

Public Service Company of Colorado
Summary Lead Lag Factors
12 Months Ended September 30, 2018

Schedule 1

Electric Department

Line No.	Description	Revenue Lag Days	Expense Lead Days	Net Lag Days	CWC Factor
	<u>Public Service Company of Colorado</u>				
1	Gas for Generation	36.39	39.88	(3.49)	(0.009553)
2	Coal Fossil Fuel & Freight	36.39	20.15	16.24	0.044502
3	Fuel Oil	36.39	19.71	16.68	0.045685
4	Purchased Power	36.39	41.61	(5.23)	(0.014316)
5					
6	Labor O & M - Regular	36.39	11.74	24.65	0.067533
7	Labor O & M - Incentive	36.39	249.13	(212.74)	(0.582851)
8	Other O & M	36.39	32.07	4.32	0.011834
9	Xcel Energy Services	36.39	37.29	(0.90)	(0.002467)
10	Paid Time Off Expense	36.39	354.77	(318.38)	(0.872275)
11					
12	Property Taxes	36.39	302.00	(265.61)	(0.727700)
13	Payroll Related Taxes	36.39	18.94	17.45	0.047807
14	Sales and Use Taxes	36.39	35.23	1.16	0.003177
15					
16	Federal Income Taxes	36.39	37.50	(1.11)	(0.003043)
17	Colorado Income Taxes	36.39	37.50	(1.11)	(0.003043)
18					
19	Sales Taxes Paid	36.39	35.23	1.16	0.003177
20	Franchise Fees Paid	36.39	44.73	(8.34)	(0.022851)
21					
22					
23	<u>Xcel Energy Services</u>				
24	Labor	37.29	11.74	25.55	0.070000
25	Other Operations & Management	37.29	32.07	5.22	0.014301

Lead Lag Study General Description

A lead lag study is a widely used and acceptable method for developing the Cash Working Capital (CWC) component of rate base in connection with the determination of revenue requirements in public utility rate case proceedings. The underlying objective is to measure the average length of time between the utility's provision of service and subsequent payment by customers (revenue lag), and between the incurrence of costs necessary for the provision of service and subsequent payment by the utility (expense lead). The measurement is in days. The lead lag study does not produce the computed cash working capital allowance. It provides the factors resulting from the revenue lag and various expense leads used in the Cost of Service Study model. Total cash working capital is the sum of the net working capital required or provided for each includible element of cost of service.

The expense factors are calculated with this formula.

$(\text{Composite Revenue Lag} - \text{Applicable Expense lead}) / 365 \text{ days} = \text{CWC factor}$

The CWC factor is applied to the appropriate test year expense amount. A positive result indicates a CWC requirement. A negative result indicates, on average, cash is received from customers before Public Service must pay the applicable expense. A negative result represents a non-investor source of capital. The CWC results of each appropriate expense are added together. This total CWC requirement is included in rate base. A positive CWC requirement is added to rate base. A negative CWC requirement is deducted from rate base.

To complete a lead lag study, a twelve-month period of time is used. Revenue receipts and payment disbursements are analyzed. The revenue receipts are electric sales. The payment disbursements are placed in categories such as fuel, purchased power, labor, payroll taxes, O&M expenses, property tax, federal and state income taxes, sales tax paid and franchise fees paid.

Revenue Lag

Public Service's customer base consists of rate groups ranging in size from one account to millions of accounts. Consequently, the rate groups were split into census and sample groups, depending on the rate class population. The census groups, which were the rate classes with generally fewer than 1,000 accounts, contained all the customers and all revenue in that rate class. The average lag day for the remaining rate classes was estimated using a random sample for each rate class. The mean and standard deviation from the 2017 Public Service Lag Study (re-calculated for weighted payments) were used as a proxy to determine the sample size estimated to achieve a 95% confidence that the mean lag day would be within $\pm 5\%$ of the estimated mean at the sample rate class level and a 99% confidence that the mean lag day across all rate classes would be within $\pm 5\%$ of the estimated mean (Table 1). Fifty percent of the calculated sample size was added to account for missing data and unknown differences between the 2017 and 2018 data. It is important to remember that these proxy variables were used to determine sample sizes only. Once actual values for the mean and variance were calculated from the new sample, they were used in all analysis.

In addition, for residential customers only, a 30 day limit on revenue lag days was used in order to exclude the effects of late payments. The Company is following its residential tariffs on the calculation and application of a late payment fee. Residential customers do not have late payment fees calculated until the printing of the next statement. Residential late payment fees are excluded from the cost of service. Commercial late payment fees remain in the cost of service. As a result, the cost of service is reduced by the commercial late payment fees credit to the cost of service. Residential late payment fees are removed by an adjustment in the cost of service. By excluding residential late payment fees from the cost of service, the cost of service is higher than it otherwise would be. Since the residential late payment fees are removed from the cost of service, the revenue lag needs to have a limit placed on it to coincide with the date the late payment fees begin. This will prevent the doubling up of the longer revenue lag associated with keeping the related late payment fees. For the current revenue lag, we plan to use a 30 day limit as a proxy for the next invoice due date for residential customers. A revenue lag will be calculated up to 30 days after the invoice date. This will place a limit on the residential invoices revenue lag days. No adjustment is necessary for non-residential customers because their late payments are included as a credit to the cost of service.

Confidence	95	1.96
Precision	5	

PSC Rate Group	Number of Premises/ Services	Sample or Census	2018 Revenue \$	% of Total Revenue	2017 PSC Mean Lag Days	2017 PSC Variance of Lag Days	Cochran's Minimum	Calculated Sample Size	Sample Size with FPC (1)	Final Sample Size with 50% Alternates (2)
C/CAL	138,280	Sample	141,115,228	5.22%	37.805	510.567	34	549	547	820
NMTR	688	Census	2,961,281	0.11%						
COL	51	Census	731,085	0.03%						
PG/etc	707	Census	249,803,324	9.24%						
PLL	813	Census	897,620	0.03%						
R/RAL/ etc	1,672,700	Sample	1,035,726,619	38.30%	32.889	267.603	924	381	381	1,386
SCS-7	53	Census	8,023,986	0.30%						
SG/etc	47,759	Sample	1,099,911,699	40.68%	37.822	143.791	123	155	154	232
SL/SLU/ MI/MSL/ etc	57,950	Sample	38,396,536	1.42%	35.710	659.746	18	795	784	1,176
TG	39	Census	122,786,181	4.54%						
TSL	122	Census	1,707,345	0.06%						
TST	14	Census	1,898,346	0.07%						
Total	1,919,176		2,703,959,250	100.00%					1,866	3,614

Total Debtor Sample & Census Counts =

6,101

1 FPC = Finite population correction factor

2 To ensure satisfying the required precision of 5%, the 2018 study's premise sample sizes were increased by 50% to compensate for anomalies and changes between studies.

Table 1. Sample Size

For the sample classes (R, C, SG and SL), only accounts with 11 – 13 invoices were used in the analysis.

After the census and sample data was extracted, lag days were calculated for each invoice. Each payment or transaction date that was applied to an invoice was used in the calculation of lag days. The calculation for the revenue lag is:

$$\begin{aligned} \text{Service Period} &= \text{Invoice To Date} - \text{Invoice From Date} + 1 \\ \text{Midpoint Date} &= \text{Invoice From Date} + \text{Service Period} / 2 \\ \text{Lag Days} &= \text{Payment Date} - \text{Midpoint Date} + .5 \end{aligned}$$

An average lag day value for each rate group was calculated and weighted with the percent of total revenue (Table 2). The sum of these weighted means equals the mean shown in Table 3. Standard deviation and confidence intervals were also calculated and are also shown in Table 3.

PSC Rate Group	Number of Premises/ Services	Sample or Census	Revenue \$	% of Total Revenue	2018 Average Lag Days	2018 Weighted Lag Days	Number of Invoices	Std. Dev.	Variance	Weighted Variance
C/CAL	138,280	Sample	141,115,228	5.22%	40.1480	2.095	7,671	20.237	409.532	0.0001454
NMTR	688	Census	2,961,281	0.11%	41.9764	0.046	4,767	11.597	134.493	0.0000000
COL	51	Census	731,085	0.03%	43.0532	0.012	731	45.995	2,115.555	0.0000000
PG/etc	707	Census	249,803,324	9.24%	39.5609	3.655	6,723	17.993	323.734	0.0000000
PLL	813	Census	897,620	0.03%	40.3000	0.013	16,520	21.555	464.599	0.0000000
R/RAL/etc	1,672,700	Sample	1,035,726,619	38.30%	32.6132	12.492	10,138	15.870	251.862	0.0036450
SCS-7	53	Census	8,023,986	0.30%	35.5245	0.105	560	5.378	28.924	0.0000000
SG/SGL/etc	47,759	Sample	1,099,911,699	40.68%	38.4369	15.635	2,102	12.567	157.936	0.0124327
SL/SLU/MI/MSL/etc	57,950	Sample	38,396,536	1.42%	34.7570	0.494	12,022	27.905	778.711	0.0000131
TG	39	Census	122,786,181	4.54%	39.1967	1.780	178	11.437	130.803	0.0000000
TSL	122	Census	1,707,345	0.06%	44.5644	0.028	3,327	18.176	330.353	0.0000000
TST	14	Census	1,898,346	0.07%	48.3217	0.034	143	14.382	206.854	0.0000000
Total	1,919,176		2,703,959,250	100.00%		36.389	64,882			0.0162362

Table 2. Statistics by Rate Class

Number of Invoices	Weighted Average Lag Days	Weighted Variance of Lag Days	95% Confidence Interval	95% Precision	99% Confidence Interval	99% Precision
64,882	36.389	0.01624	0.24975	0.6863%	0.32811	0.9017%

Table 3. Statistics for Retail Electric

Expense Leads

The expense lead is the average time period from the receipt of goods or services by the utility to the date the utility pays for the goods and services. Expense lead is measured in days. Costs may be incurred over a period of time (i.e. month, year). The expense lead is measured from the midpoint of the service period to the date of payment. A separate expense lead is computed for each major category of operating expenses or account class (fuel, labor, payroll taxes, taxes, etc.). This expense lead is compared to the overall composite revenue lag to determine whether working capital is required from the company's investors (net revenue lag), or provided by the company's customers (net expense lead). Expenses leads are broken into a service period, midpoint date and lead days. The calculations for these are:

Service Period = To Service Date – From Service Date + 1

Midpoint Date = From Service Date + Service Period / 2

Lead Days = Payment Date – Midpoint Date + .5

The "From Service Date" is the first day goods or services were received. The "To Service Date" is the last day goods or services were received. If goods or services were received on just one day, the "From Service Date" and the "To Service Date" are the same. For those expense account classes with invoices, the invoices were reviewed for service date information. If no information about the service dates was available, the invoice date was used. After service dates were determined, the lead day values are calculated. The expense lead day value is measured from the midpoint of the dates the service was received to the date the cash was disbursed.

Expense leads are calculated using statistical samples for some expense categories, while other expense categories have statutory payment dates that are strictly adhered to for payment. The expense categories where statistical sampling was done are those with invoices generated from vendors including: fuel gas for generation, fuel coal, fuel oil for generation, purchased power and operations & maintenance expenses.

For those expense categories where statistical sampling was done, the sample population had to be determined. Appropriate general ledger accounts for each expense category are reviewed to obtain the accounts payable records population. Only records that were actually paid can be used for the expense lead. A transaction was included if it was expensed to an account included in the expense category during the test period and paid. Once the population is determined, the population is reviewed to determine if the entire population ("census group") or a statistical sample will determine the expense lead. Once records are selected for the census group or sample, invoices are viewed to determine dates the goods and/or services were received. Payment dates are generally included in the

record. Once all service dates are determined and midpoint dates and lead days are calculated, the sample is ready for the overall expense lead mean to be determined.

Fuel, Purchased Power and Operations & Maintenance

Gas for Generation

Gas for generation purchases are invoiced monthly. Since there are many records in this account class, a statistical sample was selected to calculate the lead day analysis.

Coal and rail transportation

The expense lead is calculated on the purchases made for inventory replenishment during the test period. Coal for generation is purchased from several vendors. Coal is shipped from the mines to generation stations via three freight companies. Purchases are invoiced as shipments are made. Since there are many records in this account class, a statistical sample was selected to calculate the lead day analysis.

Oil for Generation

The expense lead is calculated on the purchases made for inventory replenishment during the test period. Purchases are invoiced as shipments are made. There were no payments made within this expense category during the current twelve-months ending September 2018 study, nor during the most recent 2017 study period. Therefore, the current 2018 study is using the previous, twelve-months ending September 2016 study's results because no Fuel Oil purchases were made during the current study period. Since there were few records in this account class, a census of the 2016 invoices was used for the lead day analysis.

Purchased Power

Purchased power is purchased from several vendors. Purchases are invoiced monthly. Since there are many records in this account class, a statistical sample was selected to calculate the lead day analysis.

Other Non-Labor Operations & Maintenance Expense

Other non-fuel operations and maintenance (O&M) expense encompasses the non-labor O&M expense for production, transmission, distribution, customer operations and administrative and general expenses. This category has a large volume of transactions. As a result, a statistical sample was selected to calculate the lead day analysis.

Expense Sample Results

In order to estimate the average expense lead days for Public Service, expenses were divided by account class. The lead days for the Fuel Oil account class were calculated exactly based on the twelve-months ending September 2016 study's expense amounts and actual lead days. There were no Fuel Oil transactions during the 2017, nor the current 2018 study periods. A random sample was used to estimate the average lead time for the expenses from the remaining account classes.

For all account classes, the expenses were grouped together by clearing document number, which combined those expenses that were paid together into payment groups. Each population was split into two strata, with the largest expense payments in each population included in the first stratum and the remaining expense payments in the second stratum. All elements in the first stratum were included in the sample, to reduce the uncertainty of the overall estimate. Since the second group contained records that varied widely in size (dollars), the company used random sampling with the probability proportional to size, known as "pps sampling". Random pps sampling, with replacement, gives an unbiased estimate of the mean.

The sample described above, including the stratification scheme and the associated sample sizes, was designed to achieve a 90% confidence interval that was approximately 10% of the mean lead day value. The mean and the variance by account class from the 2017 PSCo Lead Study (re-calculated for weighted payments) were used as a proxy to determine sample size. A minimum of 30 sample points was required and at least twenty percent of the calculated sample size of the second stratum was added to account for missing data and unknown differences between the 2017 and 2018 data (Table 4). It is important to remember that the estimates were used for planning purposes only. Once actual values for the mean and variance were calculated from the new sample, they were used in all analysis.

Expense Sample Results

Expense Category	Total Invoices	Census or Sample	2017 Mean Lead Days	2017 Variance Lead Days	Census Stratum 1 Size	Stratum 1 Percent of Expense Category	Sample Stratum 2 Size	Sample Stratum 2 with Alternates	Total Census or Sample
Fuel Coal	369	Sample	20.78	39.5738	130	75.11%	36	44	174
Fuel Oil	7	Census	Not Applicable	Not Applicable	7	100.00%	0	0	7
Fuel Gas	239	Sample	39.05	4.2435	55	80.12%	30	46	101
O&M *	28,510	Sample	40.99	788.7452	330	70.00%	91	200	530
Purchased Power	576	Sample	41.02	53.8366	93	50.24%	30	37	130

* Added additional records to the sample size to be conservative and ensure sampling confidence criteria was met. Selected 200 records for the sample strata.

Table 4. Sample Size Calculations

Once the payment date, payment due date, and service dates were determined for all available expense items, lead day values were calculated for each payment and a weighted lead day value was calculated for each clearing document number. A mean and variance were calculated by stratum and then a weighted mean and the associated stratified variance were calculated for the entire account class. The variance of this estimator was also calculated, which was then used to calculate a 90% confidence interval and a 95% confidence interval for the account class mean (Table 5).

Expense Category	Record Count	Weighted Average Lead	Weighted Variance	90% Confidence Interval	90% Precision	95% Confidence Interval	95% Precision
Fuel Coal	174	20.146	0.0272	0.271	1.346%	0.323	1.604%
Fuel Gas	101	39.876	0.0005	0.036	0.091%	0.043	0.109%
Fuel Oil	7	19.714	Census - Not Applicable	Census - Not Applicable	Census - Not Applicable	Census - Not Applicable	Census - Not Applicable
O&M	530	32.075	1.6259	2.098	6.540%	2.499	7.792%
Purchased Power	130	41.615	0.3995	1.040	2.498%	1.239	2.977%

Table 5. Statistics by Account Class

Labor

Payroll expenses are separated into two groups, Regular Payroll and Incentive Compensation. Employer taxes are discussed in the Taxes section of this study.

Regular Payroll

There are two types of payrolls at Public Service, Semi-monthly and Bi-weekly. Semi-monthly payrolls are paid twice a month. The first pay period covers the first through the fifteenth of the month with the pay date on the fifteenth or the prior business day. The second pay period of the month covers the sixteenth through the end of the month with the pay date on the last business day of the month. Bi-weekly payrolls run from Sunday through Saturday with a pay date the following Friday or prior business day. Employees are paid either by a direct deposit to their bank or by a check mailed to their home. Checks are mailed so that receipt is on or before the pay date.

For net pay, the expense lead period is measured from the midpoint of the payroll period to the paycheck/pay advice issue date for net pay. For payroll deductions, the expense lead period is measured from the midpoint of the payroll period to the date funds are remitted to the vendor.

To determine the average expense leads for each of the payrolls, payroll reports showing the breakdown of gross payroll by withholding tax (FICA Withheld, Federal Income Tax Withheld, State Income Tax Withheld) or employee deduction (Union Dues, 401k deductions and Other Deductions) were obtained. This payroll information was summarized by type of payroll by pay period. The summary dollar information was used to dollar-weight the components of gross pay (net pay, taxes withheld, other employee deductions) in the calculations of average expense lead of each component.

Next, an average expense lead for each gross pay component was computed. The lead for net pay and each of the various withholdings was computed for each of the two payroll types. For net pay, the actual payroll check date was used to calculate the expense lead. For tax withholdings the actual payment dates that correspond with the dates required by the IRS or state statute were used to calculate the expense lead. Other Employee Deductions were summarized by type of payroll by pay period. Deductions having the same payment date were grouped together. Then the scheduled payment date was used to calculate the expense lead of that group. Once expense leads for all the groups were determined, the average Other Employee Deductions expense lead was determined by dollar-weighting the various group expense leads. Other Employee Deductions are a component for Regular Payroll.

Incentive Compensation

Incentive compensation is processed similarly to Regular Payroll. Separate payrolls, Semi-monthly and Bi-weekly, are run for incentive compensation. There are no other employee deductions for this type of payroll. Only legally required withholdings such as Federal and state income taxes and FICA taxes are withheld. The Incentive Compensation was dollar weighted by its components.

Xcel Energy Services Company

Expenses billed to the Company by Xcel Energy Services Company are for the prior month and paid the 23 rd or following business day.

Vacation Pay/Paid Time Off

Employee vacation pay lead calculates the lag in time between when vacation pay is earned and when it is actually paid to employees.

Tax Expense Leads

The average expense leads computed for the various tax categories are based on actual amounts paid during the test year and the payment dates presently required by statute.

Property Taxes

Statutory payment dates are used to determine the property tax lead days.

Employer Payroll Taxes

FICA matching, city occupational taxes and employer unemployment taxes are included in this section. The Employer FICA Tax expense lead is the same as the FICA tax withheld expense lead in the payroll expense lead. The statutory payment dates for the taxes are used to calculate the city occupational and unemployment tax expense lead days.

Sales and Use Taxes

The Company pays both sales and use taxes. Sales tax occurs in two instances. The first instance occurs when the Company bills customers for sales tax in connection with sales of taxable goods and services. This type of sales tax is not an expense to the Company. The Company is the collection agent and remits the sales tax to Colorado. The second instance of sales tax occurs when the Company makes purchases of taxable goods and services from vendors that are required to charge the tax and remit it to Colorado's Department of Revenue. The tax paid in this instance is considered an expense to the Company.

The use tax is a complement of the sales tax and designed to level the playing field for companies that are required to collect the sales tax. It typically occurs in a situation where a taxable purchase is made by the Company from a vendor that is not required to collect a sales tax, usually because the vendor lacks a physical presence (nexus) in the taxing jurisdiction. Here, the Company must self-assess and pay the use tax directly to Colorado's Department of Revenue. Use tax is an expense to the Company.

Sales tax and use tax are remitted together. Colorado taxes are due the 20th of the following month with funds withdrawn on the 21st or following business day. The statutory payment dates were used in the calculation of the sales tax expense lead.

Franchise Fees Paid

City franchise fees are charges by cities for the right to use city streets. Franchise fees are remitted on or before the statutory payment dates. The fees paid are not an expense to the Company. The fees are passed through to customers.

Federal and State Income Taxes

The expense leads computed for Federal and State Income Taxes reflect statutory payment dates and required minimum estimate payment levels. Required minimum estimated payments during the tax year are 100% for Federal and Colorado. The Company also makes quarterly state income tax payments to California, New Mexico and Maryland.

Public Service Company of Colorado
 Fuel Gas Sample Results
 12 Months Ended September 30, 2018

Attachment DAB-7
 Schedule 3
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Line No.	Stratum	Count of		Average Lead	Variance Lead	Weight	Weighted Average Lead	Weighted Variance of Lead	Finite Population Correction Factor	Variance of Estimate	90% Confidence Interval		95% Confidence Interval	
		PayRef	Stratum Population								90% Precision	95% Precision		
1	1	55	55	39.773	1.8965	80.117%	31.865	0.022	0.000					
2	2	46	184	40.293	0.7620	19.883%	8.012	0.001	0.750	0.000				
3		101	239			100.000%	39.876			0.000	0.036	0.091%	0.043	0.109%

Public Service Company of Colorado
 Fuel Coal Sample Results
 12 Months Ended September 30, 2018

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Line No.	Stratum	Count of		Average Lead	Variance Lead	Weight	Weighted Average Lead	Weighted Variance of Lead	Finite Population Correction Factor	Variance of Estimate	90% Confidence Interval	95% Confidence		
		PayRef	Stratum Population									90% Precision	Interval	95% Precision
1	1	130	130	20.209	20.8496	75.111%	15.179	0.090	0.000					
2	2	44	239	19.956	23.6504	24.889%	4.967	0.033	0.816	0.027				
3		174	369			100.000%	20.146			0.027	0.271	1.346%	0.323	1.604%

Public Service Company of Colorado
 Fuel Oil Census Results
 12 Months Ended September 30, 2018

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 Schedule 3
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Line No.	Stratum	Count of		Average Lead	Variance Lead	Weight	Weighted Average Lead	Weighted Variance of Lead	Finite Population Correction Factor	Variance of Estimate	90% Confidence Interval		95% Confidence Interval	
		PayRef	Stratum Population								90% Precision	95% Precision		
1	1	7	7	19.714	32.9881	100.000%	19.714	4.713	0.000	0.000				
2	2	0	0	0.000	0.0000	0.000%	0.000	0.000	0.000	0.000				
3		<u>7</u>	<u>7</u>			<u>100.000%</u>	<u>19.714</u>			<u>0.000</u>	<u>0.000</u>	<u>0.000%</u>	<u>0.000</u>	<u>0.000%</u>

Public Service Company of Colorado
 Purchased Power Sample Results
 12 Months Ended September 30, 2018

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 Schedule 3
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Line No.	Stratum	Count of		Average Lead	Variance Lead	Weight	Weighted Average Lead	Weighted Variance of Lead	Finite Population Correction Factor	Variance of Estimate	90% Confidence Interval	95% Confidence			
		PayRef	Stratum Population									90% Precision	Interval	95% Precision	
1	1	93	93	39.199	22.4461	50.242%	19.694	0.061	0.000	0.000					
2	2	37	483	44.054	64.6492	49.758%	21.921	0.433	0.923	0.399					
3		130	576			100.000%	41.615			0.399	1.040	2.498%	1.239	2.977%	

**Public Service Company of Colorado
 Lead Lag Study - Payroll Lead
 12 Months Ended September 30, 2018**

**Attachment DAB-7
 Schedule 3
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Line Number	Description	Dollar Amount \$	Lead Days	Dollar Days \$
1	Regular Payroll			
2	Net Payroll	162,235,116.87	10.52	1,706,066,511.08
3	FICA Withheld	18,399,622.50	13.12	241,376,319.36
4	Federal Income Tax Withheld	31,854,684.32	13.23	421,311,375.09
5	State Income Tax Withheld - Colorado	8,994,260.00	15.62	140,520,921.00
6	State Income Tax Withheld - Minnesota	-1,146.32	55.27	-63,351.58
7	State Income Tax Withheld - Wisconsin	39.39	39.50	1,555.91
	State Income Tax Withheld - New Mexico	3.36	39.50	132.72
8	City Occupational Tax	45,334.25	59.72	2,707,462.35
9	Employee Deductions	43,895,272.93	13.75	603,424,208.13
10				
11	Total Gross Pay	265,423,187.30		3,115,345,134.06
12	Average Lead		11.74	
13				
14				
15	Incentive Payroll			
16	Net Payroll	3,176,170.88	248.67	789,829,033.88
17	FICA Withheld	368,284.46	251.75	92,715,047.22
18	Federal Income Tax Withheld	1,393,327.41	248.67	346,479,956.29
19	State Income Tax Withheld	262,965.73	252.19	66,317,838.18
20	City Occupational Tax Withheld	0.00	0.00	0.00
21	Employee Non-Tax Deductions	307,735.53	250.15	76,978,504.71
22				
23	Total Gross Pay	5,508,484.01		1,372,320,380.28
24	Average Lead		249.13	

Public Service Company of Colorado
 Operations and Maintenance Sample Results
 12 Months Ended September 30, 2018

Line No.	Stratum	Count of PayRef	Stratum Population	Average Lead	Variance Lead	Weight	Weighted Average Lead	Weighted Variance of Lead	Finite Population Correction Factor	Variance of Estimate	90% Confidence Interval	90% Precision	95% Confidence Interval	95% Precision
1	1	330	330	29.448	3922.500	70.001%	20.614	5.824	0.000	0.000				
2	2	200	28180	38.205	3639.199	29.999%	11.461	1.638	0.993	1.626				
3		530	28510			100%	32.07493			1.626	2.098	6.540%	2.499	7.792%
							Rounded weighted average lead days	32.07						

Public Service Company of Colorado
Expense Lead - Public Service Company of Colorado payment to Xcel Energy Services Company
12 Months Ended September 30, 2018

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Line No.	Period Beginning	Period Ending	Days of Service	Midpoint Days	Midpoint Date	Payment Date	Lead Days
1	10/1/2017	10/31/2017	31.0	15.5	10/16/17 12:00	11/22/2017	37.0
2	11/1/2017	11/30/2017	30.0	15.0	11/16/17 0:00	12/22/2017	36.5
3	12/1/2017	12/31/2017	31.0	15.5	12/16/17 12:00	1/23/2018	38.0
4	1/1/2018	1/31/2018	31.0	15.5	1/16/18 12:00	2/23/2018	38.0
5	2/1/2018	2/28/2018	28.0	14.0	2/15/18 0:00	3/23/2018	36.5
6	3/1/2018	3/31/2018	31.0	15.5	3/16/18 12:00	4/23/2018	38.0
7	4/1/2018	4/30/2018	30.0	15.0	4/16/18 0:00	5/23/2018	37.5
8	5/1/2018	5/31/2018	31.0	15.5	5/16/18 12:00	6/22/2018	37.0
9	6/1/2018	6/30/2018	30.0	15.0	6/16/18 0:00	7/23/2018	37.5
10	7/1/2018	7/31/2018	31.0	15.5	7/16/18 12:00	8/23/2018	38.0
11	8/1/2018	8/31/2018	31.0	15.5	8/16/18 12:00	9/21/2018	36.0
12	9/1/2018	9/30/2018	30.0	15.0	9/16/18 0:00	10/23/2018	37.5
13							
14	Average Lead Days						37.29

Public Service Company of Colorado
Lead Lag - Paid Time Off Pay
12 Months Ended September 30, 2018

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Line
No.

1	Paid time off pay accrued for 12 months ended September 30, 2018		14,480,438
2			
3	Days in test year		365
4			
5	Paid time off pay per day		39,672
6			
7	Balances in Accrued Vacation Liability Account		
8	September 30, 2017	13,859,127	
9	September 30, 2018	14,290,089	
10	Average Balance		14,074,608
11			
12			
13	Average lead paid time off days in accrued balance		354.77

Public Service Company of Colorado
Payroll Related Taxes
12 Months Ended September 30, 2018

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Line No.		Amount	Lead Days	Dollar Days
1	FICA - Company Match	18,747,897.99	17.73	332,352,289.44
2				
3	Occupational - Company Match	31,702.00	58.16	1,843,907.00
4				
5	FUTA	109,166.55	94.29	10,293,320.61
6				
7	SUTA - Colorado	201,393.18	85.21	17,161,495.68
8				
9	Totals	19,090,159.72		361,651,012.73
10				
11	Average Lead Days		18.94	

Public Service Company of Colorado
 Sales-Use-Boulder CAP Taxes Paid
 12 Months Ended September 30, 2018

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Line No.	Period Beginning	Period Ending	Days of Service	Midpoint Days (1)	Midpoint Date	Payment Date	Lead Days	Amount \$	Dollar Days \$	
1	Sales and Use Tax									
2	10/1/2017	10/31/2017	31.0	15.5	10/16/17 12:00	11/20/2017	35.0	13,082,667.52	457,893,363.20	
3	11/1/2017	11/30/2017	30.0	15.0	11/16/17 0:00	12/20/2017	34.5	12,384,512.77	427,265,690.57	
4	12/1/2017	12/31/2017	31.0	15.5	12/16/17 12:00	1/22/2018	37.0	14,617,850.69	540,860,475.53	
5	1/1/2018	1/31/2018	31.0	15.5	1/16/18 12:00	2/20/2018	35.0	16,710,478.03	584,866,731.05	
6	2/1/2018	2/28/2018	28.0	14.0	2/15/18 0:00	3/20/2018	33.5	13,791,923.55	462,029,438.93	
7	3/1/2018	3/31/2018	31.0	15.5	3/16/18 12:00	4/20/2018	35.0	14,906,796.59	521,737,880.65	
8	4/1/2018	4/30/2018	30.0	15.0	4/16/18 0:00	5/21/2018	35.5	12,014,854.53	426,527,335.82	
9	5/1/2018	5/31/2018	31.0	15.5	5/16/18 12:00	6/20/2018	35.0	12,311,103.38	430,888,618.30	
10	6/1/2018	6/30/2018	30.0	15.0	6/16/18 0:00	7/20/2018	34.5	12,574,146.37	433,808,049.77	
11	7/1/2018	7/31/2018	31.0	15.5	7/16/18 12:00	8/20/2018	35.0	14,384,152.65	503,445,342.75	
12	8/1/2018	8/31/2018	31.0	15.5	8/16/18 12:00	9/20/2018	35.0	14,010,491.29	490,367,195.15	
13	9/1/2018	9/30/2018	30.0	15.0	9/16/18 0:00	10/22/2018	36.5	12,695,767.07	463,395,498.06	
14										
15	Total							35.13	163,484,744.44	5,743,085,619.78
16										
17	Boulder Cap Tax									
18	10/1/2017	10/31/2017	31.0	15.5	10/16/17 12:00	11/30/2017	45.0	141,242.51	6,355,912.95	
19	11/1/2017	11/30/2017	30.0	15.0	11/16/17 0:00	12/29/2017	43.5	131,972.61	5,740,808.54	
20	12/1/2017	12/31/2017	31.0	15.5	12/16/17 12:00	1/31/2018	46.0	149,050.06	6,856,302.76	
21	1/1/2018	1/31/2018	31.0	15.5	1/16/18 12:00	2/28/2018	43.0	174,823.61	7,517,415.23	
22	2/1/2018	2/28/2018	28.0	14.0	2/15/18 0:00	3/30/2018	43.5	152,810.70	6,647,265.45	
23	3/1/2018	3/31/2018	31.0	15.5	3/16/18 12:00	4/30/2018	45.0	155,241.14	6,985,851.30	
24	4/1/2018	4/30/2018	30.0	15.0	4/16/18 0:00	5/31/2018	45.5	133,900.94	6,092,492.77	
25	5/1/2018	5/31/2018	31.0	15.5	5/16/18 12:00	6/29/2018	44.0	125,774.20	5,534,064.80	
26	6/1/2018	6/30/2018	30.0	15.0	6/16/18 0:00	7/31/2018	45.5	137,582.94	6,260,023.77	
27	7/1/2018	7/31/2018	31.0	15.5	7/16/18 12:00	8/30/2018	45.0	159,637.17	7,183,672.65	
28	8/1/2018	8/31/2018	31.0	15.5	8/16/18 12:00	9/28/2018	43.0	166,906.89	7,176,996.27	
29	9/1/2018	9/30/2018	30.0	15.0	9/16/18 0:00	10/31/2018	45.5	146,483.52	6,665,000.16	
30										
31	Total							44.51	1,775,426.29	79,015,806.65
32										
33	Average Lead							35.23	165,260,170.73	5,822,101,426.43

Public Service Company of Colorado
 Lead Lag - Federal Income Tax
 12 Months Ended September 30, 2018

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Line No.	Period Covered From	Period Covered To	Days of Service	Midpoint Days	Midpoint Date	Payment Date	Lead Days	Portion of Annual Tax	Weighted Lead Days
1	1/1/2017	12/31/2017	365	182.5	7/2/17 12:00	12/15/2017	166.0	25.00%	41.50
2	1/1/2018	12/31/2018	365	182.5	7/2/18 12:00	4/17/2018	-76.0	25.00%	-19.00
3	1/1/2018	12/31/2018	365	182.5	7/2/18 12:00	6/15/2018	-17.0	25.00%	-4.25
4	1/1/2018	12/31/2018	365	182.5	7/2/18 12:00	9/17/2018	77.0	25.00%	19.25
5								100.00%	
6	Total Lead Days								37.50

Payments are made on the 15th day of the 4th, 6th, 9th, and 12th months of the tax year.
 If any date falls on a Saturday, Sunday, or legal holiday, the installment is due on the next regular business day.

Public Service Company of Colorado
 Lead Lag - State Income Tax
 12 Months Ended September 30, 2018

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Line No.	Period Covered From	Period Covered To	Days of Service	Midpoint Days	Midpoint Date	Payment Date	Lead Days	Portion of Annual Tax	Weighted Lead Days
1	1/1/2017	12/31/2017	365	182.5	7/2/17 12:00	12/15/2017	166.0	25.00%	41.50
2	1/1/2018	12/31/2018	365	182.5	7/2/18 12:00	4/17/2018	-76.0	25.00%	-19.00
3	1/1/2018	12/31/2018	365	182.5	7/2/18 12:00	6/15/2018	-17.0	25.00%	-4.25
4	1/1/2018	12/31/2018	365	182.5	7/2/18 12:00	9/17/2018	77.0	25.00%	19.25
5								100.00%	
6	Total Lead Days								37.50

Effective in 2006, it is corporate policy to pay all state estimated income tax payments in four installments. The installments follow the Federal estimated income tax payments. Payments are made on the 15th day of the 4th, 6th, 9th, and 12th months of the tax year. If any date falls on a Saturday, Sunday, or legal holiday, the installment is due on the next regular business day.

Public Service Company of Colorado
Electric Franchise Fees Paid
12 Months Ended September 30, 2018

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Line No.	Pay Frequency	Period Beginning	Period Ending	Days of Service	Midpoint Days	Midpoint Date	Payment Date	Lead Days	Amount \$	Dollar \$	Days
1	Annual										
2		10/1/2017	12/31/2017	92.0	46.0	11/16/17 0:00	2/28/2018	104.5	4,817.73	503,452.79	
3	February	1/1/2018	9/30/2018	273.0	136.5	5/17/18 12:00	2/28/2019	287	22,570.91	6,477,851.17	
4											
5	Quarterly										
6		10/1/2017	12/31/2017	92.0	46.0	11/16/17 0:00	1/31/2018	76.5	-	-	
7		1/1/2018	3/31/2018	90.0	45.0	2/15/18 0:00	4/30/2018	74.5	-	-	
8		4/1/2018	6/30/2018	91.0	45.5	5/16/18 12:00	7/31/2018	76.0	-	-	
9		7/1/2018	9/30/2018	92.0	46.0	8/16/18 0:00	10/31/2018	76.5	-	-	
10		10/1/2017	12/31/2017	92.0	46.0	11/16/17 0:00	1/12/2018	57.5	-	-	
11		1/1/2018	3/31/2018	90.0	45.0	2/15/18 0:00	4/13/2018	57.5	-	-	
12		4/1/2018	6/30/2018	91.0	45.5	5/16/18 12:00	7/13/2018	58.0	-	-	
13		7/1/2018	9/30/2018	92.0	46.0	8/16/18 0:00	10/15/2018	60.5	-	-	
14											
15	Monthly										
16	October	10/1/2017	10/31/2017	31.0	15.5	10/16/17 12:00	11/30/2017	45.0	5,048,567.41	227,185,533.45	
17	November	11/1/2017	11/30/2017	30.0	15.0	11/16/17 0:00	12/29/2017	43.5	4,489,186.23	195,279,601.01	
18	December	12/1/2017	12/31/2017	31.0	15.5	12/16/17 12:00	1/31/2018	46.0	4,680,823.83	215,317,896.18	
19	January	1/1/2018	1/31/2018	31.0	15.5	1/16/18 12:00	2/28/2018	43.0	5,490,845.38	236,106,351.34	
20	February	2/1/2018	2/28/2018	28.0	14.0	2/15/18 0:00	3/30/2018	43.5	4,753,036.91	206,757,105.59	
21	March	3/1/2018	3/31/2018	31.0	15.5	3/16/18 12:00	4/30/2018	45.0	5,368,977.68	241,603,995.60	
22	April	4/1/2018	4/30/2018	30.0	15.0	4/16/18 0:00	5/31/2018	45.5	4,748,570.83	216,059,972.77	
23	May	5/1/2018	5/31/2018	31.0	15.5	5/16/18 12:00	6/29/2018	44.0	5,081,906.30	223,603,877.20	
24	June	6/1/2018	6/30/2018	30.0	15.0	6/16/18 0:00	7/31/2018	45.5	5,892,776.85	268,121,346.68	
25	July	7/1/2018	7/31/2018	31.0	15.5	7/16/18 12:00	8/31/2018	46.0	7,100,880.79	326,640,516.34	
26	August	8/1/2018	8/31/2018	31.0	15.5	8/16/18 12:00	9/28/2018	43.0	6,969,107.79	299,671,634.97	
27	September	9/1/2018	9/30/2018	30.0	15.0	9/16/18 0:00	10/31/2018	45.5	5,988,572.72	272,480,058.76	
28											
29											
30											
31	Totals								65,640,641.36	2,935,809,193.85	
32											
33	Average Lead							44.73			

Xcel Energy Services
Summary of Lead Lag Factors
12 Months Ended September 30, 2018

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<u>Line No.</u>	<u>Description</u>	<u>Revenue Lag Days (a)</u>	<u>Expense Lead Days (b)</u>	<u>Net Lag Days</u>	<u>CWC Factor</u>
1	Labor	37.29	11.74	25.55	0.070000
2					
3	Other Operations & Maintenance	37.29	32.07	5.22	0.014301

(a) Revenue lag days are the days it takes Public Service Company of Colorado to pay Xcel Energy Services.

(b) Expense lead days are the same as those used by Public Service Company of Colorado.

**Public Service Company of Colorado
Revenue Lag Results
12 Months Ended September 30, 2018**

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Number of Invoices	Weighted Average Lag Days	Weighted Variance of Lag Days	95% Confidence Interval	95% Precision	99% Confidence Interval	99% Precision
64,882	36.389	0.016236169	0.249745603	0.686313%	0.328109657	0.901661%

Public Service Company of Colorado
 Revenue Lag Results by Rate Group
 12 Months Ended September 30, 2018

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PSC Rate Group	Number of Premises/Services	Sample or Census	Revenue \$	% of Total Revenue	2018 Average Lag Days	2018 Weighted Lag Days	Number of Invoices	Std. Dev.	Variance	Weighted Variance
C/CAL	138,280	Sample	141,115,228	5.22%	40.1480	2.095	7,671	20.2369	409.532	0.0001454
NMTR	688	Census	2,961,281	0.11%	41.9764	0.046	4,767	11.5971	134.493	0.0000000
COL	51	Census	731,085	0.03%	43.0532	0.012	731	45.9952	2,115.555	0.0000000
PG/etc	707	Census	249,803,324	9.24%	39.5609	3.655	6,723	17.9926	323.734	0.0000000
PLL	813	Census	897,620	0.03%	40.3000	0.013	16,520	21.5545	464.599	0.0000000
R/RAL/etc	1,672,700	Sample	1,035,726,619	38.30%	32.6132	12.492	10,138	15.8702	251.862	0.0036450
SCS-7	53	Census	8,023,986	0.30%	35.5245	0.105	560	5.3781	28.924	0.0000000
SG/SGL/etc	47,759	Sample	1,099,911,699	40.68%	38.4369	15.635	2,102	12.5673	157.936	0.0124327
SL /SLU /MI /MSL	57,950	Sample	38,396,536	1.42%	34.7570	0.494	12,022	27.9054	778.711	0.0000131
TG	39	Census	122,786,181	4.54%	39.1967	1.780	178	11.4369	130.803	0.0000000
TSL	122	Census	1,707,345	0.06%	44.5644	0.028	3,327	18.1756	330.353	0.0000000
TST	14	Census	1,898,346	0.07%	48.3217	0.034	143	14.3824	206.854	0.0000000
Total	1,919,176		2,703,959,250	100.00%		36.389	64,882			0.0162362