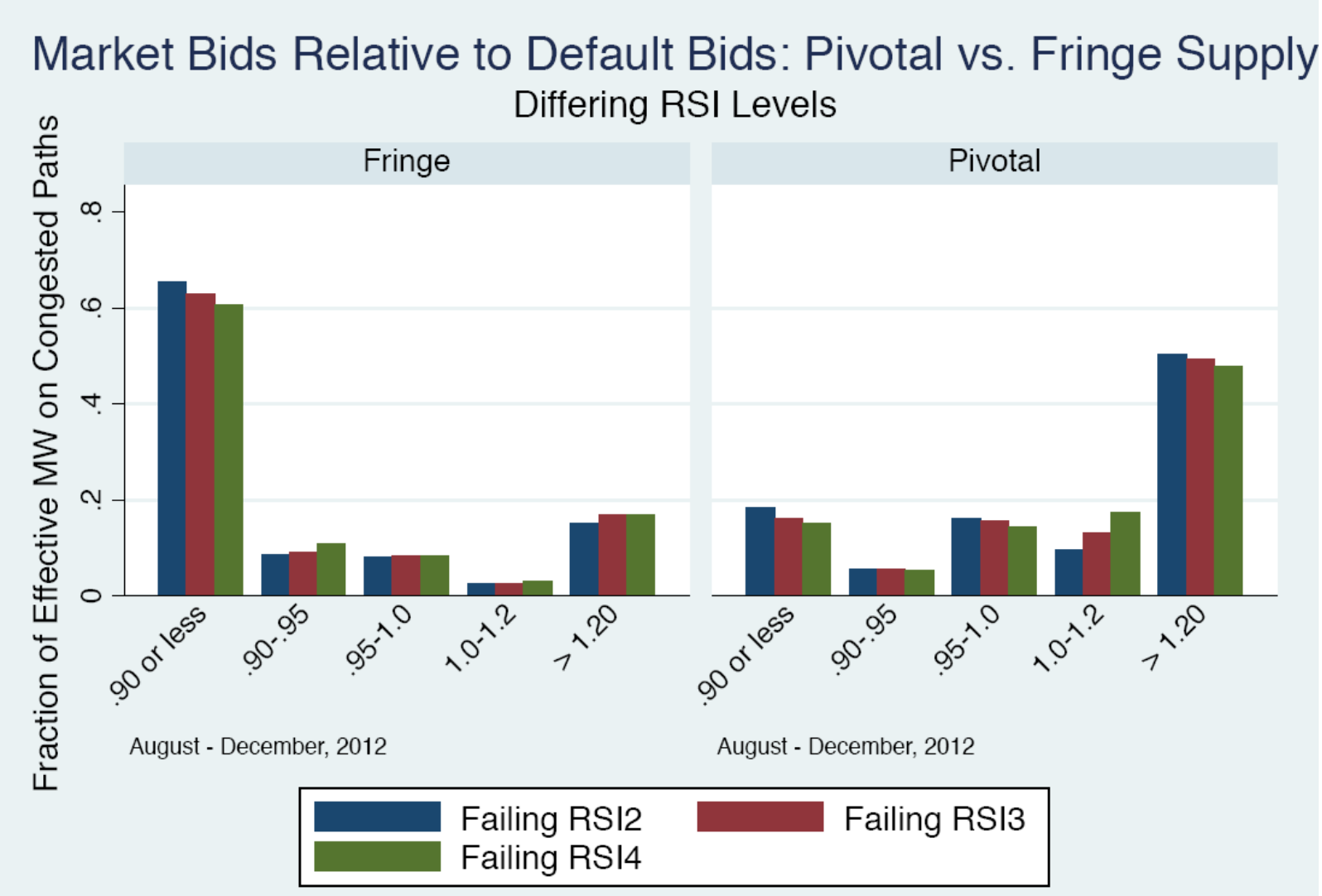
Paths of Interest:
Table 2: High Variation in RSI Levels

Flow Gate Name	Total Hours of Congestion	Hours Failing RSI 2 Test	Hours Failing RSI 3 Test	Hours Failing RSI 4 Test
SCE_PCT_IMP_BG	948	0	19	50
7830_SXCYN_CHILLS_NG	546	262	275	351
BARRE-LEWIS_NG	373	72	146	149
6110_TM_BNK_FLO_TMS_DLO_NG	310	87	99	105
30060_MIDWAY_500_24156_VINCENT_500_BR_1_2	188	42	103	168
SOUTHLUGO_RV_BG	135	41	85	113

Relationships between Path Pivotal Supplier Test Levels and Bidding



Relationships between Path Pivotal Supplier Test Levels and Bidding Behavior



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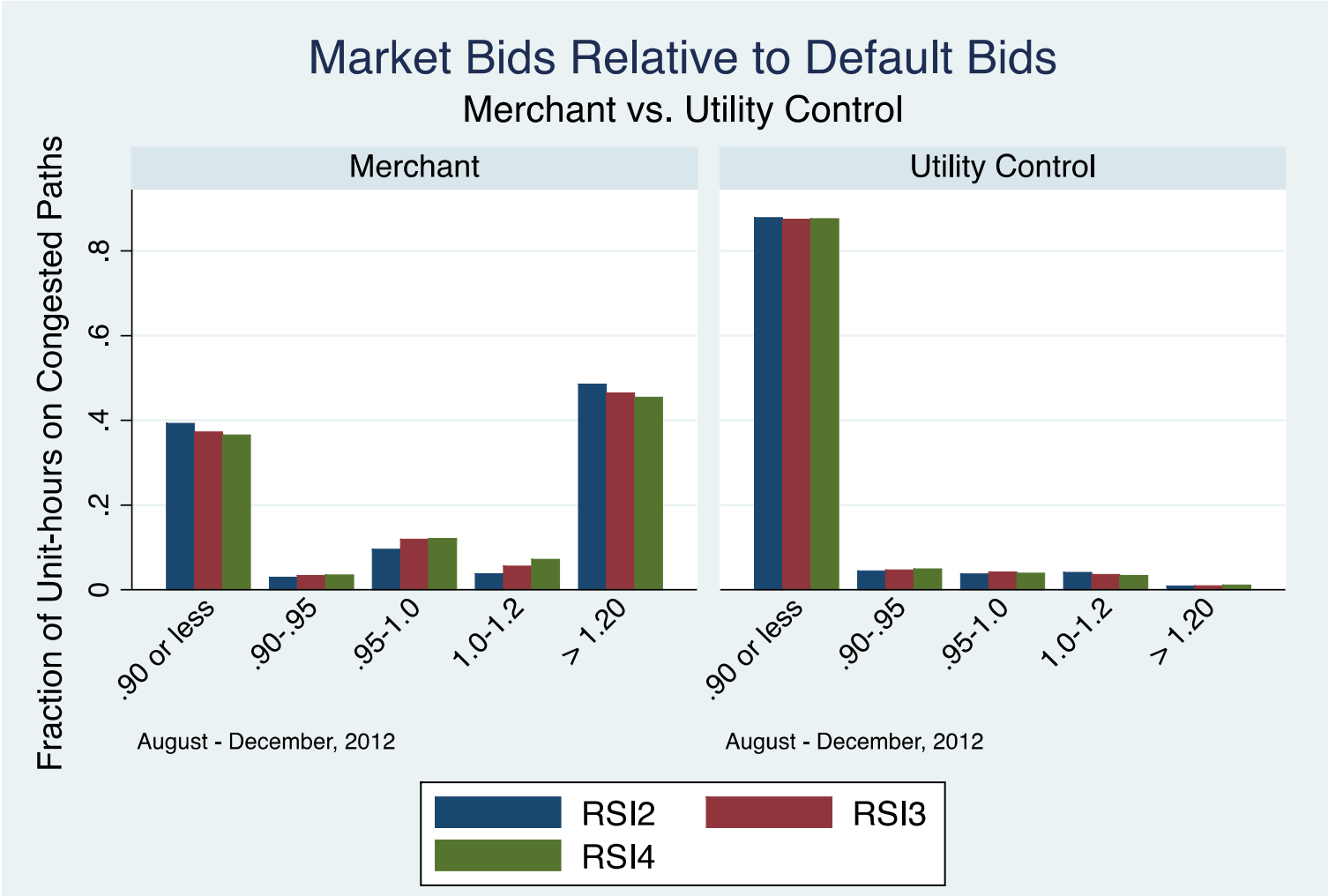
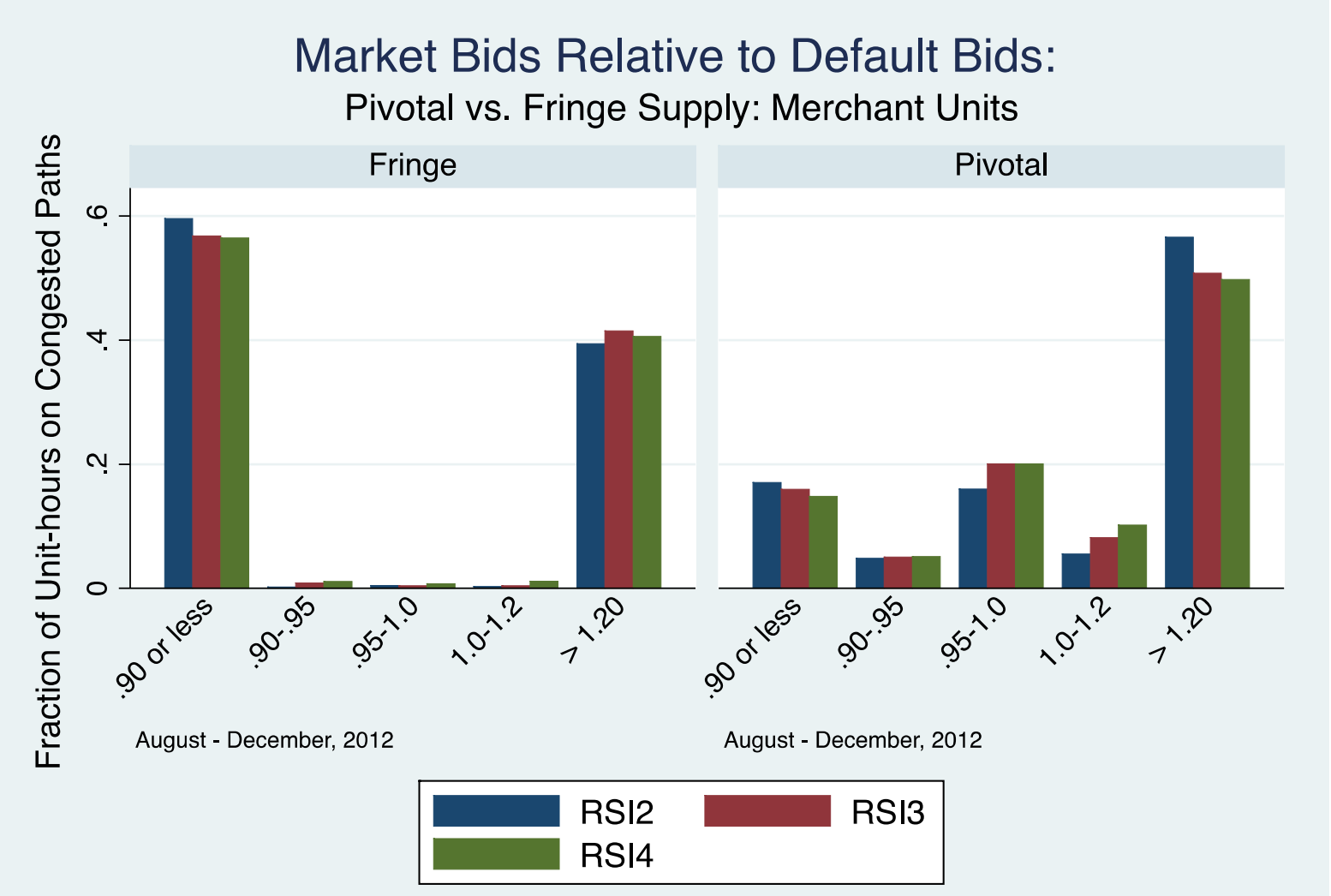
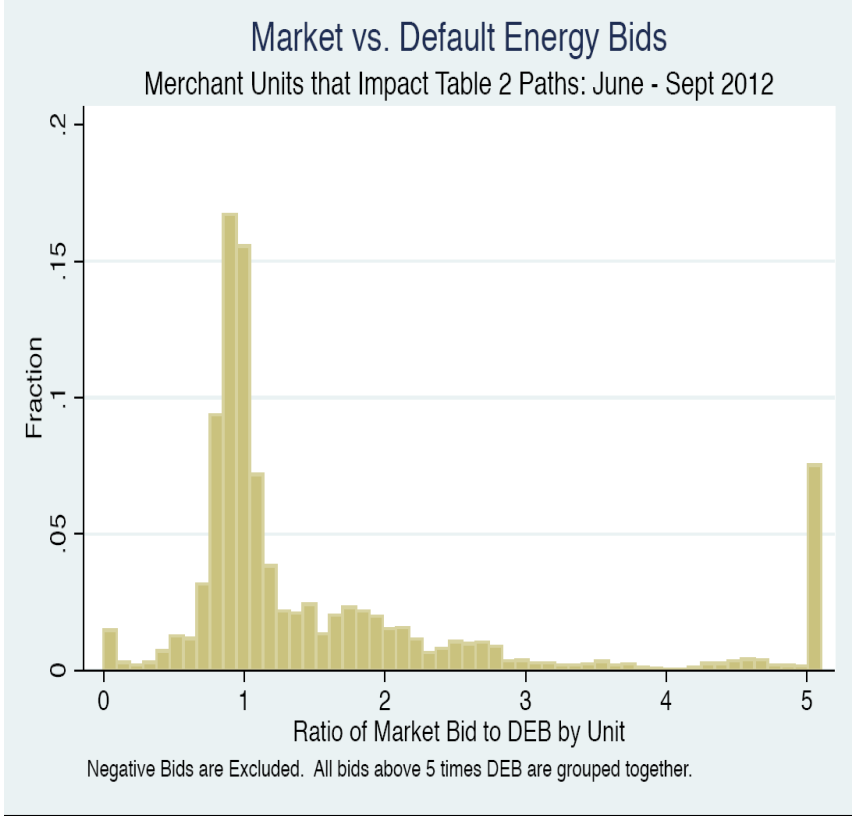
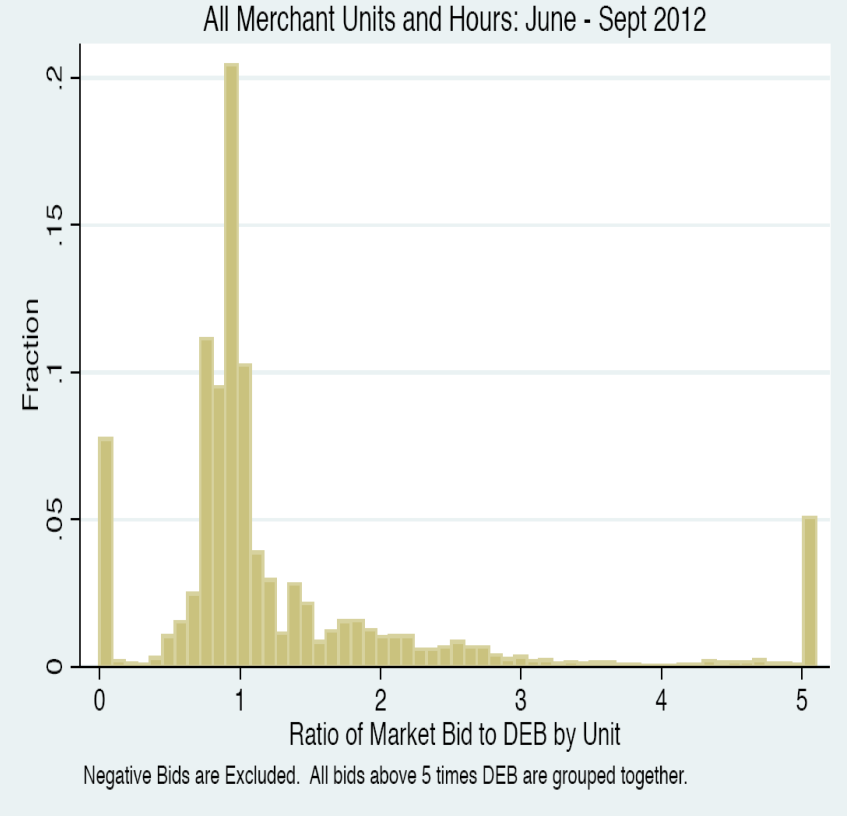


Relationships between Path Pivotal Supplier Test Levels and Bidding Behavior-3

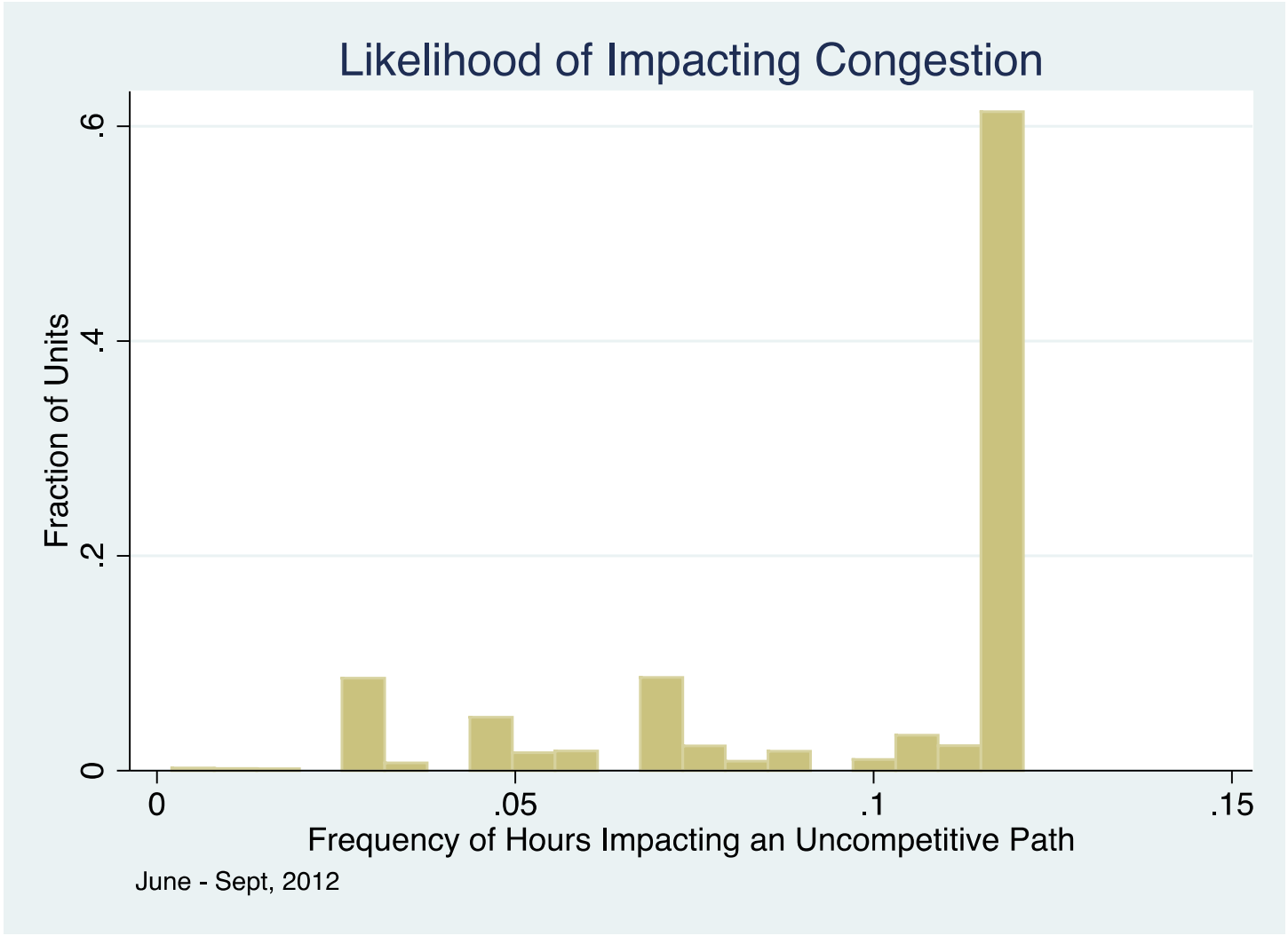


Relationships between Path Pivotal Supplier Test Levels and Bidding Behavior-4

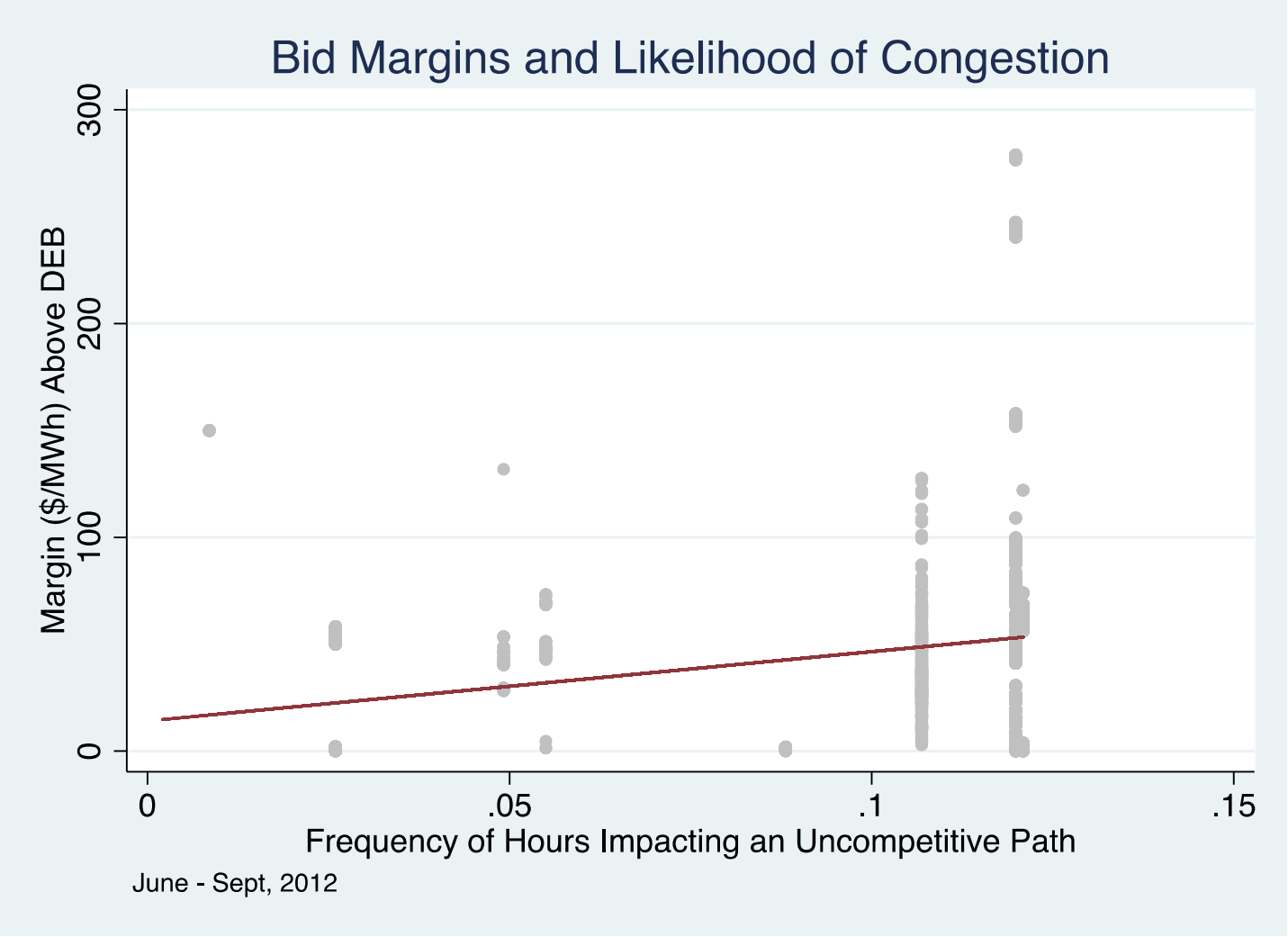




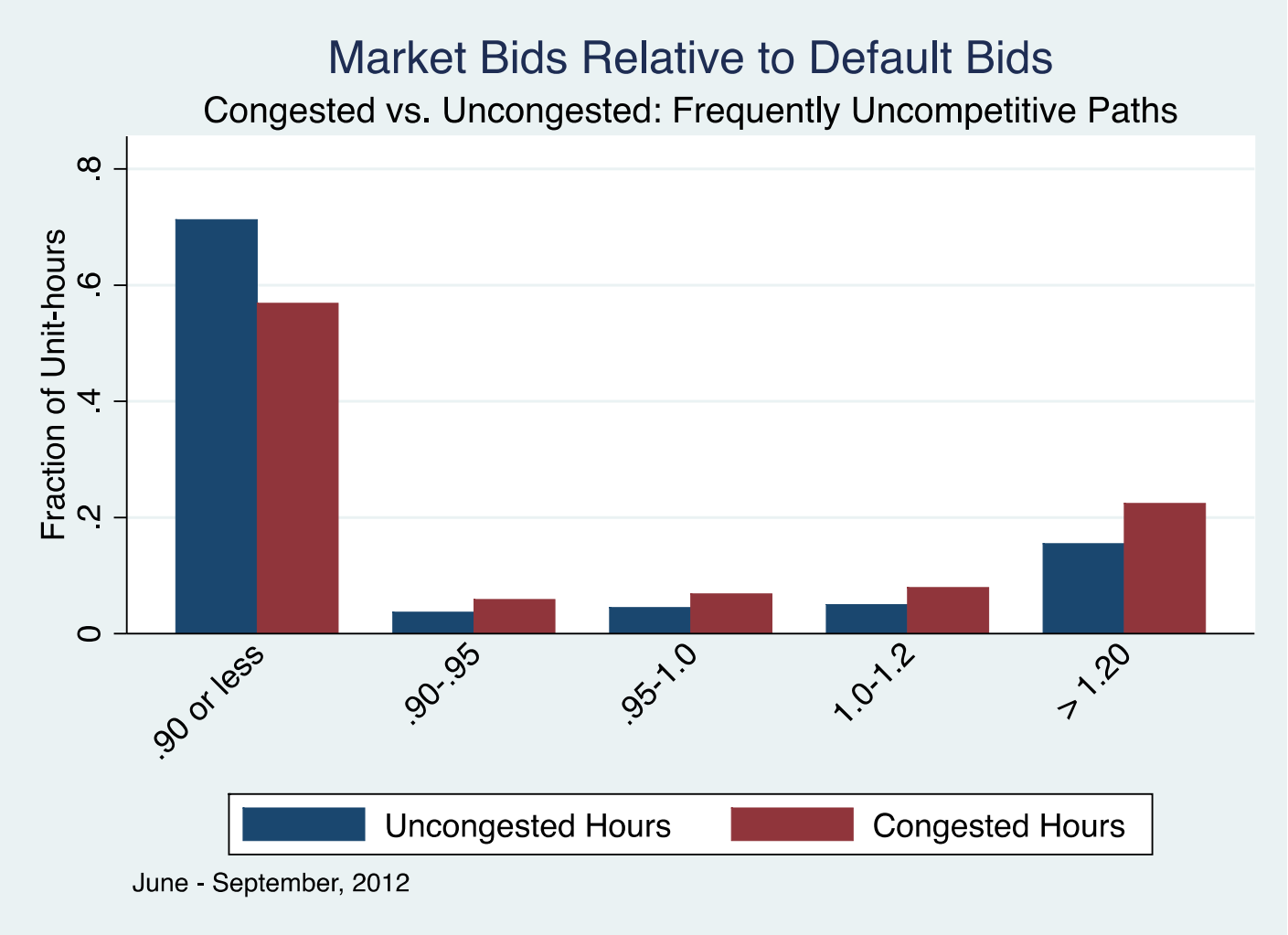
Propensity of Units to Impact Uncompetitive Paths



Propensity of Units to Impact Uncompetitive Paths and Bidding Behavior-2



Higher Bids During Congested Hours



Frequency of Mitigation

ALL BID LEVLES

	Merchant Plants					Utility Controlled Plants				
Month	**Total Unit Hours**	**Failing RSI2**	**Failing RSI3**	**Difference**		**Total Unit Hours**	**Failing RSI2**	**Failing RSI3**	**Difference**	
August	27730	179311	314815	135504		51177	146287	219123	72837	
September	29606	306984	594778	287794		33422	185934	323163	137228	
October	28980	133093	305298	172206		34268	83753	155465	71712	
November	66658	93249	141021	47772		114127	27204	51748	24544	
December	22985	49188	76255	27068		33125	6692	13334	6641	
Total	175959	761824	1432168	670344		266119	449869.5	762831.5	312962.0	

BIDS ABOVE 1.2 DEB

	Merchant Plants					Utility Controlled Plants				
Month	**Total Unit Hours**	**Failing RSI2**	**Failing RSI3**	**Difference**		**Total Unit Hours**	**Failing RSI2**	**Failing RSI3**	**Difference**	
August	11893	57784	120686	62902		668	4893	10468	5575	
September	14959	108880	255402	146522		394	1488	3393	1905	
October	12522	46728	113600	66872		1054	1543	2726	1183	
November	20268	51671	60218	8547		5224	22	22	0	
December	5328	1165	1568	403		1098	0	0	0	
Total	64970	266228	551474	285247		8438	7947	16609	8662	

Summary

- A large fraction of merchant units bid in excess of 1.2 times DEB during congested hours for the paths we studied.
  - Some in excess of 5 times DEB or $100/MWh above.
- We approximate about half of these would *not* have been mitigated under 2PS standard
  - Harder to say what the price impact would be
- Less of a clear pattern of bidding variance between 2, 3 and 4 PS.
- We do not find anything to support a change in the current three pivotal supplier threshold