ENTERGY'S WEEKLY PROCUREMENT PROCESS

QUARTERLY REPORT
March 2013 to May 2013

Prepared by:

POTOMAC ECONOMICS

Independent Monitor

June 14, 2013

Table of Contents

I. OVERVIEW

On behalf of the Independent Coordinator of Transmission ("ICT") for Entergy Services, Inc. ("Entergy"), Potomac Economics submits this quarterly Independent Monitoring report on Entergy's Weekly Procurement Process ("WPP") for the quarter March-May 2013. This report is submitted in accordance with requirements of the Federal Energy Regulatory Commission ("Commission") to monitor the operations and effectiveness of the WPP.[1]

Entergy's Weekly Procurement Process (WPP) was approved by the Commission in conjunction with its approval establishing the ICT in 2006.[2] The WPP was designed to facilitate the integration of non-affiliated resources with Entergy's own network resources to serve its native load.[3] The WPP is implemented by Entergy's Weekly Operations business unit and monitored by the ICT, by subcontract to Potomac Economics. In addition to overall monitoring and reporting responsibilities for the WPP, the ICT also grants transmission service to successful offers selected in the WPP.

The WPP is implemented by estimating system-wide production costs over a seven-day horizon under two alternative model "runs." First, production costs for a "Run 0" are estimated that relies only on resources owned or under contract by Entergy. Production costs for a "Run 1" are estimated that uses the same Entergy resources but also includes third-party offers. Third-party offers that are dispatched in Run 1 are selected and paid their as-offered costs as long as Run 1 production costs are lower.

The approval of the WPP was based on anticipated benefits from the broader integration of resources. The Commission required quarterly reporting to assess the performance of the WPP through a variety of metrics and other analysis. These reporting requirements are reflected in

---

[1] See *Entergy Servs., Inc.*, 115 FERC ¶ 61,095, at P 305 ("ICT Approval Order"), *order on reh'g*, 116 FERC ¶ 61,275 (2006); *Entergy Servs., Inc.*, 126 FERC ¶ 61,227, at PP 85-86, 90 ("March 2009 WPP Order"), *order on clarification and reh'g*, 127 FERC ¶ 61,225 (2009). See also sections 7(a)(2) and (3) of Attachment S and section 9.2 of Attachment V to Entergy's Open Access Transmission Tariff.

[2] ICT Approval Order, *Op cit.*

[3] The WPP is also available for other Entergy network customers to use to serve their load, but none have chosen to use it.

this report. First, we report on the weekly outcomes during the quarter, providing a number of metrics specified by the Commission in its Orders. We also provide the results of any investigations we have performed during the quarter. Finally, we report on aggregated statistics associated with the WPP model as specified by the Commission and compiled by Entergy.

For the quarter, estimated production-cost savings from accepted offers in the WPP was $15.2 million. In the prior three months, the total was $2.9 million. Overall we find the WPP has been implemented in accordance with the provisions of the Entergy Open Access Transmission Tariff and that the WPP continues to provide opportunity for third-party suppliers to participate in serving Entergy network load. We continue to review certain outcomes and modeling issues, as explained herein.

II. QUARTERLY REVIEW

Subsection 7(a)3 of Attachment S to Entergy's Open Access Transmission Tariff ("OATT") establishes quarterly reporting requirements. The Commission has specifically required a series of metrics to assess the WPP performance and we include these metrics in our review.[4] These include:

- Number of Merchant Generators participating in the WPP and the corresponding MW committed;
- Effects the WPP implementation has had on actual output of Entergy's legacy oil and natural gas units;
- Description of any operational adjustments that Entergy and the ICT made with respect to soft constraints; and
- WPP savings.

In addition to reporting on these metrics, we also report on our analyses and investigations relating to the WPP. These include:

- Analysis of Hold Harmless events;
- Analysis of Variable O&M cost modeling;
- Analysis of RMR rules; and
- Weekly Operation's QF Study.

A. WPP Performance Metrics

In this subsection, we present the metrics specified by the Commission in its various orders relating to the WPP.

1. Third-Party Supplier Statistics

Table 1 shows the weekly participation statistics for third-party suppliers during quarter. The statistics in the table show that participation in the WPP during the quarter was consistent from week to week with an average of about seven third-party suppliers each week. This was a slight increase over the average of six third-party suppliers in the quarter ending February 2013.

[4] See March 2009 Order, ¶¶85-90.

Table 1: Summary of Third-Party Offers

Operating Week	Third-Party Suppliers	Offers	Offered MW	Accepted Offers	Accepted MW
03/02/2013 - 03/08/2013	6	15	3728	7	2450
03/09/2013 - 03/15/2013	6	12	3078	7	1853
03/16/2013 - 03/22/2013	6	12	2978	7	1928
03/23/2013 - 03/29/2013	6	12	2478	4	1403
03/30/2013 - 04/05/2013	7	11	1885	9	1675
04/06/2013 - 04/12/2013	7	14	3350	10	2375
04/13/2013 - 04/19/2013	6	15	3675	11	2725
04/20/2013 - 04/26/2013	7	17	4297	11	2322
04/27/2013 - 05/03/2013	8	18	4425	13	3375
05/04/2013 - 05/10/2013	7	17	4237	11	2700
05/11/2013 - 05/17/2013	9	18	4662	7	1507
05/18/2013 - 05/24/2013	7	18	4687	12	2392
05/25/2013 - 05/31/2013	7	17	4468	5	1750
Average	6.8	15.1	3688	8.8	2189
Average Previous Quarter	6.0	13.2	3420	4.8	1204

Note: Because some offers may specify different MW quantities for different days and hours, "Offer MW" is the sum of each offer's max daily MW and "Accepted MW" is the sum of the maximum daily MW from each accepted offer.

The average number of weekly offers was 15, compared to an average of about 13 offers in the previous quarter. The average number offers accepted was about nine in the current quarter compared to five in the previous quarter. The average MW accepted was significantly higher in the current quarter compared to the previous quarter. The higher participation statistics of third-party suppliers in the current quarter was partly due to the WPP accepting no offers in five weeks in the previous quarter, while offers were accepted in every week in the current quarter. A number of the investigations we discuss in this report were related to these weeks in the previous quarter when no offers were accepted.

2. Effects of WPP on Entergy's Legacy Oil and Natural Gas Units

The Commission initially requested that the WPP effect on legacy units be judged based on an historical comparison to the commitment and dispatch of the legacy units in the 12 months prior to WPP implementation. However, this was in 2009 and the comparison is no longer useful. The effect on legacy units based on the comparison of their commitment and dispatch between

Run 0 and Run 1 is useful and is provided below in Section III as part of Entergy's standard reporting metrics.

3. Soft Constraint Violations and "Operational Adjustments"

Operational adjustments are associated with "soft constraint" violations. Soft constraints are constraints in the WPP model that are relaxed in the model solution algorithm but incur penalties in the objective function (the overall cost minimization) of the WPP model. Once the Run 1 results are available (usually late Wednesday), Weekly Operations manually reviews any soft constraint violations to determine if the violations exceed certain specified levels. These can be thought of as "manual constraint" levels because they are used for manual evaluation of the original soft constraint violations. If the soft constraint violations are not substantial (i.e., they do not exceed these manual constraint levels), the results are set for approval without further consideration of soft constraints. If, however, any soft constraint exceeds its manual constraint level, Weekly Operations will consider whether "operational adjustments" would be available to address such violation. Operational adjustments are modest changes to commitment schedules that could be expected to ease the soft constraint violation if the violation actually arose in real-time operations. For example, if a flexibility constraint arises (i.e., all flexible units are at their minimum and the flexibility requirement is not satisfied), a decommitment of an online unit can allow other units to ramp up to add flexibility. An operational adjustment in such a case could be decommitting a unit that can go offline and back online quickly, like a CCGT.

If Weekly Operations, in conjunction with the ICT, determines that operational adjustments are possible, the results are set for approval. If Weekly Operations, in conjunction with the ICT, determines that operational adjustments may not be available, then the WPP results for that week are not accepted. Four specific instances of soft constraint violations are discussed below.

a. WPP Operating Week Beginning March 9, 2013 – Flexibility Violation

There was a flexibility violation for hour 146, which is day six (Thursday) at 2 AM. The soft constraint violation was 39 MW, which is above the manual constraint level of 20 MW. Entergy and the ICT determined that there was one IPP unit online whose offer parameters allowed it to

be decommitted for that hour to avoid the flexibility violation. This allowed WPP results to be accepted notwithstanding the soft constraint violation in excess of the manual constraint level.

b. WPP Operating Week Beginning April 6, 2013 – Flow Violation

On the week of April 6, a large number of line flow limit soft constraint violations occurred that exceeded the manual constraint levels. For line flow limits, the manual constraint limits are (1) the flowgate limit is exceeded by five percent and (2) at least one IPP has a Generation Shift Factor ("GSF") on that flowgate of at least three percent. For the week of April 6, there were 49 hours when line flow violations exceeded these manual constraint levels. Due to the large number of hours and large number of flowgates involved, the ICT and Weekly Operations were not able to identify operational adjustments sufficient to address the problems. In accordance with Tariff provisions allowing Weekly Operations to cancel the WPP if system reliability may become jeopardized, such pervasive line flow violations would have caused the WPP to be cancelled.

Because Entergy was experiencing unexpected outages of base load units at the time, the model may have been incurring these violations because the production cost savings available under the unusually tight supply conditions exceeded the cost of the penalty factors for line flow limit soft constraints. In consultation with the IM, the ICT and Weekly Operations agreed to make new production runs with the line flow limit soft constraint penalty set at a much larger value, *viz*., $100,000/MWh instead of $4,000/MWh. With the higher soft-constraint penalty, the ICT and Weekly Operations hypothesized that the model may still find a cost-savings solution while keeping within the line flow limits. This second production run caused the model to avoid the soft constraint issues that occurred in the original run and the results were accepted.

Following this event, Weekly Operations in conjunction with the ICT commenced a study to determine whether the line-flow-limit soft-constraint penalty should be permanently raised. The study was based on “back-casting” a number of weeks by replacing the soft-constraint penalty with higher values in cases that used prior weeks’ inputs and comparing the outcomes to the original outcomes for those weeks. The higher values used for the line-limit soft-constraint penalty in the back-casting were $50,000, $75,000, and $100,000/MWh.

The analysis produced unexpected results in some instances and we judged the study results to be unreliable as a basis for permanently changing the soft-constraint penalty. In particular, there were cases where a higher soft-constraint penalty actually produced more line limit soft constraints violations than the lower soft-constraint penalty value. This is not logical because higher penalties should cause the model to avoid violating the line-limit soft constraints.

Moreover, in subsequent weeks, the model using the original $4,000/MWh penalty resulted in outcomes that produced substantial cost savings while experiencing only two line flow limit violations beyond the manual constraint levels. In both instances, Weekly Operations and the ICT identified operational adjustments that could address these issues, as described below.

As a result, the ICT does not recommend changing the line flow limit soft-constraint penalty at this juncture. However, we stand ready to respond to instances like the week of April 6, where the model finds a solution that contains numerous soft-constraint violations beyond the secondary constraint levels. In such cases, the ICT would work with Weekly Operations to consider alternative WPP runs at higher line flow limit soft-constraint penalty values with the objective of finding of solutions with manageable soft constraint violations.

c. WPP Operating Week Beginning May 18, 2013 – Flow Violation

There were line flow limit soft-constraint violations that exceeded the manual constraint levels in a single hour, hour 77. Entergy and the ICT agreed that the IPP whose GSF was greater than three percent on this flowgate could be decommitted for hour 77 to avoid the violation. Accordingly, the WPP results were accepted.

d. WPP Operating Week Beginning May 25, 2013 – Flexibility and Flow Violations

There were four hours when the flexibility violations were above the 20 MW manual constraint level. Entergy and the ICT determined that the flexibility violations could be avoided by decommitting either of two IPP units in those hours, so these violations did not preclude the WPP results being accepted.

4. WPP Savings

Based on the difference in production-cost estimates between Run 0 and Run 1, estimated production-cost savings from accepted offers in the WPP during the quarter was $15.2 million. In the prior three months, the total was $2.9 million. This increase was largely due to the improved performance of the WPP model and the tighter supply conditions after the base load resource outages in April.

B. Other WPP-Related Analyses and Investigations

1. Hold Harmless Events

In the previous quarter, we began an analysis into various "Hold-Harmless" events that occurred frequently during the winter. Entergy's transmission tariff provisions pertaining to the WPP provide for a hold-harmless trigger that requires all third-party proposals to be rejected when the WPP model is unable to find a lower-cost solution in the case where IPP offers are available (i.e., Run 1) than in the case where only Entergy-owned resources are available (i.e., Run 0). This provision is intended to prevent WPP procurements that are inefficient because they increase production costs. However, such an outcome should be rare because, in theory, an optimization should always be able to find a lower-cost solution when provided additional offers. At worst, the optimization should at least find the Run 0 solution (i.e., accept no IPP offers) and avoid an increase in production costs.

We initiated an investigation of the hold-harmless weeks in order to determine the underlying causes. The WPP model uses an iterative dispatch model to converge to a weekly commitment. This process converges to a feasible commitment and dispatch, but not necessarily the optimal one. In our evaluation of a number of the hold-harmless cases, we found that the model made suboptimal commitment choices. In addition to triggering the hold-harmless provision more frequently than expected, the fact that the model does not always find the lowest-cost solution reduces the savings achieved by the WPP.

We do not recommend substantially changing the model, given the likely cost of doing so and the amount of time the WPP will continue to be in operation. However, we will continue to

pursue incremental changes that may correct inefficiencies that can arise due to the model's structure.

2. Variable O&M Costs of Entergy Units

A stakeholder requested an evaluation of the extent to which variable O&M (VO&M) costs are included for Entergy's legacy units. Entergy's legacy unit cost data used for the WPP model includes start-up fuel costs and production-related fuel cost, but does not contain VO&M costs. We believe VO&M costs are likely to be minimal and, therefore, not likely to affect the WPP results. On the other hand, O&M cost associated with starting a unit can be substantial. In particular, units are likely to experience accelerated maintenance cost when they are cycled on and off (i.e., "cycling costs") are widely-recognized costs associated with starting a unit.

Therefore, we initiated an analysis to determine whether and how these cycling costs should be used in the current WPP model. We started the analysis by simply testing whether the WPP results would be significantly different if the Entergy legacy units were to have cycling costs included as part of the start-up costs. We used an estimate of cycling costs derived from our experience in estimating cycling costs in the MISO region. This estimate was not designed to represent a precise estimate for each legacy unit, but was meant only to help assess the sensitivity of the WPP results to the inclusion of additional start-up costs.

We used historical cases from three past WPP weeks to determine if including additional start-up costs would affect the results significantly. We expected that the Run 0 production costs (Entergy-only units) would increase. However, in two weeks, they actually decreased. We also expected that Run 1 production-cost savings would increase given the greater opportunity for IPPs to displace more expensive Entergy units. However, in two of three cases the savings actually decreased. Given these unexpected results, we are conducting further analysis on these cases to determine appropriate next steps.

3. RMR Rules

A stakeholder requested an evaluation of whether IPPs are included in satisfying the Reliability Must Run (RMR) rules in the WPP model. The RMR rules are used by the WPP model to allow it to choose among alternative units that must be committed to manage local constraints or

reliability needs. If IPPs are located in areas that allow them to satisfy these needs, they should be evaluated on a basis equivalent to the Entergy units.

We discussed details of the procedure for establishing the RMR rules with Entergy planning and operations. IPPs are included in the rules by first evaluating their impact on constrained flowgates at various key load levels.[5] At each key load level, the IPP's impact on the flowgate or local reliability need is used to define a "scalar" that represents the IPP's ability to satisfy the RMR need.[6]

The scalar is used by SCUC to co-optimize the selection of Entergy units and IPPs within the load pocket by identifying the best combination of Entergy units and IPPs. Although we have not completed our review, our initial opinion is that this approach is reasonable and properly implemented.

4. QF Study

Weekly Operations had been studying a possible alternative to modeling Qualifying Facility (QF) puts in the WPP model.[7] Currently, the model requires substantial flexibility for online units to ramp down or be decommitted in order to accommodate energy from QFs. This approach establishes a substantial "flexibility requirement," which requires the WPP model to keep a large amount of flexible capacity online. Weekly Operations proposed using forecasted QF puts as an estimate of QF injections on the grid. This promised to more accurately model the transmission system and reduce the flexibility requirement.

An initial study of the impact of this change was completed last year and was being prepared for stakeholder approval. Weekly Operations consulted with Entergy EMO on the study and concluded that while the direct modeling of QF put energy would reduce the flexibility

[5] The key load levels are those at which additional commitments are needed inside the load pockets to ensure load-serving capability.

[6] For example, if the IPP produces at 100 MW and provides 75 MW of relief on the most limiting flowgate, then the scalar is 0.75.

[7] QF Puts are the right that QFs have to sell their output to Entergy at any time with little notice.

requirement, it would also increase the reserve requirement. This is because Entergy backs-up QF put energy with system reserve capacity. Accordingly, Weekly Operations revised the study inputs in order to reflect this.

The new study results differed somewhat from the original study results. The most striking result was that hold-harmless events increased slightly in frequency and in magnitude of the dissavings. In other words, compared to the original hold-harmless weeks, the production cost in the Run 1 (with IPP offers) was substantially higher than in Run 0 when the new reserve and flexibility constraints were added.

The underlying causes of these results were not readily apparent and likely would require significant resources to investigate further. As a result, we agreed with Weekly Operations' decision to suspend this potential change.

III. WPP STATISTICS

In accordance with section 9.2 of Attachment V of Entergy's OATT, Entergy is required to maintain quarterly statistics relating to the operation of the WPP and provide it to the ICT for posting and reporting. The following are the required operating statistics for the quarter March through May 2013.

1. Flowgate Statistics

This metric identifies each flowgate that was congested in optimization Run 1 during the quarter and the total number of hours each flowgate was congested in Run 1 during the quarter. See Appendix 1 for the table presenting these statistics.

2. Each WPP Participant's Average Operating Reserve Requirement Specified for the WPP for the Quarter

A WPP Participant is a network transmission customer that uses the WPP to integrate its load and resources. Entergy was the only WPP Participant during the quarter. Its average operating reserve requirement was 618 MW.

3. Soft Constraint Statistics

The metric reports the total number of WPP Operating Weeks during the quarter that the following soft constraints were binding in Run 1: (a) AGC; (b) Operating Reserves; (c) hourly flexibility for a WPP Participant; (d) daily flexibility for a WPP Participant; (e) dump energy or WPP Participant load balance; and (f) line flow limits. Such information shall be identified separately for each such soft constraint.

Soft constraints are limits and requirements in the WPP SCUC model that result in penalties when the model violates the constraint. For example, as discussed above, when the model violates a line flow (flowgate) constraint, the iteration is penalized $4,000 for each MW of violation per hour. Therefore, the model may find a solution where a soft constraint is in violation. However, because of the soft-constraint penalties, the model will tend to avoid solutions where violations are substantial. Table 2 shows the number of times in Run 1 that the soft constraints were violated.

Table 2: Soft Constraint Violations in Run 1

Soft Constraint	Frequency
AGC	13
Operating Reserve	1
Hourly Flex	12
Daily Flex	0
Load Balance	0
Flow Limit	13

4. Third-Party Supply of Reserves

This metric reports the percentage of offers and percentage of MW selected in Run 1 during the quarter that provided AGC capability or Operating Reserves. The percentages are calculated as the ratio of the number of offers and of MWs selected that provided AGC capability or Operating Reserves to the total number of offers and the total number of MWs selected during the quarter, respectively.

There were a total of 114 third-party offers accepted in the WPP for the quarter which totaled 28,455 MW. Of these 114 accepted offers, there were no AGC offers and no operating reserve offers.

5. Third-Party Supply of Flexibility Requirement

This metric reports the percentage of offers and of MWs selected in Run 1 during the quarter that could meet a WPP Participant's flexibility requirements. The percentages are calculated as the ratio of the number of offers and of MWs selected that could meet flexibility requirements to the total number of offers and the total number of MWs selected during the quarter, respectively.

Table 3: Third-Party Offers Contributing to Flexibility Requirements

Total Accepted Third Party Offers	114
Total MW Accepted from Third-Party Offers	28,455

	Number of Offers	MW	Percentage of Offers Contributing	Percentage of MW Contributing
Offers Contributing to Hourly Flexibility	18	7,775	16%	27%
Offers Contributing to Daily Flexibility	0	0	0%	0%

6. Displacement of Entergy's Legacy Resources

This metric reports the MWh of displacement of Entergy's Legacy units (the oil- and gas-fueled generating facilities that are owned by Entergy and that were in service prior to January 1, 1995). This metric is presented on an aggregated basis (not unit-by-unit or facility-by-facility) for the quarter, and calculated as the difference between the MWh of production estimated for such units in Run 1 and the MWh of production estimated for such units in Run 0. The total displacement of Legacy units during the quarter was 2,390,161 MWh.

IV. CONCLUSION

We believe the WPP continues to provide opportunities for third-party suppliers to participate in Entergy's procurement of network resources and opportunities for Entergy to reduce overall production cost for serving its network load. However, the WPP model has produced results that indicate it is not achieving all of the production cost savings that it could. Hence, continued review of the process could increase the WPP's savings and we will continue to help identify reasonable improvements to the process.

Appendix 1 – Summary of Binding Flowgate Constraints in Run 1

All Hours in the Quarter

Flowgate Name	Hours Binding
ALCHEM-MONOCHEM 138 FTLO WILLOW GLEN-WATERFORD 500	4
AMITE SOUTH	71
BIG CAJUN 2-FANCY POINT 500 FTLO WEBRE-BAYOU LABUTTE 500	13
BROOKHAVEN-MALLILIEU 115 FTLO FRANKLIN-BOGALUSA 500	9
CARPENTER-HOT SPRINGS SOUTH 115 FTLO ARKLAHOMA-TIGRE BAY 115	1
MOLER-COLY 230 FTLO FANCY-MCKNIGHT 500	1
STAR-MENDENHALL 115 FTLO SILVER CREEK-NORTH HEBRON 115	202
GRIMES-MT. ZION 138 FTLO GRIMES-BENTWATER 138	82
GREENVILLE-LELAND 115 FTLO ANDRUS-INDIANOLA 230	1
MCLEWIS-HELBIG 230 FTLO HARTBURG-CYPRESS 500	322
HORN LAKE-ALLEN 161 FTLO FREEPORT 500/161	2
STAR-MENDENHALL 115 FTLO CHOCTAW-CLAY 500	7
STAR-MENDENHALL 115 FTLO SOUTH JACKSON-POPLAR SPRINGS 115	67
JASPER-SAM RAYBURN 138 FTLO EVADALE-JNE EVADALE 138	28
STAR-MENDENHALL 115 FTLO FRANKLIN-BOGALUSA 500	475
STAR-MENDENHALL 115 FTLO FRANKLIN-MCKNIGHT 500	42
THOMAS-LA. STATION 138 FTLO CAJUN-WEBRE 500	8
LITTLE GYPSY-LULING 115 FTLO LITTLE GYPSY 115/230	4
MCNEIL-COUCH 115 FTLO ETTA-HOT SPRINGS 500	7
PORT NECHES BULK-MID COUNTY 138 FTLO SABINE 138/230	149
MELBOURNE-CALICO ROCK 161 FTLO ISES-HOLLAND BOTTOMS 500	319
MOSSVILLE-MARSHALL 138 FTLO CARLYSS-BIG THREE 230	529
NELSON 500/230 FTLO HARTBURG-CYPRESS 500	317
PELAHATCHIE-MORTON 115 FTLO CHOCTAW-CLAY 500	3
PELAHATCHIE-MORTON 115 FTLO FRANKLIN-BOGALUSA 500	58
PPG-ROSEBLUFF 230 FTLO NELSON-CARLYSS 230	44
REX BROWN-JACKSON MIAMI 115 FTLO JACKSON SOUTH 230/115	6
SABINE-PORT NECHES BULK 138 FTLO SABINE-LINDE 138	92
TERREBONNE-GREENWOOD 115 FTLO WEBRE-WELLS 500	15
TEMPORARY FLOWGATES	116
VICKSBURG EAST-EDWARDS 115 FTLO BAXTER WILSON-RAY BRASWELL 500	2
WATERFORD-TEZCUCO 230 FTLO WILLOW GLEN-WATERFORD 500	46
WATERFORD-LITTLE GYPSY 230 #1 FTLO WATERFORD-LITTLE GYPSY 230 #2	48
WATERFORD-TEZCUCO 230 FTLO WATERFORD-NINE MILE 230	2
WATERFORD-TEZCUCO 230 FTLO WATERFORD-GYPSY 230	7
WATERFORD-TEZCUCO 230 FTLO WATERFORD-WILLOW GLEN 500	16
WHITE BLUFF-KEO 500 FTLO SHERIDAN-MABELVALE 500	22
WOTAB	477
VICKSBURG-WATERWAYS 115 FTLO GRAND GULF-FRANKLIN 500	6
Total All Flowgates	3,620