

EMBEDDED COST OF SERVICE MODEL INSTRUCTION MANUAL

AUGUST 2009

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1. About the Embedded Cost of Service Instruction Manual

This manual is intended to help third parties better understand and operate the mechanics of the Embedded Cost of Service Model that PacifiCorp uses for rate filings. The Cost of Service Model is opened as a spreadsheet within Microsoft Excel. There are several Microsoft Visual Basic macros that the study employs. This guide was designed to show users how the model works, specifically how data and calculations flow through the model to produce class results. This model is not intended to explain the rationale behind different cost of service methodologies, but to inform users about how to use the tool and understand its inner workings.

2. Reminders and Quick Tips

2.1. Working with Iterations

The cost of service model employs iterative calculations. As such, when an input within the model is changed, all cells within the model that have formulas linked to the input changed will not update themselves without being prompted. In order to have the cost of service model calculate the formulas within all cells and apply an update that has been made, a user must press the F9 key.

2.2. Working with Named Ranges

Within the cost of service model, a large number of named ranges are used. A named range is simply a reference to a specific cell or range of cells within worksheets. To navigate to a specific named range, click on the drop-down box on the upper left-hand portion of the screen. The named cell range can quickly be found by typing in the first letter of the name. Once the named cell range is chosen, automatically a specific cell or range of cells will be highlighted by the cursor.

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3. Cost of Service Model Process Overview

The Cost of Service Model performs 3 basic steps; functionalization, classification, and allocation. These steps divide costs between function (generation, transmission, distribution, etc.), classification (generation-demand, generation-energy, distribution-poles and wire, distribution-transformers, etc.), and allocation (residential, irrigation, small general service, etc.). Costs are first apportioned to their functional and classification groups, before being allocated to rate class. Functionalizing costs provides additional detail and also more easily provides a basis for apportioning costs that can not be easily identified with a particular function or class. The overall cost of service process can be viewed conceptually as the cube displayed below:

Figure 1. Functionalization-Classification-Allocation Cube



4. Functionalization: The first step in cost of service

4.1. Overview

During the functionalization process, the costs from the JAM (jurisdictional allocation model) which contain costs by FERC account for the whole jurisdiction are downloaded into the cost of service model and apportioned to each function (Generation, Transmission, Distribution, etc.). The apportionment of costs to their function primarily takes place within the "Func Study" tab. The diagram below shows what the model does during the functionalization process.

Figure 2. Functionalization Process within the Model



4.2. Downloading the JAM

The JAM (jurisdictional allocation model) is the model that PacifiCorp uses to determine the share of costs for which a particular state is responsible. The Company uses this model to determine the revenue requirement amount that it will file for a rate case. Also within the JAM, functional factors are developed that will be used within the cost of service model. The JAM is relayed to the cost of service. Cost of service department downloads it into the cost of service model.

To Download the Jam:

- 1. Open both the cost of service and JAM models in MS Excel.
- 2. In the cost of service model, select the drop-down menu option Update: JAM Inputs.



Selecting this menu option runs the UpdateJAMInputs macro, which selects the LinkJAM (named cell range) area in the JAM model under the tab labeled "Function", copies these cells and then selects the LinkCos (named cell range) area within the "JAM Download" tab of the cost of service study and pastes the values.

Note: If the JAM Download macro does not work, it is likely that the filename of either the JAM or the cost of service model is different from what is in the macro's code.

To check the macro:

1. In the cost of service model, select the drop-down menu Tools: Macro: Visual Basic Editor.

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2. Microsoft Visual Basic will load up. Within Visual Basic, select View: Project Explorer.



3. Project Explorer should open on the left-hand side of the screen. Click on the plus sign next to "Modules" under "Cost_study (Generic COS Model.xls)" to expand the selection. Double click on "Menu_Update_COS".

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4. Within the macro's coding are two filenames. If these do not match the filenames for the JAM and cost of service model that you are updating, change them accordingly and close down Visual Basic. Try to download the JAM again.

4.3. Internal and External Functional Factors

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Take note that within the JAM are both internally and externally developed functional factors. The internal functional factors are developed from costs within the JAM on the "Function" tab of the JAM study. For example, the "PTD" functional factor is calculated by determining the percentages of plant that are production, transmission, and distribution within the JAM. External functional factors are calculated elsewhere and have therefore had their values pasted into the JAM. An example of an external functional factor is the "FERC" functional factor, which is calculated outside the JAM and is based on Form 582 that the Company files with FERC. The percentage values for this functional factor were pasted into the JAM.

4.4. Using Functional Factors

The "Func Factor Table" tab within the cost of service study links to the downloaded functional factors that are located on "JAM Download" tab for easier viewing and organization.

Within the "Func Study" tab, several tasks are performed. FERC account line items are brought forward from the "JAM Download". All line items, except for retail revenues, are apportioned among the functions and sub-functions by use of the functional factors. Functional Results are developed.

4.5. Functionalization Mechanics

Beginning on row 250 of the "Func Study" tab, the cost of service model begins apportioning costs among the functions, which is the process referred to as functionalization.

On Column H, the line items from the JAM are linked from the "JAM Download" tab. These items are the revenues, expenses, rate base additions and rate base subtractions that are used by the Company to develop jurisdictional revenue requirements. Many of these line items are further identified by the portions that are applicable to specific PITA factors. For example account 456 on rows 318 through 322 shows the Other Electric Revenue by PITA factors S, CN, SE, SO, and SG. The PITA factors are listed on Column F. On Column I, the choice of functional factor is displayed for each FERC account by PITA factor.

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On columns J through N, each line item displayed on Column H is apportioned among the functions according to the functional factor choice listed. The formulas used to perform this apportionment employ the VLOOKUP function within Microsoft Excel to find the appropriate percentage within the "Func Factor Table" tab and multiply this percentage by the line item amount.

For example, on cell J378 the percentage value for the PTD functional factor is looked-up within the "Func Factor Table" (in this case that value is 51.48%) and is multiplied by the Account 421 value (\$42,042) that is on the SO PITA factor resulting in the general total for that account (\$21,644).

At the top of the "Func Study" tab on cells A1 through K81, functional summary results are displayed. As can be seen, Generation has Total Operating Expenses of \$1,340,427,359 (cell G13). Distribution has State Income Taxes of \$(2,148,467) (cell I18). Retail has Total Rate Base of \$11,253,563 (cell J54).

5. Classification

5.1. Overview

Classification is the process where costs are classified into the following three categories: demand-related, energy-related or customer-related expenses. Demand-related costs are fixed costs imposed by the company when meeting maximum demand. Such costs may include generation facilities and transmission lines. Energy-related costs are variable costs associated with the output of energy (kWh). Such costs may include fuel costs. Customer-related costs are determined by the number of customers served. These costs are associated with meter reading, service drops, billing, etc. Depending on the cost causal relationship, functionalized costs (G, T, D, R, or M) may be classified to more than one of the three categories mentioned above.





5.2. Classification Mechanics

The classification process occurs within the "Func Study" tab. On this worksheet, the costs are first functionalized as shown in the example below and as described in the functionalization section.

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The costs in columns J through N have been determined by multiplying the costs from the JAM (column J) by the appropriate functional factor (column I). These calculations begin in cell J254 of this worksheet.

Once the costs have been functionalized, almost all costs are classified into one of following 9 sub-functions:

- Generation-demand
- Generation-energy
- Transmission-demand
- Transmission-energy
- Distribution-substation
- Distribution-poles and conductor
- Distribution-transformer
- Distribution-meter
- Distribution-service

Generation and transmission are classified as either demand or energy-related. The calculations start in cell Q254 of the "Func Study" tab. See below.

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Distribution costs are classified as shown below. This process starts in cell W254. The functionalized dollar amount from column L, row 254 is multiplied by the distribution factor listed on column V. The model accomplishes this by using MS Excel's VLOOKUP function and looking up the appropriate distribution functional factor from the "Func Dist Factor Table" tab. The named distribution factor is shown in column V. The distribution factor value is found on the "Func Dist Factor Table" tab.

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Classification of Distribution Function

As an example of classification, Account 580 - Operation Supervision & Engineering is classified on cells W746 through AA748 on the "PLNT" distribution functional factor found on the "Func Dist Factor Table" tab. For the Distribution-substations sub-function, the "PLNT" distribution functional factor has a value of 15.48%. The total Account 580 value for the Distribution-substations sub-function is \$1,453,518 (cell W748)

6. Allocation

6.1. Overview

Allocation is the process of spreading the costs among customer classes. Once the costs are functionalized and classified, the last step is allocation. Allocation takes place in the factor input tabs; the "COS Factors" tab, the "Func Study" tab, and the "Hot Sheet" tab and produces the unbundled tabs (Generation, Transmission, Distribution, Retail, and Misc). The development of the unbundled tabs is achieved by use of the "Unbundle_Function" macro. The unbundled tabs aggregate to both the "Summary Table" tab and the "G+T+D+R+M" tab. Some of the results within the "G+T+D+R+M" tab and unbundled tabs are used in the development of the cost of service factors on the "G+T+D+R+M" tab and the results from the "G+T+D+R+M" tab are used to create some of the cost of service factors, several iterations must be completed.

Figure 4. Allocation Process within the Model



6.2. Factor Input Tabs

The inputs that occur in the model mostly occur within the following tabs labeled "Inputs", "Demand Factors", "Dist. Factors", "Energy Factor", "Cust Factors", "Cust Advances", "MeterServices", "Uncollectables", and "Revenues".

The "Inputs" tab contains the rate increase dollar amount, the target rate of return, the allocation / calculation option selections, tax rates, the net to gross factor, the proposed capital structure, the loss factors, the system and substation peaks, the demand / energy splits for several factors, the overhead / underground split for factor 134, and primary / secondary split for various distribution plant accounts. Below is description of where each item within the "Inputs" tab is used:

- The target rate of return is used within the "Function Summary", "Class Summary", and functional summary tabs to develop return on rate base across the functions at the target level. See section 9.1.
- The allocation / calculation factors determine which sets of factors will be used for functionalization or allocation. When selected, they move a set of factors from either the "Func Allocation Options" or "COS Allocations Options" tab and place that set onto either the "Func Study" or "Hot Sheet" tab.
- The net to gross factor is used within the "Function Summary", "Class Summary", and functional summary tabs to develop an equal rate of return across the functions. See section 9.1.
- The capital structure is used to develop the return on equity from the rate of return on the "G+T+D+R+M", "Hot Sheet", and "Func Study" tabs as wells as the functional output tabs ("Generation", "Transmission", etc.)
- The loss factors are used to bring demand and energy values from the sales level to the input level on the "Demand Factors", "Dist. Factors", "Energy Factor" tabs.
- The system peaks are used on the "Demand Factors" tab to weight the monthly system coincident peaks. The substation peaks are used on the "Dist. Factors" tab to weight the monthly distribution peaks.
- The demand / energy splits are used on the "Demand Factors" tab.
- The overhead / underground split for account 134 is used on the "COS Factor Table" tab.
- The primary / secondary splits for various distribution plant accounts are used on the "DistInvest" tab.

The "Demand Factors" tab contains raw data from load research for coincident system peaks. Data is entered according to rate schedule and voltage level at the Sales (meter) level and is increased to the Input (generator) level by multiplying the value by the loss factor located on the "Input" tab in cell D28. See below.

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143	16	Cust C		contract	79,500	79,500	79,500	79,500	79,500	79,500	79,500	79,500	79,500	79,500
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The "Dist. Factors" tab contains raw data for distribution peaks and non-coincident peaks (billing demand) at the sales and input levels, which is also provided by load research and entered by rate schedule. See below.

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160	<u> </u>		D		0	E	F	a	State	filtab	0	N			14
161									Monthle V	at Factors					
162								12	Months En	led Dec 2020)				
163								D	istribution P	eaks @ Sale	s				
164															
165			-	_	_	_	_	_	_						
166			A	B	C	D	E	E	G	н	1	لد	K	L	M
107					Jan. 20	Eab-20	Mar-20	Apr-20	Man.20	Jun-20	Jul-20	Aug. 28	Sep-20	Det-20	Nou-20
169				COS	19	4	2	11	23	22	17	12	11	22	14
170		Descrin	otion	Sch	12:00	14:00	12:00	11:00	15:00	17:00	16:00	16:00	16:00	14:00	12:00
171															
172	1	Residential											_		
173	2	Sch 001	sec	1	798,500	798,800	598,900	598,800	898,500	1,697,000	1,398,000	1,298,000	1,098,300	599,000	698,900
174	3	Sch 007	sec	7	-										
175	4	Sch 025	sec	25	1,500	1,200	1,100	1,200	1,500	3,000	2,000	2,000	1,700	1,000	1,100
176	5	Sch U25	pri Desidential Tabel	25						1700.000	1400.000	1000.000	1 100 000		-
170	7		mesidential Local		800,000	800,000	600,000	600,000	300,000	1,700,000	1,400,000	1,300,000	1,100,000	600,000	700,000
179	8	General Service	٥												
180	9	Sch 006	com	6	1,100,000	1.000.000	1,100,000	1.000.000	1.300.000	1,100.000	1.300.000	1,400,000	1,400,000	1,200,000	1,100,000
181	10	Sch 008	com	8	275,000	275,000	275,000	275,000	275,000	275,000	275,000	275,000	275,000	275,000	275,000
182	11	Sch 007	sec	7	-										
183	12	Sch 023	sec	23	300,000	300,000	250,000	200,000	300,000	300,000	250,000	300,000	350,000	250,000	200,000
184	13	Gei	neral Service Total		1,675,000	1,575,000	1,625,000	1,475,000	1,875,000	1,675,000	1,825,000	1,975,000	2,025,000	1,725,000	1,575,000
185	14	And a set of a													
185	10	Engation Sale 010		10	500	500	2,000	15.000	45.000	50.000	50.000	45.000	25,000	15.000	5.000
188	17	301 010	260	10	000	000	2,000	10,000	40,000	00,000	00,000	40,000	30,000	10,000	0,000
189	18	Street Lights													
190	19	Sch 011	sec	7	-		-		-		-	-		-	-
191	20	Sch 012	sec	7	-				-			-	-	-	
192	21	Sch 104	sec	12	750	750	750	750	750	750	750	750	750	750	750
193	22	Sch 205	sec	12				-	-		-	-		-	
194	23		St Lighting Total		750	750	750	750	750	750	750	750	750	750	750
100	24														
197	26														
198	27	State	of Utah		2.476.250	2.376.250	2.227.750	2.090.750	2.820.750	3.425.750	3.275.750	3.320.750	3.160.750	2.340.750	2.280.750
199															
200															
201															
202		Dist Pea	ks @ sales		Jan-20	Feb-20	Mar-20	Apr-20	Mag-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20
203		Sch 001 (sec)		1	800,000	800,000	600,000	600,000	900,000	1,700,000	1,400,000	1,300,000	1,100,000	600,000	700,000
204		0.1.005()			1500	1000	4.400	4000	1500	0.000	0.000	0.000	1700	1000	4.400

The "Energy Factor" tab has MWh sales data from customers as provided by the pricing department. The MWh within this tab are also increased to the input level. See below.

N 1	1icroso	ft Excel - Gen	eric (:05 Model	.xls															_ 8 ×
8	Eile	<u>E</u> dit <u>V</u> iew	Insert	Format	Tools	<u>D</u> ata	<u>W</u> indow	Help	COS MENU -	> <u>L</u> ocate	Update	<u>C</u> alculate	<u>T</u> arget	Print			Type a que	stion for h	elp 👻	_ 8 ×
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		в		C)		D		E	F		G	Н		<u> </u>		J	K		
94												Cost (of Service	By Rate	e Schedu	le				
95													State	of Utah	1					
96													Monthly V	Vgt Fac	tors					
97												12	Months E	nded D	ec 2020					
98													mWh (@ sales	s					
99																				
100					COS Sc	<u>h</u>	Jan-	20	Feb-20	Mar-3	20	<u>Apr-20</u>	<u>M</u>	ay-20	<u>Jı</u>	in-20	Jul-2	<u>20 A</u>	ug-20	
101	Reside	ntial						_			_		-							
102	Sch1	sec			1		600,00	0	500,000	500,00	0	400,000	40	0,000	500	,000	750,00	0 70	0,000	5(
103	Sch 2	sec			1		20	0	200	20	0	150		200		200	25	0	250	
104	Sch 3	sec			1	-	15,00	0	15,000	15,00	0	15,000	1:	5,000	- 17	,000	20,00	0 1	7,000	
105	Sch 25	sec			25	,	1,00	0	1,000	1,00	0	750		750	540	,000	1,20	0 74	1,000	
407		Residential	otai			_	010,20	0	516,200	516,20	0	415,900	41:	5,950	510	,200	771,40	0 71	0,250	
107	Conora	l Comiso						_												
100	Sch 6	sec				2	507.52	0	507 520	507.52	0	507 520	501	7 520	507	520	556 20	6 60	5.072	5(
110	Sch 6	nri				2	12.98	0	12 980	12.98	0	12 980	1	2 980	12	980	14.20	4 1	5 428	
111	Sch 8	sec				2	93.65	1	93,651	93.65	1	93,651	9	3,651	109	259	109.25	9 10	9 259	10
112	Sch 8	pri			Ē	3	56.34	9	56,349	56.34	9	56,349	5	5,349	65	741	65.74	1 6	5 741	E
113	Sch 9	sub trn			9	3	304.00	0	304.000	304.00	0	304.000	30-	4.000	304	.000	304.00	0 30	4.000	3(
114	Sch 23	sec			23	3	100.00	0	100.000	100.00	0	100.000	10	0.000	115	.000	130.00	0 13	0.000	11
115	Ge	neral Service 1	fotal				1,074,50	10	1,074,500	1,074,50	0	1,074,500	1,07	4,500	1,114	,500	1,179,50	0 1,22	9,500	1,11
116																				
117	Irrigatio	n																		
118	Sch 10	sec			10)	50	0	500	1,20	0	10,000	2	5,000	35	,000	40,00	0 3	5,000	
119																				
120	Street	_ights																		
121	Sch 7,1	1,12,13 sec			7,11,12,13	3	7,83	15	7,835	7,83	5	7,835		7,835	7	835	7,83	5	7,835	
122	Sch 12	sec		Traf	ffic signals	3	50	0	500	50	0	500		500		500	50	0	500	
123	Sch 12	sec		Metered	outdoor Ig	t	1,00	0	1,000	1,00	0	1,000		1,000	1	,000	1,00	0	1,000	
1124	1 5	Street Liahtina 1	fotal				9.33	15	9.335	9.33	5	9.335	1	9.335	9	.335	9.33	5	9.335	

The "Cust Factors" tab uses the average number of customers by class as provided by the pricing department and the Account 901 and Account 902 weighting factors to develop Factors 40 through 48. See below.



The "MetersServices" tab develops meter and service drop factors. Customer counts broken out by load size and voltage level from the pricing department as well as the cost of newly installed meters and service drops from engineering are input into this tab. Additionally, the percentage split of overhead and underground is used to develop weighted service drop costs for each customer level. Factors 60 and 70 are developed in this section of the model. See below.

	A	В	C	D	E		F	G	
201									
202			1	PacifiCarp					
203			Utah Ma	rginal Cart S	Study				
204			Summery of i	iverage Insta	Illed Cartr				
205			S	ervice Drups					
206									
207			(A)	(B)	(C)		(D)	(E)	
208									
209			Service	Installed Cast	Indexedta		Percent	Tatal Cart	
10	Line	Load Clarr	Conductor	2001	2009		Ure	por Sorvico	
211					C.ID				
212					C.I.D 5547 - U/G				
213	1	Residential				_			
214	2	OH-small load	\$2 Triplex	\$425.00	\$416.20	Ζ.	30.80%	\$128.19	
15	3	OH-allelectric	170 Triplex	\$500.00	\$489.65	5	4.20%	\$20.57	
216	4	UG-zmall load	170 triplex	\$425.00	\$405.75	<u> </u>	57.20×	\$232.09	
217	5	UG - all electric	470 triplex	\$485.00	\$463.03	۳.	7.80%	\$36.12	
18	6							\$416.96	
219	7								
20	\$	0 - 30 kW							
21	9	kW - 0, 1Phare	OH - 1/0 Triplex	\$550.00	\$538.62	۳.	35.00%	\$188.52	
22	10		UG-1/0 triplex	\$560.00	\$534.63		65.00×	\$347.51	
223	11							\$536.03	
224	12							-	
25	13	kW-0,3Phare	OH - 170 Quadruplex	\$750.00	\$734.48	۳.	35.00%	\$257.07	
26	14		UG-1/0 guadraplex	\$200.00	\$763.76		65.00%	\$496.44	
27	15							\$753.51	
28	16							-	
29	17	kW>1,1Phare	OH - 470 Triplex	\$800.00	\$783.44	۳.	35.00%	\$274.20	
230	18		UG - 4/0 triplex	\$600.00	\$572.82	۳.	65.00%	\$372.33	
231	19							\$646.54	
232	20								
:33	21	kWs1.3Phare	OH - 470 Quadruplex	\$950.00	\$930.34	۳.	35.00%	\$325.62	
234	22		UG-4/0 guadraplex	\$850.00	\$811.50	۳.	65.00%	\$527.47	
235	23							\$\$53.09	
236	24								
37	25	30 - 100 kW							
38	26	1Phare	OH-2-4/0 Triplex	\$1,500,00	\$1,468,95		35.00%	\$514.13	
39	27		UG-2-4/0 triplex	\$1,100.00	\$1,050,17		65.00%	\$682.61	
40	28							\$1,196,74	
41	29								
42	30	3 Phone	OH-2-4/0 Quadraple>	\$1,800.00	\$1,762,74	•	35.00%	\$616.96	
243	31		UG-2-4/0 avadranlay	\$1,600.00	\$1.527.52	•	65.00%	\$992.89	
44	32							\$1.609.25	
45	33								
246	24	3 Phone WIKUAR	OH-2-d/0 Quadruplas	¢1 300 00	\$1.762.7d		35.002	4616.96	
247	35		115-2-4/0 anadruplay	\$1,600,00	\$1 527 52	Π.	65 002	\$992.89	
	2				A.1			47/6-07	

The "Customer Advances" tab lists deposits and contribution in aid of construction for customers in each class. Factors 50 and 51 are developed on this worksheet. See below.

		~	÷	~										
1		Curtamer Advances	Factors (F5)	P-F51)										
2							Rucky Muuntain Pawer							
3							Cart Of Serv	ice By Rate S	.hodulo					
4							St	ate of Utak						
5							Munth	ly Wet Fectur	r					
6							12 Heath	r Ended Dec 2	020					
7	_						Curtame	Advances Fe	ter					
8														
9														
10	_	A	B	<u>c</u>	D	E	E	G	Ы	1				
11														
12	_			General	General	Street & Aree	General		Traffic	Outdear	Gener			
13	_		Residential	Large Dirt.	+1 H¥	Lighting	Trent	Irrigation	Siquelr	Lighting	Smell D			
14	-	Dercrietine	Sck1	Sel 6	Sch #	Sch. 7,11,12	Sel 9	Sck 10	Sch 12	Sch 12	Sel 2			
15		i												
16														
11	1	Kevenue	F 4/ 544 444											
18	2	Rezidential	546,200,000	100 535 444			151 300 000				400 505			
19		Comrind		423,979,000	120,000,000		196,200,000	40.000.000			103,929			
20		Irrigation						10,000,000						
21	2	0												
22		Curcular Havancas												
24		Con dia d	900,000	2 741 427	776 746		1 041 420				670			
24		Com ring		2,141,721	110,170		1,011,169	75.000			610			
26	10	Tabal Cush & duas and	000 000	2 741 927	776 796		1 011 120	75,000			670			
27	11	Tatarowtheoances	700,000	6,191,761	110,170		1,011,16.9	19,000	-		010			
20	12	FACTOR 54	14 57487	44 48274	12 5747-2	0.00007	16 2746 4	1 2146 2	0.00007		10.15			
20		140101.54	14.51477.	44.40517.	12.31717.	V.VVVV.	10.51407.	1.2.1447.	0.0000		10.03			
20	13													
30	14	Complex Documber	2 000 500	122.000	E00.000	40 500	490.000	125.000	1000	15 000	2 000			
22	15	Sacurity Daparty	2,000,900	135,000	300,000	10,900	190,000	125,000	1,000	19,000	3,000			
22	17	FACTOR 51	38 81587	1 44557	7 58197	A 15757	2 78877	1 \$7557	4 41547	8 22517	45 41			
24		Incronor			1.54177.	V.15157.	E.11117.			4.EE917.				
34	-													
26	-	Cantalkatian in Aid a												
	-													
31	-	UT Residential	900,000											
38	-	UI Commorcial	1,200,000											
39	-	Of Inductrial	4,000,000											
40	-	Of Irrigation	75,000											
	-	Intal	\$,179,000											
42	-													
43	-													
44	-													
45	-	Departer Charge	i by State											
46	-	08RESD0001	2,000,000	Rer										
41	-	000ESU0002	500	nef 5-1 f										
40	-	00011370006 020N50006 A	30,000	5-14										
50	-	00GNCII006P	100,000	Cali										
50	-	02GN510000	5,000	C.L.O										
52	-	020ALT007N	10,000	Set 7 11 12										
52	-	020AL T007R	500	Set 7 11 12										
54		0805LCU1202	1,000	Seb 12 (TS)										
55		080SLCU1203	15.000	Sah (2 (MONL)										
11	1	AAC NO HAAAAA	477 000	C 1 A										

The "Uncollectables" tab lists the written-off dollar amount due to non-payment and recovery dollar amounts through collection activities by class. Factor 80 is developed on this worksheet. See below.

31				
32				
33				
34				
35	Uncollectables	Writeoffs	Recoveries	Net Write-offs
36	Residential	(5,000,000)	1,900,000	(3,100,000)
37	Commercial	(750,000)	300,000	(450,000)
38	Industrial	(50,000)	30,000	(20,000)
39	Irrigation	(5,000)	250	(4,750)
40	_			
41	Total	(5,805,000)	2,230,250	(3,574,750)
42				
43				
4.4				

The "Revenues" tab lists revenues by rate schedule. See below.

1		Berennes															
2									Rock	Mountain P	ower						
3									Cost Of Se	rvice By Rat	e Schedule						
4										State of Utal							
5									Mon	thiy Wat Fac	tors						
6									12 Mos	ths Ended De	c 2020						
7									Reve	nue - Normal	ized						
8																	
			B	<u>C</u>	D	E	E	2	LL LL	1	1	ĸ	L	M	N	Q	P
10																	
11		-			General	General	treet & Are	General		Traffic	Ustdoor	General	Mobile				
12		Customer		Residential	Large Dist.	+1 MW	Lighting	Trans	Irrigation	Signals	Lighting	Small Dist.	Home Park	Industrial	Industrial	Industrial	
13	Line	Class		SCh 1	SCN D	5Ch 8	sch. 1,11,12	SCN 3	SCN 10	SCN 12	SCh 12	SCh 23	SCh 25	Cast A	Cast B	Cust C	lotal
15	1	Pacidantial		546 200 000									1 000 000				547 200 000
16		in since the		540,200,000	-								,,550,000				541,230,000
17		Commercial		· ·	× 368 250 000	60,000,000		12 000 000				100 000 000					540 250 000
18	å	oomer char			000,200,000	00,000,000		10,000,000				100,000,000					240,220,000
19	5	Industrial		-	55,250,000	60,000,000		126 200 000	10.000.000			3 500 000		3 000 000	25,000,000	22,000,000	310 350 000
20	6																
21	7	Lighting					10,580,000			500.000	800.000				-		11.880.000
22	8																
23	э	OSPA		-	75,000	· ·		18,000,000			-	25,000		-	-		18,100,000
24	10																
25	11	Interdepartmental							100 C							100 A 100	
26	12																
27	13																
28	14	Total Revenues		546,200,000	423,575,000	120,000,000	10,580,000	156,200,000	10,000,000	500,000	800,000	103,525,000	1,000,000	9,000,000	25,000,000	22,000,000	1,428,380,000
23	15																
30	16																
31	17	Total AGA Revenue	les	339,269	2,157,665	455,653	-	324,240	-	20,000	•	562,442	731	-	-		3,920,000
32	18	Misc Revenues		-	-		•				· · ·	-	-	· ·	-		
33	19	Gross Receipts A	dj														
34	20	Commercial Vol D	iscount	· ·										· ·			
20	21	Industrial Vol Dise		-	-						· ·				-		
37		Firm Demonstr	naj.	646 599 269	405 730 665	120 455 653	10 580 000	156 504 040	10.000.000	520.000	800.000	104 087 442	1000 731	9.000.000	25,000,000	22,000,000	1432 300 000
20	24		F141	20 16 1	00,000	0.449	0.742	10.925	0.707	0.042	0.067	7.075	0.072	0.625	1754	1542	100.007
39	24		1.141	30.104	23.124	0.414	0.144	10.334	0.104	0.044	0.064	1.214	0.014	0.654	1.154	1.544	100.004
40	26	Non-Firm															
41	27			-	-							-	-		-		
42	28																
43	29	Total Revenue		546,599,269	425,732,665	120,455,653	10,580,000	156,524,240	10,000,000	520,000	800,000	104,087,442	1,000,731	9,000,000	25,000,000	22,000,000	1,432,300,000
44																	
45																	
46																	

6.3. Cost of Service Factors

On the "COS Factors Table" tab, the cost of service factors are developed from the various inputs tabs described in the section above. Additionally many of the cost of service factors are developed from the "G+T+D+R+M" tab and unbundled tabs. Factors 10 through 96 and 141 are developed from the various inputs sheets. Factors 101 through 140 are developed from the "G+T+D+R+M" tab and the unbundled tabs. See Table 1 from in the Appendix for a listing where each cost of service factor is derived. The cost of service factors are used to allocate the functionalized costs to each customer class within the "Hot Sheet" tab.

6.4. Hot Sheet Iterations

To develop the tabs labeled "G+T+D+R+M", "Generation", "Transmission", "Distribution", "Retail" and "Misc", the five functional results are copied over from the "Func Study" tab to the "Hot Sheet" tab and allocated amongst the customer classes. When the command Calculate: Entire Model is selected, all five functions and all 9 sub-functions are copied into the "Hot Sheet" tab, calculated and then pasted into their unbundled tabs. Below is a conceptual diagram and illustration.



Figure 5. Conceptual Illustration of Allocation

Under the "Calculate" menu selection, any of the functions or sub-functions can be unbundled individually or the entire model can be calculated.

N	licros	soft Ex	cel - Generic COS Model.xl	5							
8	Eile	<u>E</u> dit	View Insert Format	<u>T</u> ools <u>D</u>	ata <u>W</u> indow	Help COS M	1ENU> L	ocate Up	date 🛛	<u>Calculate</u> <u>T</u> arget <u>P</u> rint	Туре
	2) 🔁 🖾 🖤 🗼 🛙	b 🛍 •	🚿 N + C	- 🗟 Σ	- <u>2</u> Z	10 🚯 60)%	Entire Model	*.00 ÷
1	ta			Reply (with Changes	End Review		. (4)	₽ > = 1	G+T+D+R+M - (5 functions only)	
С	орүБ	Rvcdt	 <i>f</i>_∗ =-I129-I130 	D-1138-11	46-1148-1150-1	152-1179	• • •			Generation - Total	
1	A	всс) E Distribution - METER - Unbu	F	G H	I	J	К		Transmission - Total	
2								Roc Cost Of S	ky Mou ervice	Distribution - Total	_
4								Mo	State - nthiy 'u	Retail - Total	
6								12 Moi	oths En	Miscellaneous - Total	
9	_	•	В	С	D	E	F	G General	treet	Generation - Demand	Dor
11 12			DESCRIPTION		Jurisdiction Normalized	Residential Sch 1	Large Dist. Sch 6	+1 MW Sch 8	Ligh Sch. 1	Generation - Energy	ing 1 12
13 14	14		Operating Revenues		14,753,615	3,364,172	1,308,385	361,718	203	Transmission - Demand	,188
15	15 16		Operating Expenses		6 000 001					Transmission - Energy	-
1/ 18 19	17 18		Depreciation & Maintenance Exp Depreciation Expense	enses	2,985,968	4,084,265 2,102,286 89,397	334,449	50,253	2	Distribution - Substations	959 17
20	20 21		Taxes Other Than Income Income Taxes - Federal		493,761 (200,304)	251,837 (102,163)	150,664	30,980	6	Distribution - Poles+Wires	50
22 23	22 23		Income Taxes - State Income Taxes Deferred		(70,074) 1,455,758	(35,741) 742,493	(21,382) 444,204	(4,397) 91,338	21		(7) 148
24	24 25		Investment Tax Credit Adj Misc Revenues & Expense		(16,362) (28,687)	(8,345) (7,366)	(4,993) (11,971)	(1,027) (2,298)		Distribution - Transformers	(2) (7)
26	26 27 28	+ +	Total Operating Expenses		11,072,613	7,109,594	1,772,443	316,438	203	Distribution - ServiceDrops	305
29	29	+ +	Operating Revenue For Return	•	3,681,002	2,854,578	135,942	45,281		Discribución - Meters	282
31	31										

To follow the allocation of the generation function, follow the steps below:

- 1. Make sure that the cost of service model is open and the JAM is closed. (Having the JAM open at the same time will cause the cost of service model to run slowly.)
- 2. Select the menu option Calculate: Generation Total.



3. The model should just have unbundled the generation function. Go to the "Hot Sheet" tab. Notice that the heading in cell E1 has been changed to read "Generation – Total – Unbundled". The "Hot Sheet" tab now displays the unbundled results for the total generation function. This will mirror what is in the "Generation" tab.

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17	_		Ope	ration &	Maintena	nce Exp	enses				1,340,427,359	382,116,56	5 464,15	3,271	116,544,024	3,602,745	191,825,608	10,298,
18	_		Dep	reciation	Expense	•					91,775,542	23,989,12	20 38,10	6,064	7,321,790	191,330	11,069,376	627,

6. Open up the MS Visual Basic code for the unbundled macro by selecting Tools: Macro: Visual Basic Editor.



7. Microsoft Visual Basic will load up. Within Visual Basic, select View: Project Explorer.



8. Project Explorer should open on the left-hand side of the screen. Click on the plus sign next to "Modules" under "Cost_study (Generic COS Model.xls)" to expand the selection. Double click on "Menu_Unbundle".



9. About mid-way down the coding, notice the TotGen() sub-routine. This piece of coding sets the term "Function_Source" to the "GenTot" named cell range and the term "Results_Paste" to the "Generation1" named cell and then runs the Unbundle_Function sub-routine.



The Unbundle_Function() sub-routine slightly further down on the coding describes that it will do the following

- 1. Go to the term Function_Source, which has been set to the named cell range of "GenTot".
- 2. Copy this range.
- 3. Go to the named cell range of "UACCT".
- 4. Paste the values.
- 5. Calculate.
- 6. Go to the named cell range "Results".
- 7. Copy this range.
- 8. Go to the term Results_Paste, which has been set to the "Generation 1" named cell range.
- 9. Paste the values.
- 10. Calculate.

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This same coded logic can be followed manually. To follow the coding manually, follow these steps:

1. Select GenTot named range by clicking on the upper left-hand drop down box and navigating to GenTot. For convenience type in the letter "g" to go straight to this section.

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- 2. The destination for the named range cells is J250:J2463 of the "Func Study" tab.
- 3. Copy this range by hitting Ctrl-c or by selecting the Edit: Copy from the menu.

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4. Go to the UAcct named cell range following the same procedure completed in step 1.

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5. Select the Edit: Paste Special from the menu.

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6. Select values and hit OK.



- 7. Hit F9 to calculate. The functionalized results for generation that were in the "Func Study" tab have just been copied and pasted into the "Hot Sheet" tab. The calculations from the "Hot Sheet" are employed to allocate to the customer classes
- 8. Go to the named cell range labeled "Results".

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- 9. Copy this range by hitting Ctrl-c or by selecting the Edit: Copy from the menu.
- 10. Go to the named cell range "Generation 1".
- 11. Select Edit: Paste Special from the menu.
- 12. Select Values and hit OK.
- 13. Hit F9 to calculate. The results for the generation function as they have been allocated to the customer classes have been pasted to the "Generation" tab from the "Hot Sheet" tab. All instructions have been completed for the generation function.

The unbundling for the other four functions can be done by following the code in the same way for the TotTrn(), TotDis(), TotRet(), and TotMisc() sub-routines. The coding can also be followed for the unbundling of the sub-functions, by walking through the GenDE(), GenEG(), TrnDE(), TrnEG(), DisSUB(), DisP(), DisXfm(), DisMtr(), and DisDrp() sub-routines. When the menu option "Calculate: Entire Model" is selected, all

of the functions and sub-functions are unbundled several times. This ensures that all cost of service factors and functionalized class results have been fully developed.

Another way to follow the macros is to step through each macro line-by-line and watch the results as they happen. To do this, follow the steps below:

1. Open up the MS Visual Basic code for the unbundled macro by selecting Tools: Macro: Visual Basic Editor.



2. Microsoft Visual Basic will load up. Within Visual Basic, select View: Project Explorer.



3. Project Explorer should open on the left-hand side of the screen. Click on the plus sign next to "Modules" under "Cost_study (Generic COS Model.xls)" to expand the selection. Double click on "Menu_Unbundle".

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4. Split the screens as shown below so that the actions from Visual Basic can be seen in Excel. This can be done by minimizing both Excel and Visual Basic and sizing each to half the size of the screen.

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5. In Visual Basic, place cursor in front of "Sub TotGen ()" as shown below.

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6. Press F8 to follow the Visual Basic code line-by-line. Below in Excel, the actions occur as the Visual Basic code is followed above. Continue to press F8 until that section is complete and the cursor is on "End Sub" as shown below.

1. Once the cursor is on "End Sub", click the stop button to stop Visual Basic.

2. Please note that some of the coding will go through the clock mechanism built into the Visual Basic coding. This can be ignored.

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7. Step 6 can be completed for each function: TotTrn(), TotDis(), TotRet(), and TotMisc() sub-routines. The coding can also be followed for the unbundling of the sub-functions, by stepping through the GenDE(), GenEG(), TrnDE(), TrnEG(), DisSUB(), DisP(), DisXfm(), DisMtr(), and DisDrp() sub-routines.

9.1. Setting Equal Rate of Return Across the Functions

One of the main underlying principles within the cost of service study in determining required revenue from the classes is that return on rate base is held equal across all functions and rate classes. In other words, for every dollar of rate base allocated to the functions and classes, a specified return is required to bring each class to cost of service. It is important to realize that three different types of rate of return are used in the study: overall rate of return at the target level, overall rate of return at the earned level, and actual rate of return for each rate class. These values represent what each class should be earning at the requested revenue level, what each class should be earning at the current revenue level, and what each class is actually earning respectively.

On the "Function Summary", "Class Summary", "Generation Summary", "Transmission Summary", "Distribution Summary", "Retail Summary", and "Misc Summary", both overall target and earned return on rate base is calculated by multiplying the rate of return by the total rate base within each summary sheet. Return on rate base, revenue credits and operating expenses are added together to get revenue requirements. For target revenue requirements, the operating expenses are adjusted for taxes using the net to gross factor from the "Inputs" tab. The target rate of return is located within the "Inputs" tab and is determined based upon user input of a target overall rate increase or target rate of return percentage. The earned rate of return is developed within the "G+T+D+R+M" tab.

Within the "G+T+D+R+M" tab, the overall earned rate of return is developed at the top summary level section by dividing the overall Operating Revenue for Return by the Total Rate Base. See cell H61 within the generic model which also has the named cell value of "ActualROR". Total rate base comprises the allocated rate base additions and deductions. Operating revenues are determined by subtracting allocated expenses from revenues. Revenues for each rate class are derived from the actual retail revenue and allocated portions of other revenue types such as Sales for Resale and Other Electric Operating Revenues.

The overall earned rate of return which is developed within the "G+T+D+R+M" tab influences revenue requirements at the earned level which influences the cost of service allocation factors, which in turn influence the "G+T+D+R+M" tab. The setting of an overall rate of return across the functions and sub-functions is therefore an iterative process which is developed as the unbundled macro progresses.

Along with overall earned and target rates of return, individual rates of return are developed for each rate class within the "G+T+D+R+M" tab based upon the same method. Since revenues, rate base, and expense vary by rate class, each rate class is shown to be achieving a different rate of return. See cells I61 through U61 on the "G+T+D+R+M" tab of the generic model. These individual rates of return are used within the "Hot Sheet" tab to develop operating revenues by function and sub-function. These operating revenues within the "Hot Sheet" tab are then used in each of the unbundled tabs to show the increase or decrease in revenue required to bring each class to the overall average rate of return. This is done, because retail revenue is not available by function and the various functional output sheets need to show this detail.

Revenue requirements for all classes and functions are developed upon an overall jurisdictional return on rate base. The "G+T+D+R+M" tab and the output sheets ("Generation", "Transmission , "Distribution", etc.) show results at the earned level and the summary sheets ("Function Summary", "Class Summary", "Generation Summary", "Transmission Summary", etc.) show results both at the earned and target levels. The "Summary Table" tab shows how each rate class's actual return on rate base from present revenue levels varies from the overall jurisdictional return on rate base at both earned and target levels. See the diagram below for an illustration of how each rate of return fits into the cost of service model.

Figure 6. Rates of Return in the Cost of Service Study



7. Changing and Customizing the Cost of Service Model

7.1. How to Change Demand/Energy Percentages

To change the demand and energy percentages, only the F10 (cell D9) demand percentage on the "Input" tab needs to be changed. The energy percentage will automatically change after the demand percentage has been changed. By making the changes on the "Input" tab, the calculations will flow through the entire model. To complete calculations, hit F9 after each percentage change and re-calculate the entire model. See below for an illustration.

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13		Factor 86:	Demand 🔀 =	0%										
14		Factor 87:	Demand % =	75%										
10		Factor 88:	Demand % =	152				ate	Undate	Calc	ulate	Target	Print	
17		Factor 90:	Demand % =	0%	Effect			acc	Obdate	Zaic	alace [Target	Dunc	
18		Factor 91:	Demand % =	0%	Effect			epc.			Entire	Model		N =
19		Factor 92:	Demand % =	0%	Feder			~	LA ED		Endre	model		- 1 - D
20		Factor 93:	Demand 🛪 =	0%	State			Ť	, <u>, , , , , , , , , , , , , , , , , , </u>					
21		Factor 94:	Demand 🛪 =	0%	Net to						Gener	ation	- Total	+.0 .00 r
22		Factor 95:	Demand % =	75%	CCS F			r H			action		1000	

7.2. How To Change System Coincidental Peak Months

To include or exclude a month, changes are made on the "Input" sheet. See below for an illustration.

1 1						INPUTS							
2	1						-						
3	1												
4	1	Prepared By :	Rocky Moun	tain Power	Allocation / Calcu	lation Opti	ions:						
5	1	Jurisdiction :	State of Utah										
6	1	Test Period :	12 Months Er	nded Dec 2020	Jurisdictional					Target			
7	1	Method :	Monthly Vgt	Factors	Functional Factors -	MSPFacto	a 🔹			Rate of Re	turn		
8	1												
9	1	Factor 10:	Demand % =	75%	Distribution				Percent In	crease =	7.01%		
10		Factor 11:	Demand % =	50%	Functional Factors -	MSPFactor	v 🗾		Dollar Inci	ease =	\$ 60,000,000		
11													
12		Factor 85:	Demand % =	75%	COS Factors - Monthly	WatFactors	-						
13		Factor 86:	Demand % =	0%			_						
14		Factor 87:	Demand % =	75%									
15		Factor 88:	Demand 🛪 =	75%									
16		Factor 89:	Demand % =	0%									
17		Factor 90:	Demand % =	0%	Effective Tot Tax %	=	41.50%			Capital	Embedded	¥eighted	
18		Factor 91:	Demand % =	0%	Effective Fed Tax %	=	31.50%			Structure	Costs	Costs	
19		Factor 92:	Demand % =	0%	Federal Tax Bate	=	35.00%		Debt	65.00%	5.00%	3.250%	
20		Factor 93:	Demand % =	0%	State Tax Bate	=	10.00%		Preferred	0.00%	10.00%	0.000%	
21		Factor 94:	Demand % =	0%	Net to Gross Factor	=	58.35%		Common	35.00%	12.00%	4.200%	
22		Factor 95:	Demand % =	75%	CCS Regulatory Exp	=	\$0			100.00%		7.450%	
23		Factor 96:	Demand % =	0%									
24		Factor 134:	OverHead %	35%									
25						Coincid	ent Peak	Data I	Pacificorp S	ystem Pea	Distrib	ition Peak I	Data
26		Demand	Sec =	1.10000				1-inc					Substation
27		Loss Factors:	Pri =	1.09000	Month/Yr	Date	Time	0-ezc	W	Z	Date	Time	Peaks
28			Trn =	1.06000	Jan-20	1	09:00	1	8,600	86.87%	19	12:00	15
29	-				Feb-20	3	09:00		8,300	83.84%	4	14:00	5
30	-	Energy	Sec =	1.10000	Mar-20	17	09:00		7,900	79.80%	2	12:00	
31	-	Loss Factors:	Pri =	1.07000	Apr-20		09:00		7,500	75.76%	11	11:00	
32	-		I I I I	1.05000	May-20	25	10:00		8,200	82.83%	23	10:00	É
33	-	Dict Plant - enlit-	Sec	Pri	Jun-20 Jul-20	17	10:00		3,200	52.93% 100.00%	17	16:00	120
35	-	Acet 364 -	0.0500	0 9500	Aug.20		17-00		9,700	97 98 2	12	16-00	40
36		Acct 365 -	0.1500	0.8500	Sep-20	7	17:00		8,800	88.897	11	16:00	10
37	1	Acct 366 =	0.4000	0.6000	Oct-20	31	09:00	1	7,400	74.75%	22	14:00	5
38	1	Acct 367 =	0.3000	0.7000	Nov-20	22	19:00	1	8,300	83.84%	14	12:00	5
39		Acct 368 =	1.0000		Dec-20	15	19:00	1	8,900	89.90%	3	12:00	15

Make changes in the highlighted area (I28:I39) above. Enter a zero (0) to exclude the month or enter a one (1) to include a month. After making the changes, hit F9 and recalculate the entire model.

7.3. How To Change Cost Allocation Factors

To make changes to the cost allocation factors, changes are completed on the "COS Allocation Options" tab. See below.

M	licroso	oft Ex	cel - Gen	neric Cl	DS Model.	xls						
	Eile	<u>E</u> dit	<u>V</u> iew	Insert	F <u>o</u> rmat	<u>T</u> ools	<u>D</u> ata	<u>W</u> indow	<u>H</u> elp	COS MENU -	> <u>L</u> oca	ate <u>U</u> pdat
- 10	122	3		2	(1) [1]	88 8		6.) 😅 🛯		a 🖪	₩S 1
- *	10	- I		*			-					* *·
								1	Arial		• 12 •	BI
	A1		-	f _x								
		A	В			С		E	F	н	J	L
1]						COS AL	LOCATION	OPTIONS	
2			_									
3								Rolled-In	MSP	Mo Vqt Fa	Option-1	Option-2
4								Uption	C	- C	IUnderined	Undermed
6								Ŭ	Ŭ			- V
7	FE	RC						COS	COS	COS	COS	COS
8	AC	CT			DESCR	IPTION		Factor	Factor	Factor	Factor	Factor
9	440		Residen	tial Sale	s			×	•	· ·	· ·	· ·
11	442		Conner	cial \$ la	ductrial Sal	**						
12				Inte	rruptible D	emand		F10	F10	F10	F10	F10
13				Inte	rruptible E	erq y		F30	F30	F30	F30	F30
14										-		
15			D-LE- 0									
10	***		r ablic s	treet &	uide#94 rid	acied		<u>^</u>	<u> </u>	1 °	<u>^</u>	- 1
			-									

Depending on model type, rolled-in or MSP, change the factor in columns E and F respectively. For a complete list of factors, see Appendix. For convenience, two optional sets of cost of service factors located on columns J and L have been provided. These two options along with rolled-in and MSP can be toggled between on the "Inputs" tab. See below.

	Ε	F		G	Н	I
				INPUTS		
						_
		Allocation	/ Calc	ulation Opti	ons:	
020		Jurisdictional				
		Functional Fact	tors -	MSP Factor	u 🔻	
	·			· ·		
75%	1	Distribution				
50%		Functional Fact	tors -	MSP Factor	· •	
	'					
75%	1	COS Eactors				
0.2		0001 00015	Monthly	Watfactors	•	
75.2			Rolled-II MSR Fax	n Factors -tore		
75%			Monthly	WatFactors		1
197			Option1			
07		Effective Tet T	Option2	-	41 50%	1
		Freenoe Incl.	AI /.		41 BUZ	

7.4. How to Change the Target Rate of Return

The target rate of return can be changed either by entering a percentage or a dollar amount. See below for illustration.

⊆alculate	<u>T</u> arget	Print		Type a qu
» 10 -	Sele	ect Target Rate o	of Return	;0 ₊ (
2= 1=CE	Sele	ect Target Dollar	Increase	0
n on •0	Inp	ut Class Target R	levenue	. •
J	К	L	M	N

Choose either target rate of return or dollar increase from the menu.

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If percent is chosen, enter the number as a decimal.



If the dollar amount is chosen, enter the amount in whole dollars.

acti	Input				? >	4
ecti dera	Enter: Target	: Dollar Incre	ease (\$'s)			J
t to						1
_	60000000					
N		[ОК		Cancel	
	Feb-20 Mar-20	3 17	09:00 09:00	1	8,300 7,900	8: 7:

Once the target rate of return has been entered, changes can be seen on the "Input" tab and on the "Summary Table" tab.

By going to the macros under Modules – Menu_Options, and scrolling to the bottom of the programming language, the code can be followed for the macro that sets the rate of return.



If a target percent is selected, the input that the user puts into the box is placed onto cell AA13 on the "Inputs" tab. The "Given_Target_ROR" (cells AA13:AA14 on the "Inputs" tab) named cell range is then pasted onto the "Given_Paste" named cell range (cells L9:L10 on the "Inputs" tab). The macro then re-calculates.

If a target dollar amount is selected, the input that the user puts into the box is placed onto cell AA17 on the "Inputs" tab. The "Given_Target" (cells AA16:AA17 on the "Inputs" tab) named cell range is then pasted onto the "Given_Paste" named cell range (cells L9:L10 on the "Inputs" tab). The macro then re-calculates.

8. Scenarios

Scenarios have been added to this manual to demonstrate how specific, somewhat realistic scenarios could be developed within the cost of service model. Please note that these scenarios do not constitute an endorsement of any methodology but are rather intended to inform users of how they might modify the model.

8.1. Adding another row to the "Hot Sheet"

Suppose there was additional information concerning account 547 and the user wanted to create an additional sub-category within the account. Within the generic cost of service model, there is roughly \$200 million dollars within this account. Suppose that \$10 million of this natural gas fuel was burned during the hours of the 12 monthly system coincident peaks, and there is a proposal to allocate this amount of the \$200 million to factor 12. Below are the instructions for developing such a scenario:

- 1. Before any scenario is developed, save the Generic COS Model as a different file so that the scenario that is developed can be compared to the original.
- 2. This scenario's change relates to a fuel expense account, so it should be functionalized 100% to generation and classified 100% to generation-energy-related. No change will therefore need to be made to the "Func Study" tab.
- 3. Since this change deals with allocation to the rate classes, the primary change will be made to the "Hot Sheet" tab. Changes to other tabs will be mostly to accommodate the change made in the "Hot Sheet" tab. Within the "Hot Sheet" tab go to account 547 (rows 331 through 333). Insert a new row above 333 by highlighting the row and going to Insert: Cells on the drop-down menu.

M	🔀 Microsoft Excel - Generic COS Model - Scen 1 - new row on Hot Sheet.xls															
8	<u>F</u> ile	Ēd	lit	⊻iew	Inse	ert F <u>o</u> rmat	To	ols	<u>D</u> ata	<u>W</u> ii	ndow	Help	р	COS MENU>	Γo	cate
	A33	3		•		C <u>e</u> lls										
	A	в	С	D		Worksheet					F		G	Н		
328	328															
329	329		546	Ope		Name	•	er	ing		= F1	0		379,1	71	
330	330		_		sta-	_										
331	331		547	Fue		Comment					F93	2		190,126,0	52	
332	332			S		×		ion	Turbin	ie	F9	3		9,708,2	32	
333	333			1	Fotal	547		-						199,834,2	84	
334	334															
335	335		548	Ger	nerat	ion Expense					F1	0		5,266,2	59	

4. Since the "Hot Sheet" unbundles results by class for all functions and subfunctions, the new row will only contain \$10 million when the "Hot Sheet" is unbundling generation. Because of this, a formula is needed that identifies the function or sub-function and returns the value of \$10 million if it is either Generation or Generation-Energy Related. On cell H333, type in "=IF(Function="gen",IF(OR(classification="total",classification="energy"),10 000000,0),0)"

N 12	🗙 Microsoft Excel - Generic COS Model - Scen 1 - new row on Hot Sheet.xls																
8	<u>F</u> ile	Ēc	lit <u>v</u>	liew	Insert	F <u>o</u> rmat	<u>T</u> ools	<u>D</u> ata	<u>W</u> in	idow	<u>H</u> elp	COS MENU>	Lo	cate ļ	Jpdate	⊆alo	ulate <u>I</u>
	EXAC	T		- X	🗸 🖌 fx	=if(functi	on="ge	n",if(or <mark>(</mark> c	las	sificati	on="t	otal",classificati	ion=	"energ	y"),1000	0000	0,0),0)
	A	в	С	D		E				F	G	Н			I		,
331	331		547	Fue	el					F92		190,126,0	52		57,827,2	271	56
332	332			S	Simple C	ycle Com	bustion	Turbine	;	F93		9,708,2	32		2,914,	888	2
333												ation="total",c	lass				
334	334				Total 54	7						199,834,2	84		60,742,	159	59
335	335																

Essentially, this formula reads that if the "function" named range equals "gen" and the "classification" named range equals either "total" or "energy", return the value of \$10 million, otherwise return zero. Both of these named ranges are on the "Func Study" tab. They are changed to each function and sub-function as the calculate macro runs through each iteration.

- 5. To make sure that the formula is doing what it is intended to do, run the Generation Total macro by selecting Calculate: Generation Total. After the macro runs, go to cell H333 to ensure that \$10 million is shown. Repeat the process with Generation Energy and with Generation Demand. Cell H333 will show \$10 million on Generation Energy, but zero on Generation Demand.
- 6. Label the newly created row within the "Hot Sheet" tab the following: "Fuel at the Time of System Peak" on cell E333.
- 7. Now an allocation factor can be assigned to this new line item. Type "F12" onto cell F333 as shown below.

M	1icros	oft	Ежс	el - (Generic C	:05 Model	- Scen	1 - new	row	on Ho	ot Sh	neet
8	Eile	Ē	dit	⊻iev	/ <u>I</u> nsert	F <u>o</u> rmat	<u>T</u> ools	<u>D</u> ata	<u>W</u> ir	ndow	Hel	р
				•	🗙 🧹 fx	F12						
	Α	в	C	D		1	1			F		G
328	328											
329	329		546	; 0	peration	Super & E	ngineer	ing		F3	0	
330	330				1	-						
331	331		547	/ Fr	uel					F93	2	
332	332				Simple (Cycle Com	bustion	Turbin	e	F9	3	
333					Fuel at t	he Time of	f Syster	n Peak		F1	2	Į
334	334				Total 54	17						ľΤ
335	335											
336	336		548	G	eneratio	n Expense				F3	0	

8. The formulas which look up this allocation factor and assign costs to the customer classes need to be copied down. Highlight cells I332 through V332. Select Edit: Copy.

M	1icros	oft Exc	el - Ge	eneric CC)5 Mode	- Scen 1	l - new r	ow on	Hot Sheet.	xls							
	Eile	<u>E</u> dit	<u>V</u> iew	Insert	F <u>o</u> rmat	<u>T</u> ools	<u>D</u> ata	<u>W</u> indow	v <u>H</u> elp (cos	MENU> Loca	ite <u>U</u> po	late	<u>C</u> alculate <u>T</u> arg	get <u>P</u> rint		Type a questi
			•	fx	=VLOO	KUP(\$F	332,Fac	tSum,	'COS Fact	or '	Table'!F\$135,FA	LSE)*\$H	1332				
		L		M		N	0		P		Q	R		S	Т	U	V
328																	
329		416		15,39	6	799		27	į	53	5,770		50	1,013	3,672	2,532	-
330																	
331		832,788		30,843,61	0 1	,543,811	53	3,145	106,29	91	11,581,273		98,867	2,029,185	7,342,387	5,072,962	-
332		42,784	L .	1,584,56	5	83,183		2,730	5,46	61	592,109		5,038	104,248	378,095	260,619	<u>.</u> .
333																	18 x 13C
334		875,572		32,428,17	5 1	,626,994	54	5,876	111,75	51	12,173,382	10	03,905	2,133,433	7,720,482	5,333,581	
335																	

M	1icros	oft E	kcel - Gener	ic C(05 Mode	l - Scen 1	- new	row on	Hot Shee	t.xls	;								
8	Eile	Edit	<u>V</u> iew <u>I</u> ∩:	sert	F <u>o</u> rmat	<u>T</u> ools	Data	<u>W</u> indov	<u>H</u> elp	COS	5 MENU>	Locate	: <u>U</u> pdate	⊆alculate	<u>T</u> arge	t <u>P</u> rint			Туре
	1332	s)	<u>U</u> ndo Typing	F12	' in F333	Ctrl+Z	2,Fa	ictSum,	COS Fa	ctor	Table!F\$13	35,FALS	SE)*\$H332						
		U	<u>R</u> epeat Mac	ros		Ctrl+Y	(0	Р		Q		R	S		Т		U	
328		¥	Cut			Chd+X	+	27		53		5.770	5	0	1.013	3.6	72	2.5	32
330		00	-			Carra						.,			.,	-,-			
331		43	Cobh			Ctrl+C		53,145	106	291	11,58	1,273	98,86	7 2,02	9,185	7,342,3	87	5,072,9	62
332			Office Clip <u>b</u> o	bard.				2,730	5.	,461	59	2,109	5,03	8 10	4,248	378,0	95	260,6	19
334		A	Paste			Chrl+V		55.876	111	751	12.17	3.382	103.90	5 2.13	3.433	7.720.4	82	5,333.5	81

9. Highlight cell I333 and select Edit: Paste.

N	1icros	oft E	kcel - Ge	eneric C()5 Model	- Scen	1 - new	row on H	ot Sh
8	Eile	Edit	View	Insert	F <u>o</u> rmat	<u>T</u> ools	Data	<u>W</u> indow	Hel
	1333	s)	<u>U</u> ndo Ty	ping 'F12	' in F333	Ctrl+Z			
328		C ⁴	<u>R</u> edo Pa	iste		Ctrl+Y	J		K
329		a	<u>P</u> aste			Ctrl+V	28	,040	
330			Paste S	pecial			6.133	.811	16.66

- 10. The formulas are now copied down so that the \$10 million value is being allocated on this row to the customer classes based upon factor 12. Press F9 to re-calculate the model to see the new values calculated.
- 11. To ensure that allocation factor options within the "COS Allocation Options" tab are consistent with those in the "Hot Sheet" tab, insert a row on the "COS Allocation Options" tab above row 216.



12. On this new row, type F12 onto cell E216 and copy and paste onto cells F216 through L216.

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Eile	<u>E</u> dit	<u>V</u> iew	Insert	F <u>o</u> rma	at <u>T</u> ools	; <u>D</u> ata	<u>W</u> indow	<u>H</u> elp (COS MENU	·> Lo
	F216	-		<i>f</i> ≈ F10	2					
BG	eneric (COS Mo	del - Sc	en 1 - I	new row	on Hot S	heet.xls			
		С			E	F	н	J	L	
211 212 213	Super & I	Engineeri	ing		F30	F30	F30	F30	F30	MVH (
214					F30	F30	F92	F30	F30	MVH (
215	SSECT -	Simple	Cycle Co	nbusti	F30	F32	F93	F30	F30	
210					F 12	<u> </u>	<u> </u>	<u> </u>	<u> </u>	
218										Ê.
213	Expense				F30	F30	F30	F30	F30	MAH (
220	SSGCT	- Simple	Cycle Co	nbusti	F30	F32	F30	F30	F30	
	► HK	Func	Dist Facto	or Table	λ COS	 Allocatio	n Options	COS Fa	actor Table ,	(Dema

13. On the "Hot Sheet" tab, the \$10 million value needs to be deducted from the total \$200 million already in the account. For simplicity, only row 331 which has about a \$190 million value will subtract this amount. Go to cell H331 and type in "-H33" at the end of the formula.

M	icr	osoft	Ежо	:el							
Eile		<u>E</u> dit	⊻ie	w <u>I</u> nsert	F <u>o</u> rmat	Tools	<u>D</u> ata	<u>W</u> indow	Help	COS MENU>	Lo
	EX	ACT		- × v	fx =SUN	M(UAcc	:t547 Se	e)-H333			
20	ien	ieric (:05	Model - So	:en 1 - ne	w row o	n Hot S	heet.xls			
	в	С	D		E			F	G	Н	
328											
329		546	0	peration Su	iper & Eng	jineerin	g	F30		94,793	
330					-						
331		547	Fu	iel				F92		ct547Se)-H333	<u> </u>
332				Simple Cy	cle Combu	ustion T	urbine	F93		9,708,232	
333				Fuel at the	Time of S	System	Peak	F12		10,000,000	
334				Total 547						199,834,284	1
335											
H -	• •	E M K	Re	tail (Misc)	Hot Shee	et 🏑 DAN	1 Downla	ad / Fund	Study	/ 🗶 Func Allocation	i Opl

14. The total account 547 line on row 334 needs to be changed so that the totals pick up the new row that has been added. To do this, go to cell H334. Change the formula so that it picks up cell H333.

M	icrosoft	Excel									
Eile	<u>E</u> dit	⊻iew	Insert	F <u>o</u> rmat	<u>T</u> ools	<u>D</u> ata	Wi	ndow	Help	COSI	МE
	EXACT	-	$\times \checkmark$	<i>f</i> ₂ =SUN	и(<mark>НЗЗ</mark> 1	1:H3 <mark>3</mark> 3)					
	ieneric	COS Ma	odel - Sc	en 1 SUN	4(numl	per1, [nu	ımbe	r2],)		
			E			F	G		н		Γ
329	peration	n Super	& Engin	eering		F30			9	94,793	
330											
331	iel					F92		T	180,12	26,052	I
332	Simple	Cycle C	Combus	tion Turbi	ine	F93			9,70	08,232	
333	Fuel at	the Tim	ne of Sys	stem Peal	ĸ	F12		<u> </u>	10,00	00,000	L
334	Total 5	47						=SUM	(H331:F	333)	L_
335											Γ_
336	eneratio	on Expe	nse			F30	<u> </u>	1 -	1.31	16,565	
llie e	с⊾ыµ	(Retail	(Misc)	Hot Shee	et 🔬 JA	M Downlo	ad	<u></u> ζ Fun	c Study	_/Fu	nc

15. Copy cell H334 and paste onto cells I334 through U334. Hit F9 and make sure that error check on V334 is zero.

16. The "Hot Sheet" is now set up so that when Generation or Generation-Energy Related are being calculated; \$10 million will be separated from the total for account 547 and allocated to the rate classes based upon factor 12. Since a new row has been added, the "Generation", "Transmission", "Distribution", "Retail" and "Misc." tabs are not in sync with the "Hot Sheet". These tabs will be aggregated incorrectly within the "G+T+D+R+M" tab and cause errors in the model. To fix this, go to the "Generation", "Transmission", "Distribution", "Distribution", "Retail" and "Misc." tabs and insert a row above row 333 on each. No other changes are necessary on these tabs, since the unbundled macro will copy and paste the correct values and formatting.

🔀 Mi	icroso	oft	Excel									
Eile	<u>E</u> di	it	⊻iew	Ins	ert	Format	<u>T</u> oc	ols	<u>D</u> ata	<u>W</u> indow	Help	COS ME
	A333	}	-		Cg	ells -						
🖳 G	ieneri	ic C	05 Ma		W	orksheet		4 O	n Hot S	heet.xls		
	A	в	С	1					E			F
328	328		1	<u>IN</u> a	ame	•						
329	329	546	1	Co	mment		En	gineeri	ing		F10	
330	330			_		_×						
331	331		547	T	uer	•						F92
332	332				Si	<u>mple Cyc</u>	le Co	mt	oustion	Turbine		F93
333	333				Τ	otal 547						
334	334											
335	335		548	0	Sen	eration Ex	ten	se	,	,		F10
• •	} →	٩K	Mise S	Summ	ary	(G+T+	D+R-	+M	/ Gene	eration /	Transmi	ssion /

17. Also go to the "G+T+D+R+M" tab and insert a row above line 333.

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333	333					Total	547					
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- 18. On the "G+T+D+R+M" tab, copy cells H332 through V332. Go to cell H333 and paste.
- 19. Rename cells E333 and F333 respectively, "Fuel at the Time of System Peak" and "F12".
- 20. Re-calculate the model to see the results. Select Calculate: Entire Model.

COS MENU -	> Locate	Update	Calculate Target Print
			Entire Model
			Generation - Total
F	G	Н	Distribution - Total
			Retail - Total
F10		379,1	Generation - Demand
F92		180,126,0	Generation - Epergy
F93 F12		9,708,2 10.000.0	€ 101 Generation 2 Energy 197
		199.834.2	84 60.114.801 60.638.547
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21. Compare the "Summary Table" from the new scenario file with the "Summary Table" from the original generic model. By comparing the target change in revenues for the residential class on cell M66 on each, the change results in a benefit to the residential class of roughly \$0.6 million. Also, the change results in a \$0.5 million benefit to Schedule 9.

8.2. Adding a new allocation factor

Suppose there is additional information and account 547 should be allocated on a new factor that is based upon the price of natural gas at different times coincident with MWH sales at those times. Under such circumstances, this information could be used to development a new allocation factor to apportion account 547 to the classes. Below are the instructions for developing such a scenario:

- 1. As with the first scenario, save the new scenario as a separate file so that the base case can be compared to the original.
- 2. Within the model, insert a new worksheet by selecting Insert: Worksheet.



3. Rename the new sheet to something such as "Gas Price Weighted MWH" by double clicking on the tab at the bottom.

34 I → H Gas Price Weighted MWH / Inputs /

4. Drag the tab over next to the "Energy Factor" tab, so that it is in the same area as the model's input sheets.

34									.						
H 4	()))	N C De	mand Factors	_/	Dist. Fac	tors /	(Ener	gy Factor	$\lambda \epsilon$	ias Price W	eighted MW	<u>/н /</u>	Cust Fa	ctors /	<u>(a</u>

5. Within the "Energy Factor" tab, copy cells A1 through P14.

M	1icros	oft Ex	cel - Ge	neric CC)S Model -	Scen 2	- new -	allocatio	on factor	.xls			
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6. Go to the new "Gas Price Weighted MWH" sheet and select cell A1. Select Edit: Paste.

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10			<u>A</u>		<u>B</u>	<u>C</u>		D	<u>E</u>	E	<u>G</u>	H	Ī	5
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14)escri	ptior	Sch 1	Sch 6	S	ch 8	ich. 7,11,	,1. Sch 9	Sch 10	Sch 12	Sch 12	Sch

7. Now headings are shown for each rate class within the cost of service study and a new allocation factor or factors can be developed. The column widths can be widened so that each rate schedule can be seen. Also, cell B1 can be changed to read "Gas Weighted Energy Factors (F97)" and cell B7 can be changed to read "Gas Weighted Energy Factors". Type "FACTOR 97" on cell B15.

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1.10	1													

8. For simplicity, MWH sales by time period and natural gas prices used in this example are entirely fictitious. Weightings can be developed in separate worksheet or manually entered into the model like this example. Enter the following fictitious percentages for each rate schedule. Starting in cell C15 and ending on cell O15, enter the following values: 0.45, 0.2999, 0.05, 0, 0.03, .01, 0, 0, 0.1, 0.0001, 0.02, 0.02, 0.02. These cells can be formatted into percentages for easier viewing.

	K Microsoft Excel - Generic COS Model - Scen 2 - new allocation factor.xls														
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11															
12		General	General	Street & Area	General		Traffic	Outdoor	General	Mobile					
13	Residential	Large Dist.	Large Dist.	Lighting	Trans	Irrigation	Signals	Lighting	Small Dist.	Home Park	Industrial	Industrial	Industrial		
14	Sch 1	Sch 6	Sch 8	Sch. 7,11,12	Sch 9	Sch 10	Sch 12	Sch 12	Sch 23	Sch 25	Cust A	Cust B	Cust C	Total	
15	45.00%	29.99%	5.00%	0.00%	3.00%	1.00%	0.00%	0.00%	10.00%	0.01%	2.00%	2.00%	2.00%		
16															

9. On cell P15, enter "=SUM(C15:O15)". The end result should be 100%.

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10	Ĺ	M	N	<u>0</u>					
11									
12									
13	Industrial	Industrial	Industrial						
14	Cust A	Cust B	Cust C	Total					
15	2.00%	2.00%	2.00%	100.00%					
40									

Now a set of factor values for each rate class is stored on this sheet. Developing this new sheet is not a necessary step to developing a new allocation factor. The Rocky Mountain Power Cost of Service Instruction Manual 2009 Version 2 August 2009 40 factors themselves could be directly input into the "COS Factor Table" sheet. However, storing the back-up for the derivation of allocation factors in the cost of service study is a good idea and has therefore been presented in these instructions. A fully developed scenario would have back-up calculations on this sheet instead of fabricated percentages.

10. In the "COS Factor Table" sheet, highlight row 57 and select Insert: Cells from the menu.

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	A			Name						
55	F95	Firm Wh		Mamo	,					
56	F96	Non-Firm	1	Comment		e				
57	F101	Rate Bas		×						
58	F101G	Generati	on R	ate Base						
59	F101T	Transmission Rate Base								

11. On cell A57, enter in "F97". On cell B57, enter "Gas Price Weighted Energy". On cell F57, enter "='Gas Price Weighted MWH'!C15".

M	Microsoft Excel - Generic COS Model - Scen 2 - new allocation factor.xls															
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	F57	7	•	fx	='Gas Pr	rice We	ighted	MWH!C	15							
	A					В					С	D	E	F		G
55	F9{	5 Fi	Firm Wheeling - Utah Share											0.277	778	0.3
56	F96	6 N	Non-Firm Wheeling - Utah Share											0.311	152	0.2
57	F97	7 G	Gas Price Weighted Energy											0.450	000	
	E 4 6													0.007	- 00 Y	

12. Copy cell F57 and paste into cells G57 through R57. Hit F9. Copy cell S56 and paste into cell S57. Hit F9. This cell will equal 1.00000.

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	S57	7	•	f _x	=ROU	JND(SUM(F57:R5	7),6)						
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55		0.0002	1	0.0677	9	0.00048		0.00994		0.02353	0.	02486	1.0000	0
56		0.0005	5	0.0604	4	0.00053		0.01049		0.03778	0.	02622	1.0000	0
57		-		0.1000	0	0.00010		0.02000		0.02000	0.	02000	1.0000	0
58		0.0002	0	0.0719	4	0.00050		0.00630		0.01399	0.	01580	1.0000	0
59		0.0002	5	0.0632	1	0.00045		0.00896		0.02052	0.	02240	1.0000	0

13. Since this allocation factor was inserted between other allocation factors, no named ranges will need to be updated. If a factor were inserted at the beginning or end of the allocation factors, the "FactSum" named range would need to be modified.

14. Go to account 547 within the "Hot Sheet" tab. Enter "F97" in cells F331 and F332.

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333	333				Tota	nl 547						Ϊ	
334	334												

All of account 547 should now be using the newly created factor 97 to apportion itself to the rate classes. Functionalization does not need to be altered, because 547 will still be functionalized entirely to generation.

15. Select Calculate: Generation from the menu so that the generation function's calculations can be viewed within the "Hot Sheet" tab.

kls		
COS MENU> Locate Upo	date <u>C</u> alculate <u>T</u> arget <u>P</u> rint	
Σ - 2 Ι ΖΙ 🛍 🛷 10	10% Entire Model	\$
	Generation - Total	
F G H	Distribution - Total	
	Retail - Total	_
F10	- Generation - Demand	
E97	Generation - Energy	
F97	* *	_

- 16. Go to rows 331 through 333 of the "Hot Sheet" tab. Confirm that factor 97 is being applied to account 547.
- 17. Select Calculate: Entire Model to run the scenario through all functions.
- 18. Compare the "Summary Table" from the new scenario file with the "Summary Table" from the original generic model. By comparing the target change in revenues for the residential class on cell M66 on each, the change results in a detriment to the residential class of roughly \$29.2 million. Also, the change results in a \$26.5 million benefit to Schedule 9.

9. Appendix

 Table 1. Source location of cost of service factors.

Source Location	Factor	Factor Description
"Demand Factors"	F10	Coincident Peak, System

tab		
	F11	Coincident Peak. System
	F12	Coincident Peak, System
	F13	Seasonal System Capacity Combustion Turbine
	F14	Seasonal System Generation Combustion Turbine
	F15	Seasonal System Capacity Cholla
	F16	Seasonal System Generation Cholla
	F17	Seasonal System Capacity Purchase
	F18	Seasonal System Generation Contract
"Dist. Factors" tab	F20	12 Weighted Distribution Peaks
	F21	Transformers - NCP
	F22	Secondary Lines - NCP
"Energy Factor" tab	F30	MWH @ Input
""	F32	Seasonal System Energy Combustion Turbine
	F33	Seasonal System Energy Cholla
	F34	Seasonal System Energy Contracts
"Cust Factors" tab	F40	Average Customers
	F41	Weighted Customers Acct 902
	F42	Weighted Customers Acct 903
	F43	Residential Split
	F44	Commercial Split
	F45	Industrial / Irrigation Split
	F46	Liahting / OSPA Split
	F47	Wtd Customers Acct 902 - irrigation
	F48	Wtd Customers Acct 903 - irrigation
"Cust Advances" tab	F50	Contribution in Aid of Construction
	F51	Security Deposits
"MetersServices"		
tab	F60	Meters
	F70	Services
"Uncollectibles" tab	F80	Uncollectables
"NPC Factors" tab	F85	Firm Sales - Utah Share
	F86	Non Firm Sales - Utah Share
	F87	Firm Purchases (Non-Seasonal) - Utah Share
	F88	Seasonal Purchases - Utah Share
	F89	Non firm Purchases - Utah Share
	F90	Coal (Non-Seasonal) - Utah Share
	F91	Seasonal Cholla Coal - Utah Share
	F92	Gas (Non-Seasonal) - Utah Share
	F93	Seasonal CT Gas - Utah Share
	F94	Other Generation - Utah Share
	F95	Firm Wheeling - Utah Share
	F96	Non-Firm Wheeling - Utah Share
"G+T+D+R+M" tab	F101	Rate Base
"Generation" tab	F101G	Generation Rate Base
"Transmission" tab	F101T	Transmission Rate Base
Source Location	Factor	Factor Description
"Distribution" tab "Retail" tab	F101D	Distribution Rate Base Retail Rate Base

	F101R	
"Misc" tab "G+T+D+R+M" tab	F101M F102	Misc Rate Base SGP - System Gross Plant
"Generation" tab	F102G	SGGP - System Gross Generation Plant
"Transmission" tab	F102T	SGTP - System Gross Transmission Plant
"Distribution" tab	F102D	SGDP - System Gross Distribution Plant
"Retail" tab	F102R	SGTP - System Gross Retail Plant
"Misc" tab "G+T+D+R+M" tab ""	F102M F103 F104	SGDP - System Gross Misc Plant SGP - System Gross Plant (Regulatory fees) SNP - System Net Plant
"Generation" tab	F104G	SNP - System Net Generation Plant
"Transmission" tab	F104T	SNP - System Net Transmission Plant
"Distribution" tab	F104D	SNP - System Net Distribution Plant
"Retail" tab	F104R	SNP - System Net Retail Plant
"Misc" tab "G+T+D+R+M" tab	F104M F105	SNP - System Net Misc Plant STP - System Prod & Trans Plant
"Generation" tab	F105G	SGGP - System Gross Generation Plant
"Transmission" tab	F105T	SGTP - System Gross Transmission Plant
"Distribution" tab	F105D	SGDP - System Gross Distribution Plant
	F105R	SGTP - System Gross Retail Plant
"" "G+T+D+R+M" tab ""	F105M F106 F107	SGDP - System Gross Misc Plant STP - System Transmission Plant STP - System Trans & Dist Plant
"Generation" tab	F107G	SGGP - System Gross Generation Plant
"Transmission" tab	F107T	SGTP - System Gross Transmission Plant
"Distribution" tab	F107D	SGDP - System Gross Distribution Plant
	F107R	SGTP - System Gross Retail Plant
	F107M	SGDP - System Gross Misc Plant
Source Location	Factor	Factor Description
"G+T+D+R+M" tab	F108	SGP - System General Plant
"Generation" tab	F108G	SGGP - System Gen Generation Plant

"Transmission" tabF108TSGTP - System Gen Transmission Plant
SGDP - System Gen Distribution PlantRocky Mountain Power Cost of Service Instruction Manual 2009Version 2August 200944

	F108D	
"Retail" tab	F108R	SGTP - System Gen Retail Plant
"Misc" tab	F108M	SGDP - System Gen Misc Plant
"G+T+D+R+M" tab	F110	SIP - System Intangible Plant
	F118	Account 360
	F119	Account 361
	F120	Account 362
	F121	Account 364
	F122	Account 365
	F123	Account 366
	F124	Account 367
	F125	Account 368
	F126	Account 369
""	F127	Account 370
	F128	Account 371
""	F129	Account 372
	F130	Account 373
""	F131	Account 581 thru 587 & 591 thru 597
""	F132	Account 364 + 365
""	F133	Account 366 + 367
	F134	Account 364 + 365 + 369 (OH)
""	F135	Account 366 + 367 + 369 (UG)
	F136	Account $902 + 903 + 904$
	F137	Total O & M Expense
"Generation" tab	F137G	Generation O & M Exp
"Transmission" tab	F137T	Transmission O & M Exp
"Distribution" tab	F137D	Distribution O & M Exp
"Retail" tab	F137R	Retail O & M Exp (Customer)
	-	
	F137M	Misc & Customer O & M Exp
"G+I+D+R+M" tab	F138	GID O&M Exp (less fuel, purchased p & wheeling)
"Generation" tab	F138G	Generation O & M Exp (less fuel & purchased power)
"Transmission" tab	F138T	Transmission O & M Exp - (less wheeling exp)
"Distribution" tab	F138D	Distribution O & M Exp
"Retail" tab	F138R	Retail O & M Exp (Customer)
"Misc" tob	E138M	Misc & Customer O & M Exp
Source Location	Fisolvi	Factor Description
All Unbundled Tabe	F1/0	Revenue Requirement Before Rev Credits
AIL OF DUFINIEU TADS	1140	Revenue Requirement Delote Rev Oleulia
"Generation" tab	F140G	Revenue Requirement Before Rev Credits
"Transmission" tab	F140T	Revenue Requirement Before Rev Credits
"Distribution" tab	F140D	Revenue Requirement Before Rev Credits

"Retail" tab	F140R	Revenue Requirement Before Rev Credits
"Misc" tab	F140M F141	Revenue Requirement Before Rev Credits Firm Revenues

Table 2. Description of Tabs within Cost of Service Study.

COS Tab	Tab Description		
"Inputs"	Input area for system peaks, substation peaks, loss		
	factors, tax rates, capital structure, methodology choice,		
	etc.		
"Summary Table"	Shows the overall summary of class results by function.		
"Unit Costs-earned"	Shows the functional and sub-functional unit-costs by		
	class at the earned level.		
"Unit Costs-target"	at at		
	the target level.		
"Function Summary"	Shows the overall summary results for each function.		
"Class Summary"	Shows the overall summary results for each class.		
"Generation Summary"	Shows the generation function summary results for each		
	class.		
"Transmission	Shows the transmission function summary results for each		
Summary"	class.		
"Distribution Summary"	Shows the distribution function summary results for each		
	class.		
"Retail Summary"	Shows the retail function summary results for each class.		
"Misc Summary"	Shows the miscellaneous function summary results for		
	each class.		
"G+T+D+R+M"	Aggregates the unbundled functional results by class.		
"Generation"	Output sheet for unbundled generation results by class.		
"Transmission"	Output sheet for unbundled transmission results by class.		
"Distribution"	Output sheet for unbundled distribution results by class.		
"Retail"	Output sheet for unbundled retail results by class.		
"Misc"	Output sheet for unbundled miscellaneous results by		
	class.		
"Hot Sheet"	Develops functional and sub-functional results by class		
	and imports to the various output sheets.		

COS Tab	Tab Description	
"JAM Download"	Stores the results from the jurisdictional allocation model including the functional factors.	
"Func Study"	Develops functional and sub-functional results and imports to the "Hot Sheet".	
"Func Allocation Options"	Provides different options for functional factors used within the "Func Study".	
"Func Factor Table"	Shows the values and descriptions for each functional factor.	
"Func Dist Factor Table"	Provides different options for distribution sub-functional factors used within the "Func Study".	
"COS Allocation Options"	Provides different options for COS allocation factors used within the "Hot Sheet".	
"COS Factor Table"	Shows the values and descriptions for each COS allocation factor.	
"Demand Factors"	Shows development of demand allocation factors. Location for input of system coincident peaks.	
"Dist. Factors"	Shows development of distribution-related allocation factors. Location for input of distribution system coincident peaks and non-coincident peaks.	
"Energy Factor"	Shows development of energy allocation factors. Location for input of MWH sales.	
Cust Factors"	Shows development of customer allocation factors. Location for input of customer counts.	
"Cust Advances"	Shows development of customer advances factors. Location for input of contributions in aid of construction and customer deposits.	
"MetersServices"	Shows development of meter and service drop factors. Location for input of meter and service drop costs.	
"Uncollectibles"	Shows development of uncollectibles factors. Location for input of write-offs and recoveries.	
"NPC Factors"	Shows development of net power cost factors. Location for input of net power costs.	
"Revenues"	Shows development of revenue factors. Location for input of revenues.	
"TransInvest"	Shows transmission account direct assignments that are input into the "Hot Sheet".	
"DistInvest"	Shows distribution account direct assignments that are input into the "Hot Sheet".	
"ErrorCheck"	Checks for consistency within the COS Model.	
"Message"	Displays run-time progress during calculations.	
"Dialog"	Initial display that is shown when the COS Model is opened.	



Diagram 1. Relationship between Tabs within the Cost of Service Model

Technical Support

For questions related to using or understanding PacifiCorp's Cost of Service Model, please do not hesitate to contact one of the following persons:

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