

Aquila, Inc.
d/b/a Aquila Networks – MPS
and Aquila Networks – L&P

**Lead/Lag Study
For
Missouri Gas Operations**

For the Calendar Year 2002

Purpose. A lead/lag study is performed to determine the cash working capital component necessary to compute the working capital portion of rate base. The remaining components of working capital, such as the investment in materials and supplies, liquefied petroleum (propane) inventories, prepayments, etc., are determined by generally accepted regulatory methods. A lead/lag study measures the differences in time frames between (1) the time that service is rendered until the revenues for that service are received (lag) and (2) the time that labor, materials, or services are used in providing service until expenditures for such items are made (lead). Each major category of expense and its applicable lag days is compared to the calculated revenue lead days. The difference between these periods, expressed in terms of days, times the average daily operating expenses, produces the cash working capital required or available for those operating expenses.

Components of the Lead/Lag Study. This lead/lag study will compile and analyze revenues collected and expenses paid to determine the lead or lag days. This study has been categorized into the following major classifications:

Lag Time for Revenues Collected

- A. Metering Period
- B. Processing Time
- C. Collection Period

Lead Time for Expenses Paid

- A. Payroll Expense
- B. Gas Purchase Expense
- C. Other Operation and Maintenance Expense

Calculation of Revenue Lag Time.

- A. Metering Period. Aquila's gas meters are read and bills are computed on a monthly basis. The total number of days between initially providing service to a customer and the date of reading the customer's meter is $365 / 12$, or 30.4 days. Since a lead/lag study is computed on an average basis, the midpoint of a metering cycle would be one half the 30.4 days, or 15.2 days. This reflects the average number of days the Company incurs expenses until the customer's meter is read.
- B. Processing Time. Bill processing reflects the number of days from the date a meter is read until the bills are mailed. There are two categories of bills - Cycle 21 for transportation and aggregated bills, and Non-Cycle 21 for sales.

Non-Cycle 21 refers to all meter-read customers. By using ITRON equipment to read meters and transmit data, the Company is able to read a customer's meter in a three-day period and generally produce a bill within 24-48 hours. The Company's billing system is designed to prepare sales customer bills in three to five business days. In 2002, the average time necessary to prepare a Missouri gas sales bill was 9.02 days. This statistic was unusually long due to the transfer of billing operations from Omaha to Raytown, which delayed many bills. To correct this problem, a second query was run with all bill preparation times greater than five days changed to 5 days. This time period was chosen because the Company's billing system is designed to prepare all sales bills within five days, and because it is close to the average of all non-adjusted data. After making this change, the average time to prepare a sales bill was 4.516 days.

Cycle 21 customers are handled differently. These meters can be either chart-read or tele-metered. Since these are usually transportation customer bills, information must frequently be obtained from interstate pipelines before the bills can be prepared. Once the meter reading data for these customers is obtained, the volumes for each customer are sent to the Company's transportation billing department, where the bills are manually calculated, checked through various control procedures, and mailed. The average Cycle 21 bill was prepared in 18.5 days.

To calculate the bill processing period, a computer query was written to calculate the number of days between the end of the meter reading period and the date each bill was issued for every Missouri gas customer during the calendar year 2002 (both Cycle 21 and Non-Cycle 21.) Each bill amount was multiplied times the number of preparation days to determine a weighted average lag period per customer. Dividing the total weighted end-of-period to bill issue date amount by the payment amount yields the average number of days necessary to process bills. In 2002, the Company prepared Sales bills in an average of 4.52 days, Cycle 21 bills in an average of 18.52 days, or a weighted average of 6.24 days for all bills.

The following table shows the computation of the average bill processing time for all Missouri customers during calendar 2002:

Bill Cycle	Annual Payment Amount	Weighted End of Period to Bill Issue Date	Bill Processing Days
Cycle 21	\$10,621,830.38	\$196,702,896.94	18.52days
Non-Cycle 21	\$75,430,620.82	\$340,651,405.98	4.52 days
Total – All Cycles	\$86,052,451.20	\$537,354,302.92	6.24 days

- C. Collection Period. The collection period is the average number of days for the Company to receive customer payments. The same query used to calculate the bill processing period calculated the collection period by comparing the number of days between bill issuance and the date the bill was paid. The bill collection days was calculated by dividing the

Weighted Bill Collection Period by the Annual Payment Amount. This analysis was performed for all Missouri customers. In 2002, the average bill was paid in 21.177 days.

Bill Cycle	Annual Payment Amount	Weighted End of Period to Bill Issue Date	Bill Collection Days
Cycle 21	\$10,621,830.38	\$207,708,010.67	19.55 days
Non-Cycle 21	\$75,430,620.82	\$1,614,619,608.29	21.41 days
Total – All Cycles	\$86,052,451.20	\$1,822,327,618.96	21.18 days

Calculation of Expense Lead

- A. Payroll. Both the Field (Operations) and Central Office (Administrative) employees are paid bi-weekly (every other Friday). There are 26 pay periods in the year. The average lead time is 365 days divided by 26 pay periods, or 14.0 days. The average lead time would be one-half of the 14.0 days, or 7.0 days. In addition, payroll is paid 7 days in arrears, so the average payroll lead time is 14.0 days. This is the number of days between the midpoint of the pay period and the date the payroll is paid.
- B. Gas Purchase Expense. The payment period for gas purchases is calculated by taking the number of days from the midpoint of the delivery period to the payment date for each invoice. The resulting payment time is then multiplied by the amount paid. Dividing the total weighted average payment amount by the total amount paid provides the lead

time for gas purchases. This study reviewed all gas purchase invoices in all of the Company's operations for the calendar year 2002, with the following results: Weighted Payment Amount (payments x lag days) \$32,678,304,085.11 / Annual Payment Amount \$730,848,206.03 = 44.713 days.

- C. Other Operation and Maintenance Expense. Other O&M Expense consists of cash disbursements for items such as materials, miscellaneous services, professional and contractor services, and employee expenses. To determine the lead time for Other O&M Expenses, a computer query sorted all Missouri expenditures for 2002, excluding gas purchases and payroll. The query calculated the number of days between the invoice date and the date of payment, weighted the results, and then averaged the weighted results. The division of the total weighted Other O&M lead days amount by the total payment amount provides the average number of days between the invoice date and the payment date. The overall lead days for Missouri O&M Expenses in 2002 was 29.956 days.

<u>Weighted Other O&M Expenses</u>	<u>\$4,987,142,695.39</u>	= 29.956 days
Total Payment Amount	\$166,182,569.97	

A second method, the 1/8th Rule, was also considered for O&M Expenses. Under this approach, 365 days per year is divided by 1/8th or 0.125 = 45 days. Aquila chose this approach because it provides a more conservative result (i.e., longer lead).

Calculation of Days Cash Required. The difference between revenue lag and expense lead times for each expense category provides the net number of days of cash required.

The cash requirement for Payroll Expense is calculated as follows:

Payroll lag time	42.621 days
Less: Payroll lead time	<u>14.000 days</u>
Days cash required	28.620 days

The cash requirement for Gas Purchase Expense is calculated as:

Gas Purchase lag time	42.621 days
Less: Gas Purchase lead time	<u>44.710 days</u>
Days cash required/(provided)	(2.090) days

The case requirement for Other Operations and Maintenance Expense is:

O&M lag time	42.621 days
Less: O&M Expense lead time	<u>45.000 days</u>
Days cash required	(2.380) days

No	Old Sheet	New Sheet	Sec. No.	Description of Tariff Change
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Changes to All Sheets

1				Change company names to Aquila Networks-MPS and Aquila Networks-L&P
2				Eliminate reserved pages and re-paginate

Changes to MPS Rate Schedules

3				New cover page
4	0.1	N/A	N/A	Delete Adoption Notice
5	1	1		Index – update, consolidate MPS, L&P
6	1	2		Communities served – consolidate MPS, L&P
7	1.1-1.3	3-6		Description of Authorized Gas Service Territory - consolidate MPS, L&P
8	New	7		Map of service systems
9	2	8-14		General Service Rate Schedule – divide class into Residential, Small Commercial, Small Volume and Large Volume classes; eliminate block rates
10	New	8		Residential Service (RS-M) rate schedule applicable to Southern, Northern and Eastern systems; increase customer charge from \$9.00 to \$15.00; increase energy charge from \$0.22295/Ccf to \$0.26825/Ccf
11	New	9		Small Commercial Firm (SCF-M) rate schedule applicable to Southern, Northern and Eastern systems; 0-4999 Ccf annual usage; increase customer charge from \$9.00 to \$25.00; increase energy charge from \$0.22295/Ccf to \$0.26200/Ccf
12	New	10		Small Volume Firm (SVF-M) rate schedule applicable to Southern, Northern and Eastern systems; 5000-39,999 Ccf annual usage; increase customer charge from \$9.00 to \$50.00; decrease energy charge from \$0.22295/Ccf to \$0.19200/Ccf
13	4-6	11		Large Volume Firm (LVF-M) rate schedule - applicable to Southern, Northern and Eastern systems; annual usage of 40,000 Ccf or more, reduced from 150,000 Ccf; eliminate block rates; no change in customer charge; energy charge increased from \$0.0246/\$0.01000/Ccf to \$0.03790/Ccf; demand charge increased from \$0.3900/Ccf to \$0.4000/Ccf.
14	6-9	Delete		Large Volume Firm Sales contract – delete
15	10-12	13		Large Volume Interruptible (LVI-M) rate schedule - applicable to Southern, Northern and Eastern systems; annual usage of 40,000 Ccf or more, reduced from 150,000 Ccf; eliminate block rates; no change in customer charge; energy charge increased from \$0.0246/\$0.01000/Ccf to \$0.03790/Ccf; demand charge increased from \$0.3900/Ccf to \$0.4000/Ccf.
16	12-15	Delete		Large Volume Interruptible Sales contract – delete
17	16-18	Delete		Large Volume Transportation Service schedules – delete

No	Old Sheet	New Sheet	Sec. No.	Description of Tariff Change
18	19	38		Flexible Rates for Transportation Customers
19	20	39		Special Transportation Contract Rates
20	21-28	22-50		Additional provisions applicable to Transportation Service
21	32.8	28		Small Volume Transportation (SVTS-M) rate schedule applicable to Southern, Northern and Eastern systems; 5,000 to 39,999 Ccf annual usage; customer charge \$50.00; energy charge \$0.17150/Ccf
22	16	31		Large Volume Transportation (LVTS-M) rate schedule applicable to Southern, Northern and Eastern systems; 40,000 Cc or greater annual usage; customer charge \$50.00; energy charge \$0.03500/Ccf; demand charge \$0.40000/Ccf
23	29-32	Delete		Large Volume Interruptible Transportation contract – delete
24	32.1-25	22-52		Transportation Service
25	33-44.1	53-64		Consolidate PGAs, adopt MPS PGA clause
26	45	65		Tax and License Rider
27	46-49			Move promotional practices section to Rules and Regulations
28	50	Delete		Promotional Practices variance for Salem and Owensville conversion costs – delete
Changes to L&P Rate Schedules				
29	0.1	N/A	N/A	Delete Adoption Notice
30	1	1		New Index
31	2	2	N/A	Index of communities served – consolidate MPS, L&P
32	2.1-2.2	3-6	N/A	Index of certificated territories – consolidate MPS, L&P
33	3	7	N/A	System map
34	4			Residential service schedule 910 for all territory except Fairfax, Rockport and Tarkio
35	4.1			Residential service schedule 911 for Fairfax, Rockport and Tarkio
36	New	15		New Residential Service (RS-L) rate schedule applicable to all L&P territory; increase customer charge from \$6.66 to \$10.00 (\$5.65 to \$10.00 in Fairfax, Rockport and Tarkio); increase energy charge from \$0.16350/Ccf to \$0.22950/Ccf
37	5	Delete		General service schedule 920 for all territory except Fairfax, Rockport and Tarkio
38	5.1	Delete		General service schedule 921 for Fairfax, Rockport and Tarkio
39	5-5.1	16-18		Divide General Service class into Small Commercial, Small Volume and Large Volume classes; eliminate block rates
40	New	16		New Small Commercial Firm (SCF-L) rate schedule applicable to all L&P territory; 0-4999 Ccf annual usage; increase customer charge from \$12.31 to \$20.00 (\$9.39 to \$20.00 in Fairfax, Rockport and Tarkio); increase

No	Old Sheet	New Sheet	Sec. No.	Description of Tariff Change
				energy charge from \$0.14010/Ccf to \$0.20650/Ccf
41	New	17		New Small Volume Firm (SVF-L) rate schedule applicable to all L&P territory; 5000-39,999 Ccf annual usage; increase customer charge from \$12.31 to \$40.00 (\$9.39 to \$40.00 in Fairfax, Rockport and Tarkio); increase energy charge from \$0.14010/Ccf to \$0.17150/Ccf
42	6	18		Large Volume Firm (LVF-L) rate schedule applicable to all L&P territory; 40,000 Ccf or greater annual usage; increase customer charge from \$184.53 to \$200.00; reduce energy charge from \$0.07290/Ccf to \$0.03500/Ccf; add demand charge \$0.40000/Ccf
43	6	18		Large service schedule 930
44	New	20		New Large Volume Interruptible (LVI-L) rate schedule applicable to all L&P territory; 40,000 Ccf or greater annual usage; customer charge \$200.00; energy charge \$0.03500/Ccf; add demand charge \$0.40000/Ccf
45	7.1-7.8	22-50		Remove Transportation Service rate schedule and rules provisions; new transportation provisions were adopted in October 2002 (Sheets 22-50).
46	7.1-7.4			Transportation service schedule 971
47	32.8	33		Small Volume Transportation (SVTS-L) rate schedule applicable to all L&P territory; 5,000 to 39,999 Ccf annual usage; customer charge \$50.00; energy charge \$0.17150/Ccf
48	7.1	36		Large Volume Transportation (LVTS-L) rate schedule applicable to all L&P territory; 40,000 Cc or greater annual usage; customer charge \$50.00; energy charge \$0.03500/Ccf; demand charge \$0.40000/Ccf
49	New	38		New Flexible Rate Transportation Service (LVTS-F)
50	New	39		New Special Contract Rates for Transportation Service (LVTS-SC)
51	8-9.4	53-64		Purchased gas adjustment clause
52	32.1-21	22-52		Gas transportation service
Changes to MPS Rules and Regulations				
53				New cover page
54	R1-R2	R1-R2		New Index
55	R3-R4	R3-R4		Changes to definitions: "company," "normal business hours"
56	R5	R5		New language to affirm the customer's responsibility to notify company of permanent changes in load characteristics or requirements
57	R7	R8	2.04 G(4)	Adopt a 6.0 percent deposit interest rate
58	R15	R18	2.07A	Increase charge for reconnections from \$20 to \$30 during normal business hours, with no change in charge for connections after normal business hours; moved dollar references to table in Section 10

No	Old Sheet	New Sheet	Sec. No.	Description of Tariff Change
59	R15	R18	2.07B	New language establishes a connection charge for after-hours reconnections.
60	New	R19	2.07C	New language establishes a trip charge to cover trip costs when crews are scheduled to disconnect service, but customers pay at the premise.
61	New	R19	2.07D	New language to establish a special reconnect charge for customers that order disconnections and reconnections within a twelve month period. The charge would be the greater of a standard reconnect fee (\$30/\$50) or the sum of customer charges that would have been charged if the customer had remained on gas service during the period of disconnection. This change is intended to address cost subsidization by the general system when customers turn off gas service for several months.
62	New	R19	2.07E	New language to affirm that connection and reconnection charges do not include the costs of line extensions.
63	New	R19	2.08	New language to establish a \$20 charge for returned checks.
64	R16			Delete language requiring a trip charge for connection or disconnection of customer appliances. Aquila Networks no longer performs this service due to the potential liability.
65	R16	R20	2.09	Adopt the L&P charge for installing excess flow valves when new service is installed.
66	R18	R22	3.07	Adopt new language to simplify priority of service for curtailment.
67	New	R27	5.03B	Adopt new language to permit customers to request a special meter test. If the test shows the meter is reading within the allowed two percent tolerance, customer pays the company the cost of the test or \$30, whichever is less.
68	R23	R28	5.04C	Adopt new language to affirm the current practice that when a meter is found to have an average error of more than two percent, the refund and corrected billing provisions of Section 5.04 apply.
69	R24	R30	6.03C	Adopt new language to allow small volume transportation customers to move from transportation service back to sales service every six months, as stated in the transportation rules.
70	R25	R31	6.04B	Adopt new language to reflect changes in the company's business practices, which now encourage customers to use an interactive voice response system to record meter readings, instead of postcards.
71	R26	R32	6.04C	Increase the charge for meter readings by special appointment to the cost of the trip, \$30 during regular business hours, and \$50 after regular business hours.
72	R28	R35	6.06A	Adopt new language to reflect changes in the company's business practices, which now encourage customers to report disputes to the company's 24 hour customer service center.
73	R32-R34	R40-R47	7	Adopt new policies for extensions of mains and service lines, including distinguishing treatment of temporary and permanent service, and a capital project feasibility model.
74	R36-R37	R51-R52	10	Update table of charges.

No	Old Sheet	New Sheet	Sec. No.	Description of Tariff Change
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Changes to L&P Rules and Regulations				
75	R1-R2	R1		Index
76	R3-R4	R3-R4	1	Definitions
77	R5	R5	2	Requesting Service
78	R5	R5, R29	2.01	Receipt of Service
79	R5	R5	2.02	Contract Period
80	R6-R9	R25	3	Customer's Service
81	R6	R25	3.01	Customer's Piping and Appliances
82	R6		3.02	Right of Way
83	R7	R40-R46	3.03	Line Extensions
84	R7	R45	3.04	Additional Facilities
85	R10-R13	R26-R27	4	Measuring Service
86	R10	R26	4.01	Meter Installation
87	R10	R26	4.02	Meter Measurement
88	R11	R27	4.03	Meter Failure or Error
89	R12	R27	4.04	Customer Billed Under Wrong Schedule
90	R13	R29	4.05	Estimated Readings
91	R14		4.06	Sub-metering and Resale of Energy
92	R14-R29		5	Paying for Service
93	R14	R6-R8	5.01	Residential Security Deposit Requirements
94	R17	R6-R8	5.02	Non-residential Security Deposit Requirements
95	R18		5.03	Billing of License, Occupation, Franchise or Similar Charges or Taxes
96	R19	R39	5.04	Late Payment Charge
97	R19	R34	5.05	Average Payment Plan
98	R20		5.06	Non-Payment
99	R20	R27	5.07	Billing Adjustments
100	R21	R37	5.08	Settlement Agreements
101	R22	R9-R13	5.09	Disconnection of Service
102	R22.2	R18	5.10	Charge for Reconnecting
103	R23	R14-R17	5.12	Cold Weather Rule
104	R29	R19	5.13	Returned Checks of Drafts
105	R29	R22	5.14	Curtailment of Service

No	Old Sheet	New Sheet	Sec. No.	Description of Tariff Change
106	R30-R33		6	Safety
107	R30		6.01	Customer Equipment
108	R30	R25	6.02	Ownership and Maintenance of Services
109	R30		6.03	Venting of Appliances
110	R30	R22	6.04	Load Limitations
111	R31	R21	6.05	Continuity of Service
112	R31	R22	6.06	Unauthorized Interference, Diversion of Use
113	R33	R21	6.07	Access for Company's Representatives
114	R33	R22	6.08	Opening of Service Lines
115	R33	R21	6.09	Indemnity to Company
116	R34	R20	6.10	Excess Flow Valves
117	R34-R36	R48	7	Promotional Practices

**Summary of Test Year Fee Revenue
2002 Aquila Networks - MPS**

Schedule RJA-3.1

	Test Year Number of Transactions	Existing Fee	Existing Revenue	Estimated Number of Transactions	Proposed Fee	Proposed Revenue	
Connections							
Business Hours	7,581	\$ 20.00	\$ 151,620.00	7,581	\$ 30.00	\$ 227,430.00	
After Bus. Hours	549	\$ 55.00	\$ 30,195.00	549	\$ 50.00	\$ 27,450.00	
Reconnections							
Business Hours	1,600	\$ 20.00	\$ 32,000.00	1,600	\$ 30.00	\$ 48,000.00	
After Bus. Hours	59	\$ 55.00	\$ 3,245.00	59	\$ 50.00	\$ 2,950.00	
Reconnects within 12 months	35	\$ 20.00	\$ 700.00		\$20.00	\$ -	
Excess Flow Valves							
New installations	3	\$ 30.00	\$ 90.00	3	\$ 65.00	\$ 195.00	
Special meter reads							
Business Hours	1,708	\$ 5.00	\$ 8,540.00	342	\$ 30.00	\$ 10,248.00	1
After Bus. Hours	-	\$ 10.00	\$ -		\$ 50.00	\$ -	
Collection fee at disconnects							
Business Hours			\$ -	462	\$ 30.00	\$ 13,845.00	2
Charge for NSF Checks			\$ -	695	\$ 20.00	\$ 13,900.00	
Total Revenue			<u><u>\$ 226,390.00</u></u>			<u><u>\$ 344,018.00</u></u>	

NOTES:

- 1 Assume the increase in fee will reduce special meter reads by 80%
- 2 Assume the collection fee will reduce payments at disconnection by 50%

**Summary of Test Year Fee Revenue
2002 Aquila Networks - L&P**

Schedule RJA-3.2

	Test Year Number of Transactions	Existing Fee	Existing Revenue	Estimated Number of Transactions	Proposed Fee	Proposed Revenue	
Connections							
Business Hours	700		\$ -	700	\$ 30.00	\$ 21,000.00	
After Bus. Hours	28		\$ -	28	\$ 50.00	\$ 1,400.00	
Reconnections							
Business Hours	95	\$ 20.00	\$ 1,900.00	95	\$ 30.00	\$ 2,850.00	
After Bus. Hours	8	\$ 55.00	\$ 440.00	8	\$ 50.00	\$ 400.00	
Reconnects within 12 months	-		\$ -	-	\$ 20.00	\$ -	
Excess Flow Valves							
New installations	-	\$ 65.00	\$ -	-	\$ 65.00	\$ -	
Special meter reads							
Business Hours	179	\$ -	\$ -	36	\$ 30.00	\$ 1,074.00	1
After Bus. Hours	-	\$ -	\$ -		\$ 50.00	\$ -	
Collection fee at disconnects							
Business Hours	13	\$ -	\$ -	7	\$ 30.00	\$ 195.00	2
Charge for NSF Checks	78		\$ -	78	\$ 20.00	\$ 1,560.00	
Total Revenue			<u><u>\$ 2,340.00</u></u>			<u><u>\$ 28,479.00</u></u>	

NOTES:

- 1 Assume the increase in fee will reduce special meter reads by 80%
- 2 Assume the collection fee will reduce payments at disconnection by 50%