

## EXPANSION OF CUSTOMER CHOICE PRESENTATION

Given by Bill Snowden 5/23/03

This discussion follows the Power Point Presentation by italicizing the phrases from the study. References to calculations are for Excel Workbook <*Customer Choice WorkSheet*>

The purpose of the study is to develop rates such that each customer could choose between a multi-system rate and a single system rate.

Two methods were compared:

Calculation of Multiple System Transmission Rate (MSTR) 1<sup>st</sup>

Calculation of Single System Transmission Rate (SSTR) 1<sup>ST</sup>

### List of acronyms

CROD – Contract Rate of Delivery = Load = Reservations

PDP – Parker Davis Project

IP – Intertie Project

CAP – Central Arizona Project

RR – Revenue Requirement

### **Determine the SSTR as a Compliment of the MSTR**

Calculation of MSTR 1<sup>ST</sup>

1.  $MSTR = Total\ RR / Total\ CROD / 12$

Our initial thought was to capture the MSTR rate by dividing the total revenue requirement by the total load and then dividing by 12 to get the monthly rate which would be billed. This was a logical first step because even though we had the load that we assumed would take the service; it was not obvious how much revenue requirement that group would need to recover. In addition we had calculated the MSTR Only (the rate is the same). As presented in tab “Method 1 – 1<sup>st</sup> Cut”, the MSTR is \$1.16.

The actual numbers Revenue Requirement for each system and reservations both with multi-system rate (unpancaked) and without the multi-system rate (pancaked) are shown in the tab titled RR & CROD.

Notice that the total load is different depending whether the MSTR is available as are the loads on each of the single systems. This is because the six customers whose reservations go over more than one system (pancaked) are charged for only one system for delivery's which begin in one system and end in another.

2. *Estimate revenue from un-pancaked CROD*

That is we estimate the revenue we'll get from those customers who take the MSTR service. Initially, we assumed that only those customers who are currently

pancaked will take this service. That calculation is MS PP Reservations times Monthly MSTR times 12 plus the estimate of network service revenue (Load Ratio Share times Network Load times 12). The number given in the first run is \$13,356,699.

### *3. Allocate to the appropriate Projects*

This step captures the distribution of the estimated revenue from MSTR and NITS revenue among the three projects. Each project is allocated a dollar amount based on its revenue requirement percent of the total revenue requirement times the total from step 2. We looked at distributing the revenue as a function of percentage of load rather than as a percentage of revenue, but test cases showed this method did not return the correct amount of revenue to the projects.

### *4. Determine the remaining RR for each Project*

The remaining RR for each project is simply the RR for each project minus the allocation from the MS estimate (step 3). This is the amount of money which must be collected by those customers who are taking the single rate. It can be thought of as the net RR after MSTR is applied.

### *5. SSTR = Remaining Revenue/SS CROD/12*

The final step is to determine the Single System Transmission Rates. As the formula indicates, to get the monthly transmission rate for each of the systems, we take the net RR for each project and divide it by the appropriate load divided by 12. The rates for each of the projects presented are PDP - \$1.20; CAP - \$.64; and IP - \$1.23.

## Discussion

Three general assumptions about customer choice were made. These are:

1. The customer will make an economic decision on which rate to take
2. The customer may make a final choice after iterations are presented
3. Final may be changed only in yearly increments

Comparing the rates of the single system to the MSTR calculated in Step 1 we see that the Parker Davis and Intertie rates are greater than the multiple system rate. Comparing these rates to the current (FY03) rates we notice an even greater difference. Given a choice between the MSTR and the SSTR, these customers are likely exercise a choice to the less expense of the two and choose the MSTR at \$1.16 over either the PDP or the IP rates.

## Determine the SSTR as a Compliment of the MSTR Second Run

Knowing that the PDP and IP customers will take the MSTR, we must recalculate the rates taking in to account the shift in the CROD. The tab named "Method 1-2<sup>nd</sup> Cut" uses the new numbers to calculate the rates. In general, the formulas

are the same, but there are some nuances which must be highlighted. First, notice the differences in the Reservations column. The SS-PDP and SS-IP reservations are now 0 kW and the MS Point to Point cell contains the sum of the PDP, IP and MS CRODs from the first run. The total system CROD is the same for both cases.

#### *Step by step recalculation of the rates*

Step 1, calculation of the MSTR, does not change from the first run because the Total RR and the total load have not changed. Step 2, estimate of revenue from the MSTR, does yield a different number than in the first run. This makes sense because there is now more load taking this product. The calculation of MS rate times the reservations gives an estimate of \$56.7 million compared to \$13.4 million in the first run.

In Step 3 where we allocate the estimated revenue to the different projects we see that RR for each is still higher than the amount allocated. It follows that in Step 4 there are still dollars which need to be collected in each of the three projects. Step 5, the calculation of the SSTR, highlights the problem. There is CROD only in CAP. It follows that reservations in CAP will have to account for remaining revenue in all the projects.

#### *5. SSTR = Remaining Revenue/SS CROD/12*

Applying the new values yields a rate of \$1.19 for the CAP service. The next step is to allocate the expected revenue from this rate to each of the projects. We under-collect by about \$4600 when we add the allocation of the MSTR to the allocation of the revenue from the CAP.

#### Discussion

We now compare the CAP rate to the MSTR and find that the CAP rate is greater than the MSTR. Using the same general assumptions of how a customer will choose, we see that the customers under CAP will now want to switch to the cheaper rate, the MSTR.

The conclusion of this exercise is that if we calculate the MSTR first, it will be less than the complimentary single system rates and that all the customers will gravitate to that rate. This does not appear to actually represent a choice. To remedy this we decided to approach the problem from the reverse approach. That is we calculate the single system rates as if there were no MSTR, estimate the revenue this would yield and assume the customers taking the MSTR would be responsible for the remaining revenue.

#### **Determine the MSTR as a compliment of the SSTR**

The tab named Method 2 - 1<sup>st</sup> C contains the data for the presentation of method which calculates the single system rates first. For this calculation, it made more

sense to break out the Intertie as 2 systems because there were no contracts which were pancaked on the 500 kV system.

*1. SSTR = SS RR/SS CROD/12*

In this step, we calculate SSTRs as if a MS transmission service is not being offered. These rates are the same as the current rates. For this exercise, we have shown the Intertie rate as a single rate, as shown in the presentation given by Jack in the morning session. At first glance, this method has the potential to offer true choice because none of the single system customers (those who do not have pancaked reservations) will see an increase in their rates.

*2. Estimate revenue from SS CROD*

In this step, we multiple the rate for each system by the appropriate single system reservations. Notice that the reservations in this step are different than in the first step because the first step was done as if there were no MSTR. As a part of this step, we sum the SS revenue for all the projects.

*3. Allocate revenue to appropriate projects*

As in the previous discussions we will use the allocation factors equal to the RR percent each system is the total RR. The allocated dollars for each project are different than the estimated dollars from Step 2 even though the total dollars are the same. This is a consequence of allocating the dollars by percentage of RR assuring that each project remain whole.

*4. Determine remaining revenue for MS*

The remaining revenue which must be collected through the MSTR is equal to the total RR minus the sum of the RR estimated to be collected by the single systems. The logic is similar to that of Method 1. Step 3 is not needed to complete this step. It has been included to show that the allocation procedure is necessary to make the final check show each project gets the revenue it needs.

*5. MSTR = Remaining Revenue/MS CROD/12*

In this final step, we use the remaining revenue from Step 4 as the RR to be collected by the customers taking the MS Service. The monthly MSTR using this method is \$1.32.

Discussion

When the \$1.32 rate is applied to the customers who are pancaked, we find that 2 of the 6 pay more money over the year than they would have if they were charged based on a pancaked single rate system. These two customers are APA and APPA-MESA. The reason for this is that portion of their CROD that is pancaked is small compared to their total CROD. The following table presented at the 4/23/03 informal customer meeting shows the differences.

	<b>Pancaked Res.</b>	<b>% of Delivery</b>
APA	48,139 kW	21%

APPA-SWTA	72,690 kW	37%
APPA-Mesa	18,546 kW	15%
CAWCD	122,400 kW	100%
IID	120,000 kW	75%
USBR	25,673 kW	100%

Notice APA and APPA-MESA have the lowest percent of delivery.

Determine the MSTR as a compliment of the SSTR Second Run

Knowing these two customers are going to pay more for the MSTR, we assume they will choose to switch back to their single system pancaked rates. To do this we move the appropriate load back in to the individual systems and subtract their CRODs from the multiple system totals. In addition, the discussion which John Delgado presented showed that we could move 78 MW to the Intertie 500 if we implemented the MSTR. We loose this capability when these two contracts switch back to the SSTR. The loads to accomplish this are listed in Step 1B in the tab labeled "Method 2 – 2<sup>nd</sup> Cut".

*1. Calculate SSTRs as if a MS transmission service is not being offered.*

The numbers for this calculation are the same as in Method 2 – 1<sup>st</sup> Cut.

*2. Estimate Annual Revenues from SS Point-to-Point Transmission Service with Changes:*

It is this step where the additional reservations come in to play. Not only are the SS reservations different than in Method 2 – 1<sup>st</sup> Cut, but the total reservations on the system have changed. This is due to the re-pancaking of the two customers.

*3. Allocate Revenue to individual Systems*

Just as in the 1<sup>st</sup> Cut, the allocation is different that the dollars collected by the rate. The total is about \$45 million.

*4. Determine Revenue Requirement for MS Point-to-Point Transmission Service*

The remaining revenue to be accounted for in the MSTR rate is roughly \$9,719,494 but there are fewer reservations taking the service than in the 1<sup>st</sup> cut.

*5. Calculate the MSTR*

As in the 1<sup>st</sup> Cut, we use the remaining revenue as the RR and determine the rate as  $MSTR = RR/CROD/12$ . The calculation yields a rate of \$2.03.

Discussion

We now take this new rate and apply it on a customer by customer basis. We discover that at this MSTR, APPA-SWTC, and IID will pay more under the MSTR than they would if it were to take the pancaked single system rate. We must now take the appropriate CROD out of the multiple system and add the appropriate CROD to both PDP and IP. It is reasonable to assume that a third iteration

would drive the rate to the point where the two remaining customers would be better off with the SSTR.

The conclusion is that if we start with the current rates and set the MSTR to recover the revenue not collected by those single system rates, the MSTR will be so large that it will not be cost effective for any customer to take that service.