

AR No. 3

Consolidate Electrical Service

Recommended Action

Consolidate electrical service to one meter to reduce the number of service fees you pay each month. Other savings will be realized when consolidating meters changes the rate schedule you fall under. Consolidate electrical service for the customer account numbers and (Schedule 27) to one service meter (Schedule 48T). This action will save 3.8 percent per year.

Assessment Recommendation Summary		
Cost Savings	Implementation Cost	Payback (years)
\$9,775	\$24,325	2.5

Background

There may be a reduction in total and reactive power demand because of diversity savings. These savings are possible because the peak demand period for the separate meters probably will not occur at the same time. Therefore, the consolidated demand may be less than the sum of the individual meters. However, we do not include any diversity savings in the following calculations. We do recommend that you have a demand profile taken for the selected meters to better estimate actual diversity savings before implementation. We also recommend that you discuss the proposed service changes with your utility representative and request an estimate from a qualified electrical contractor.

Anticipated Savings

There are no energy savings associated with this recommendation, only cost savings. The largest savings occur when the combined usage qualifies you for a different rate schedule for larger power and energy users. The cost savings for the basic, energy, demand, and reactive power charges are shown in the following Consolidation of Meters worksheet. The present and proposed rate schedules for the meters are indicated in the table.

Basic Charge Savings. Both schedule 27 and 48T have the same basic rate, however the basic rate for schedule 27 of \$240 per month will no longer need to be paid on 2 meters. Therefore, the basic cost savings (BS) is

$$\text{BS} = \$240/\text{month}/\text{meter} \times 2 \text{ meters} \times 12 \text{ mo/yr} \\ \$5,760/\text{yr}$$

Demand Cost Savings. Demand charges will decrease from \$61,489 to \$58,314 per year with consolidation. The demand savings (DS) is

$$\begin{aligned} \text{DS} &= \text{Demand} \times (\text{Current} - \text{Proposed charges}) \\ &= 16,709 \text{ kW/yr} \times (\$3.68/\text{kW} - \$3.49/\text{kW}) \\ &= \$3,175/\text{yr} \end{aligned}$$

Energy Cost Savings. There are no energy savings because the same energy is required to run the equipment regardless of meter. However, there would be cost savings because of the difference in rate schedule. Therefore, the energy cost savings (ES) are

$$\begin{aligned} \text{ES} &= \text{Usage} \times (\text{Current} - \text{Proposed}) \\ &= 5,610,420 \text{ kWh/yr} \times (\$0.03484/\text{kWh} - \$0.03469/\text{kWh}) \\ &= \$84/\text{yr} \end{aligned}$$

Total Cost Savings. The total cost savings (TCS) for meter consolidation are

$$\text{TCS} = \text{BS} + \text{ES} + \text{DS}$$

as illustrated in the following table.

Savings Summary	
Source	Cost \$
Basic Service Charge Savings	\$5,760
Demand Cost Savings	\$3,175
Energy Cost Savings	\$840
Total	\$9,775

Implementation Cost

We calculated the amount of kVA you would need from the formula:

$$\text{KVA} = (\text{KVAR}^2 + \text{kW}^2)^{1/2}$$

From this formula we found that a 2,000 kVA transformer would provide all the power you need. A vendor quote for \$19,950 is used for the cost of a 2000 kVA transformer. To get the most accurate quote for the required electrical work we recommend that you contact your utility company or a qualified electrical contractor. Based on estimates from the 2000 National Construction Estimator, we estimate the time required to perform the electrical work will be 80 hours, at a rate of \$55/hr for electrical contract work. This may create a production loss because installation will require that all the power be disconnected for the required installation time.

Implementation Cost	
Item	Installed Cost
2,000 kVA Transformer	\$19,950
Labor (80 Hours)	\$4,375
Total	\$24,325

The cost savings will pay for the implementation cost in 2.5 years.

Current Combined Meters Electricity Summary

Account Numbers: 415-0069 415-0070 415-0071 415-0072						
Month	kW	kW\$	kWh	kWh\$	Taxes/fees	Total \$
May-00	1,355	\$4,986	447,300	\$15,530	\$720	\$21,236
Jun-00	1,403	\$5,163	470,920	\$16,348	\$720	\$22,231
Jul-00	1,475	\$5,428	450,820	\$15,654	\$720	\$21,802
Aug-00	1,540	\$5,667	494,780	\$17,176	\$720	\$23,563
Sep-00	1,517	\$5,583	519,700	\$18,046	\$720	\$24,349
Oct-00	1,472	\$5,417	519,420	\$18,034	\$720	\$24,171
Nov-00	1,500	\$5,520	496,240	\$17,232	\$720	\$23,472
Dec-00	1,319	\$4,854	489,340	\$16,985	\$720	\$22,559
Jan-01	1,288	\$4,740	437,260	\$15,183	\$720	\$20,643
Feb-01	1,231	\$4,530	425,820	\$14,780	\$720	\$20,030
Mar-01	1,280	\$4,710	418,680	\$14,537	\$720	\$19,968
Apr-01	1,329	\$4,891	440,140	\$15,279	\$720	\$20,889
Totals	16,709	\$61,489	5,610,420	\$194,784	\$8,640	\$264,913
Avg/Mo	1,392	\$5,124	467,535	\$16,232	\$720	\$22,076

Proposed Combined Meters Electricity Summary

Account Numbers: 415-0069 415-0070 415-0071 415-0072						
Month	kW	kW\$	kWh	kWh\$	Taxes/fees	Total \$
May-00	1,355	\$4,729	447,300	\$15,517	\$240	\$20,486
Jun-00	1,403	\$4,896	470,920	\$16,336	\$240	\$21,473
Jul-00	1,475	\$5,148	450,820	\$15,639	\$240	\$21,027
Aug-00	1,540	\$5,375	494,780	\$17,164	\$240	\$22,779
Sep-00	1,517	\$5,294	519,700	\$18,028	\$240	\$23,563
Oct-00	1,472	\$5,137	519,420	\$18,019	\$240	\$23,396
Nov-00	1,500	\$5,235	496,240	\$17,215	\$240	\$22,690
Dec-00	1,319	\$4,603	489,340	\$16,975	\$240	\$21,819
Jan-01	1,288	\$4,495	437,260	\$15,169	\$240	\$19,904
Feb-01	1,231	\$4,296	425,820	\$14,772	\$240	\$19,308
Mar-01	1,280	\$4,467	418,680	\$14,524	\$240	\$19,231
Apr-01	1,329	\$4,638	440,140	\$15,268	\$240	\$20,147
Totals	16,709	\$58,314	5,610,420	\$194,625	\$2,880	\$255,820
Avg/Mo	1,392	\$4,860	467,535	\$16,219	\$240	\$21,318

Electric Utility Summary

Rate Schedule	27		
Basic Charge	\$240.00 /month		
Energy Cost	\$0.03482 /kWh below	20,000 kWh	
	\$0.03463 /kWh above	20,000 kWh	
Demand Cost	\$3.68 /kW		
Billed Demand Cost	\$3.68 /kW		

Electric Utility Summary

Rate Schedule	48T		
Basic Charge	\$240.00 /month		
Energy Cost	\$0.03469 /kWh		
Demand Cost	\$3.49 /kW		
Billed Demand Cost	\$3.49 /kW		