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9/10/93

TO WHOM IT MAY CONCERN

Growing and Tending 'Profitable' Conservation products and services

In the past, conservation has been deemed to make a contribution to BPA as a 'least cost resource' to the agency and the region.

Under the current concept of 'margin management' used in the marketing plan process, products are presumed to be a contribution to BPA only if they show value to BPA (our price is greater than our cost) and to our customers (the benefits to the customer--real and perceived--are greater than the price of the BPA product or service).

What is 'value' to BPA?

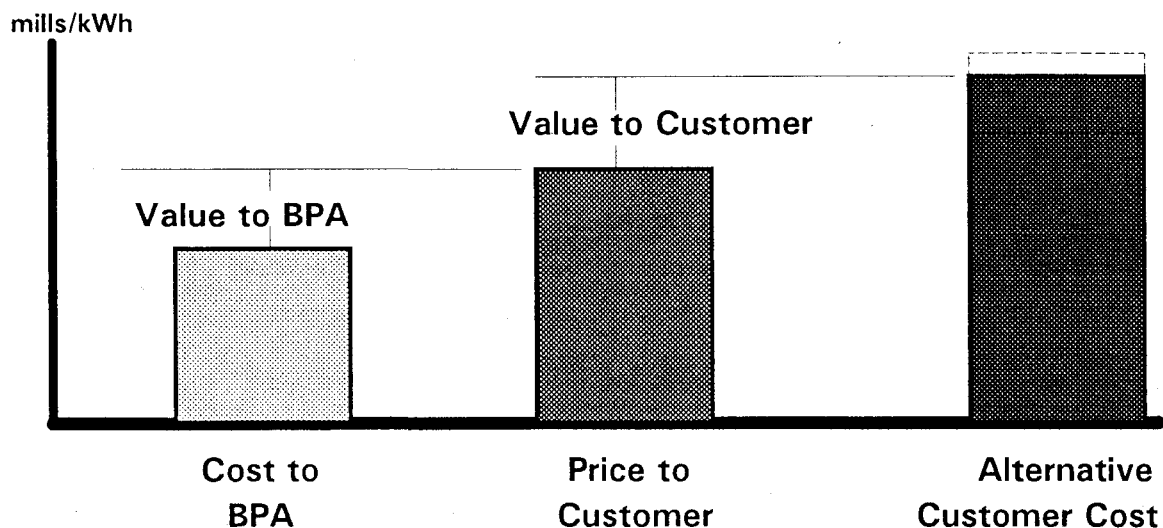
The difference between our costs for any product and our price for that product is the value (or margin) of that product to BPA. In 1992, for most of BPA's power products, this margin was negative: our costs exceeded our price. This is a typical result for public enterprises like BPA. For self-sufficient entities, costs should be equal to price. Profitable entities need price to exceed cost, if not now, at least eventually.

For conservation products and services, costs to BPA are about equal to power generation, but the price to our customers is effectively zero. In fact, very little (if any) of our 'product' is sold. It is given away.

Could there be a conservation product or service that was 'sold' at a 'profit?'

Such a product or service would have the following characteristics:

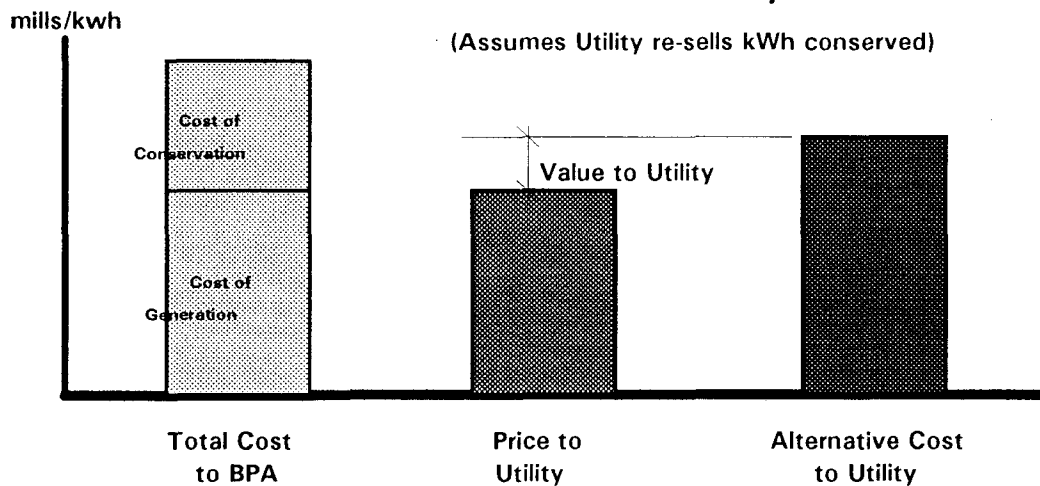
1. BPA's cost to produce the product is less than its price to the purchaser. In other words, there is 'margin' in the product. That margin is the value to BPA of producing the product.



2. Second, the value to BPA will not be realized if the customer cannot see some value ('margin') in the product as well--some benefit in excess of the price paid. (Otherwise, the product will not be bought.) This benefit arises when the cost of alternatives to the product--plus (or minus) any non-monetary benefits (or costs) perceived by the customer--are greater than the price paid for our product by the customer.

Given this definition of value to BPA, our current conservation programs have 'value' to our Utility customers, but do not appear to have any 'value' to BPA (See Figure 2).

Figure 2: 'Sales' of Conservation Products and Services to Utility Customers



When an end user conserves a kWh of conservation, that kWh is not left on the line. It is sold to some other user on the BPA network. (See Box below for discussion of cases where BPA or its customer utility loses revenues as a result of end user conservation.) If we assume that the kWh is sold to another user in the same Utility service area, then our customer Utility should suffer no loss of revenues or margins.* If BPA and the end user split the cost of the conservation, then there is no cost for the utility beyond BPA's price for the kWh to be resold. The cost to BPA is the cost of the original generation of it, plus the cost of conserving it. Using current costs only, this would be in the range of

* This assumes, of course, that the customer utility's cost and price of power are the same for the end user conserving the kWh as for the end user to whom the conserved kWh is re-sold. There are obvious examples where this is not true, and where conservation may find an arena for future action. The utility should be interested in saving power where the sale of it realizes low margins, and re-selling it where the sale realizes high margins. Conservation activities could make the use of power more efficient in uses where utilities realize low margins, and permit the utility to make it available for sale to uses where utilities would realize high margins. This is an area of possible future activity for the conservation staff.

50 mills/kWh--27 mills/kWh for generation and 19 mills/kWh for conservation. See Figure 2. Under these assumptions, BPA pays more for the kWh sold than it gets for it. (At the same time, our utility customer may find some value in the product, as its alternatives are more expensive than the BPA power at the priority firm price.)

Again, even though the conservation investment might be a 'cost-effective' one within our familiar 'least cost resource' framework, it appears to be an investment of no value under the 'margin management' approach. Managers wanting to invest in the product with the greatest margin (value) to BPA will not be impressed with conservation.

On the phenomenon of lost revenues (or margins): There are two kinds of lost revenues: 1. THE USUAL CASE: A Utility loses revenue when one of their end users conserves a kWh of electricity and the Utility cannot re-sell that kWh to someone else in their service area. Both BPA and the Utility lose revenue when the Utility cannot re-sell the conserved kWh to another user in its service area, and when BPA cannot re-sell the kWh no longer sold to the Utility to some other Utility in BPA's service area.

But utilities can lose revenues even if the conserved kWh is re-sold. 2. A SPECIAL CASE: a Utility loses revenue when the revenues realized from the re-sale of a conserved kWh are less than the revenues realized from the sale of the kWh to the conserving end user. This happens when power conserved in the commercial sector (relatively high priced) is re-sold to the large industrial sector (where price may be relatively low).

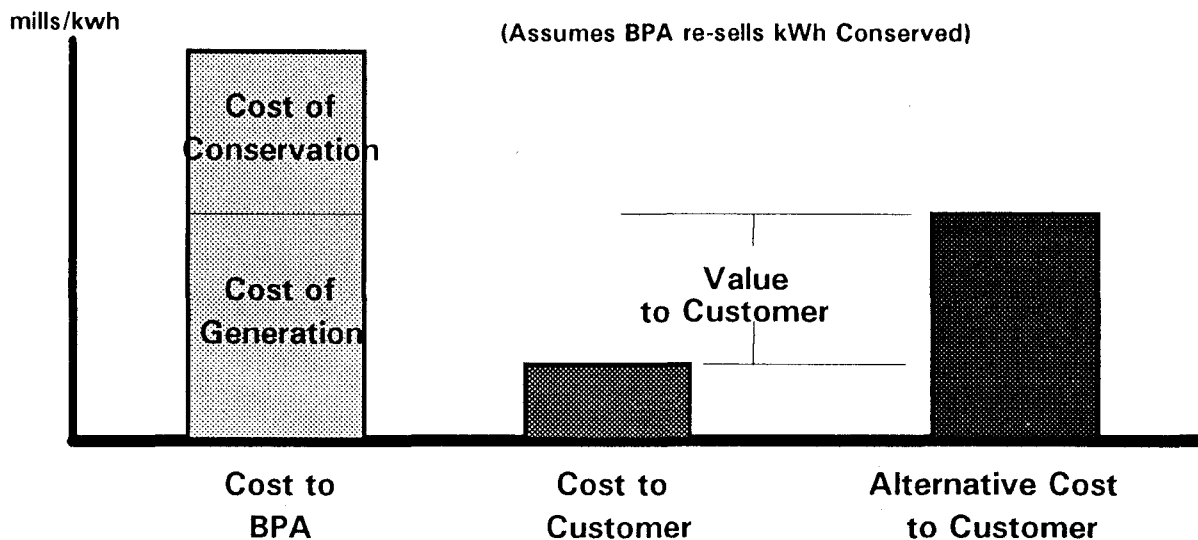
If both the Utility and BPA can re-sell the kWh conserved, and if there is no loss of revenue when re-sale does occur, there are no lost revenues. That simple, latter situation is the one assumed in the analysis here.

It is instructive to carry this 'margin management' analysis one step further, to consider the case of BPA acquisition of conservation from its direct service customers:

In cases where BPA sells directly to end users, the situation is essentially the same for BPA but, conceivably, somewhat better for the direct service customer. In those cases, the customer does realize some significant benefits from our conservation activity: their electricity bill is reduced. But it also cost the Customer something to get the conserved kWh. The value to the end user is the avoided cost of the electricity they saved less the cost of the investment they had to make to realize the savings--in most cases a fraction of the amount BPA pays. (See Figure 3)

That deal has the following characteristics:

Figure 3: 'Sales' of Conservation Products and Services to Direct Service Customers



1. BPA's cost to produce the product is the BPA share of the cost of producing one kWh of conservation plus the costs of generating the kWh resold. The cost to the Customer is the Direct Service Customer's share of the cost of the conserved kWh--on the average about 25% of the cost of the project. The alternative for the Direct Service Customer is the industrial firm price of power from BPA, i.e., what it would pay if it hadn't conserved the kWh.

2. The 'value' to the Direct Service Customer is the cost of purchasing a kWh of power from BPA minus the cost of saving the kWh. The customer realizes considerable value--because there is a real benefit and little or no cost for the product.

Again, conservation investments on behalf of our direct service customers will not produce 'value' to BPA. They will certainly produce value for our direct service customers, but they will not (and cannot) produce a return to BPA in the 'margin management' sense of our marketing plan effort.

All of which explains why I come to the conclusion that **there are three ways for conservation to contribute 'value' to BPA, given the 'margin management' focus of the marketing plan:**

1. design new conservation products and radically redesign our current conservation products and services, where possible, so that their offering produces value in the 'margin management' sense of the term (See Attached paper analyzing the financial feasibility of establishing a self-sufficient, revenue-generating Energy Services Company at BPA); and

2. reduce the cost of remaining conservation products; load less cost on our power and transmission products and services; and thereby reduce the loss of value (negative margins) these products provide--both to BPA and our customers. This will not produce a profitable conservation product, but it will increase the profitability of our power products. It is clear that this element requires at least:

- a. The end user has to pay more;
- b. The retail utility has to pay more; and
- c. BPA has to scale down the pace of its conservation investments

3. Re-orient our conservation to emphasize the promotion of efficiency of electricity end uses in our Region; and to turn away from conservation as an activity which would add resources to our federal base power system. In this formulation, conservation promotes efficiency of use, and efficiency of use makes electricity a more 'valuable' product. This effort would target investment to those cases where increased efficiency is most likely to produce the greatest increase in value of the product to the customer, making the customer more inclined to pay a higher price.

Because this paper is directed mostly toward the unbundling of conservation products and services as part of the marketing plan effort, the following pages relate mainly to the first of these challenges: designing new conservation products, and redesigning our current products, to produce value to BPA. An attached paper proposes one method for reducing the costs of conservation. A paper now in the works will look at the ramifications of a new emphasis in conservation--efficiency of the electric product use.

Re-designing current conservation programs to produce value for BPA

Tinkering around the edges of our current programs will not realize revenue-producing conservation programs for BPA. Radical surgery will in most cases be required.

All of our current programs (in all sectors) have the same general structure:

1. find places where investment in conservation will produce electric energy savings for BPA; then
2. force the investments to be made by changing the codes (mainly applied to new structures), or
3. talk the owners into making the investment through technical assistance and/or financial incentives (applied to both new and existing facilities and processes).

There are three general services needed in order to realize conservation investments: technical assistance, general contracting and financial assistance. In fact, those are in general the major services offered by Energy Service Companies:

1. Analyses of facilities or processes to discover what kinds of investments in process or facility would save electric or other energy.

2. Estimates of the cost (capital and operating) of the investment; and of the energy and dollars expected to be saved with that investment.
3. Obtaining financing for the project.
4. Installation of the project (on time and within budget)
5. Confirmation of the savings expected.

These services, or some sub-group of them, could be offered by a BPA project team. The team would be relatively small, undoubtedly less than 6 staff overall. Installation would be sub-contracted. Would there be a market for these services?

Households would not be in such a market. Neither would smaller commercial or industrial firms. The market is very small in number of firms, and very large in megawatt use per firm. A preliminary financial analysis of the feasibility of such a firm is attached. This attachment shows that a small company installing almost 10 aMW over 7 years could operate without loss to BPA, and generate up to \$5 million annually in revenues. As this analysis shows, a BPA Energy Services Company would be small, would gross less than \$5,000,000 a year, and would be seriously challenged by a small army of experienced energy service companies and consultants already in the market.

A second offering could be targeted toward utilities, public utility regulators, public agencies and others involved in the distribution or regulation of electric power. This service would include:

1. Recommendations as to the kinds of investments in process, facilities or households which will save electric energy, and the amount of savings which could be expected to be captured.
2. Recommendations as to how the utility or regulator or public agency might get owners to make the investments which would lead to the expected savings.
3. Recommendations for cost and saving accounting mechanisms and analytical methods for determining the cost-effectiveness of any program.

This would be a very small group, probably numbering only 2 or 3 staff. Its market would be small, diffused around the world and stingy. Could gross revenues conceivably be greater than \$500,000? BPA should have a good reputation among these potential clients, but competition in this market would be stiff. Realistically, again, this effort would be small, affecting overall BPA revenues very little.

A Third Idea: establishing the Electric Ideas Clearinghouse as a stand-alone company. This activity now limits itself strictly to the distribution of information on ways to achieve energy efficiency in the commercial and industrial sectors. Its expenditures for FY 1992 were a reported \$600,000. The Hotline gets about 300 calls per month; the computer bulletin board receives about 2,000 calls per month. If this service to Utilities, architects and engineers were self-sufficient, it would have to charge about \$250 per call. If it offered itself as a subscription service, it would take 50 subscribers at \$1,000 a year, and still have to charge \$240 per call to break even. This level of service does not appear to be cable of being self-sufficient. Perhaps a more limited service, emphasizing low-cost bulletin board service only, may be something that could be

self-sustaining. In any event, it would make a relatively small contribution to BPA revenues.

In summary, it is clearly difficult to find a potentially 'profitable' or even self-sustaining possibility in BPA. Not impossible, but difficult. In my opinion, BPA should nonetheless begin the development and testing of these services. But as for these services contributing in any major way to BPA's revenues, I don't think there is any chance.

Designing new conservation programs to produce 'value' for BPA

A new power company--for those remote locations beyond the transmission grid--may be a possibility for the future. This would be a power company, offering power off the grid to remote resorts, telemetering stations, etc. If transmission is unbundled from power as to pricing (and locations on the fringes of the transmission grid have to pay a much higher price for power than they now do), there may be several locations now on the grid which would be good candidates for such an offering.

The idea is simple. This BPA company would design, install and finance the equipment and facilities needed to provide electric power to remote areas or locations. This would include efforts to build in energy efficiency from the start, as well as building power generators.

The market for such a service is uncertain. An analysis would start with the locations now on the network which cost BPA a lot to serve.

Conclusion

In conclusion, it appears that the prospects for new revenues from self-sufficient new enterprises located at BPA are not many, and they are not very productive of new revenues. If all of the enterprises considered above were successful, new revenues to BPA would amount, surely, to less than \$4,000 000. This is certainly not insignificant, and BPA is well-advised to test these possibilities for the contribution they would make. But the significance of these possibilities relative to other possibilities being considered in the marketing plan argue for no further consideration of these during this preliminary phase of the marketing effort.

The Future for Conservation under 'Margin Management.'

If the precepts of 'Margin Management' were to be used to guide BPA over the next decade, how would our conservation activities change? What is Conservation going to be like in BPA in the next ten years?

First, it's going to cost BPA a LOT less than it now does. Or, to put it differently, BPA will be budgeting less and less for conservation over the next 10 years.

As the role of conservation changes from "BPA's Least Cost Resource" (where it has enjoyed a favored position since the Regional Act), conservation becomes less valuable and more and more just another cost to be reduced in favor of higher margins on power products (Margin Management).

Attractive, competing uses for limited BPA capital will increase the pressure to reallocate budget from conservation to other efforts at BPA. Reductions in staff and administration can help, but the bulk of our costs (82%) are in our incentives. To reduce cost as much as it will take, BPA's conservation incentives must be cut. The End User must make up that shift, by paying a significantly greater portion of the total cost of conservation. This will reduce conservation activity in all but large commercial and industrial projects.

It is easy to see how the BPA budget in five years could be 1/2 its current level.

Second, BPA will have to slow its rate of acquisition of energy conservation.

Requiring that the End User pay a higher portion of the costs will reduce penetration in all but the Large Commercial and Industrial Sectors (where an Energy Service Charge can conceivably maintain penetration by offering 100% financing).

Even if penetration could be maintained, reduced budgets would still restrict acquisition.

Could BPA acquire 600 aMW of conservation in 10 years under these conditions? Not with our current approach. The pace of conservation will have to slow. We may be lucky to acquire 200 aMW in the next 10 years.

WHAT DOES CONSERVATION BECOME IN THE NEW BPA?

More an activity designed to promote investment in more efficient use of electricity in the Northwest by others:

1. raise the required level of energy efficiency through voluntary changes in Federal, State and local codes, and
2. increase the efficiency of products and equipment sold through voluntary changes in specifications by manufacturers and fabricators.
3. promote the benefits of energy efficiency in all uses through technical assistance and information.

Less an activity to increase our energy resource base with our own investments.

1. raise the required level of energy efficiency through surcharge-forced changes in Federal, State and local codes; and
2. purchase megawatts to add to resource base.

More an activity which takes its direction from the power market, and from customers.

Less an activity which implements the Northwest Power Plan.

More a staff (marketing?) activity within the BPA organization.

Less a line activity within the BPA organization.

Ernie Bonner - RMIC:7/28/93

ATTACHMENT A

6/22/93

TO: Function by Function Review Team

FROM: Ernie Bonner

SUBJECT: A Strategy for Reducing Conservation Costs (while maintaining an aggressive acquisition program) for FY 94, FY 95 and beyond.

I would like to offer a strategy for reducing BPA's costs of conservation by half over the next 5 years. I have discussed this informally with other BPA staff in the recent past. I offer it here for formal consideration as part of the cost-cutting exercises being carried out throughout the agency.

Developing a framework for our efforts to reduce costs

Reducing costs is not an end in itself. With increasing pressures on our budget, it may be the only way to maintain our ambitious conservation program. How we accomplish that reduction in costs, and at what rate, is also important. So while we are busy trying to find ways to cut costs, we should not lose sight of the goal we have, and the strategy we will use to get there.

Further, reducing costs should be everybody's business, not just managers. Again, everybody can contribute to cost reduction if everybody understands where the cost reductions can lead us, and how we plan to get there.

Finally, the latest exercise in finding cost savings will not be the last. Our future as a viable resource producer will require us to be ever vigilant about costs.

So we don't need a quick fix here, and then go on. We need a long-term goal and strategy, and a long term commitment to cost consciousness, as Randall Hardy has already noted.

Thus, we will be best prepared for the present as well as the future if we take some time now to establish for ourselves a cost goal and a strategy for getting there--both for the short and long term. This need not be elaborate. It need only be clear. I offer one such goal and strategy below:

A Long-Term Goal for BPA Conservation Costs:

- 1. Reduce BPA's share of the cost of conservation (including all of BPA's direct payments to end users and utilities, and all direct BPA administrative expenses) to less than one-third of the total cost of conservation measures. (This means that BPA's average current contribution must be halved).*
- 2. All conservation measures supported will be regionally cost-effective;*
- 3. Current overall (not by sector, nor by Area, nor by year) megawatt targets will be achieved.*

A Strategy for Achieving the Long-Term Goal:

- 1. Over the next 5 years, reduce BPA incentive payments to end users in all sectors so that when combined with the reduction in BPA administrative expenses, BPA's costs are reduced to half of their current levels.*

This reduction in incentive and other program payments can be accomplished evenly over the next 5 years, or more abruptly at the end or at the beginning of the period. An important aspect of this part of the strategy is that it establishes a clear end result, while giving the entire regional conservation system time to adjust at whatever rate of speed seems best.

- 2. Over the next 3 years, reduce BPA administrative expenses so that when combined with the reduction in BPA incentive payments to end users in all sectors, BPA's costs are reduced to half their current levels.*

This reduction must occur in both the administrative costs incurred by BPA and those incurred by customer utilities which are implementing BPA programs. BPA is already initiating efforts to reduce their administrative costs. Program procedures and contracts will have to be amended to call for reductions in payments to utilities to reimburse them for their administrative expenses. Again, this reduction could occur evenly across the next 3 years, or lumped at the beginning or the end of the period. In any case, this transition is meant to minimize the disruption that will ensue as a result of the cost reductions.

- 3. Over the next 3 years, design and implement an energy services charge kind of program for the Commercial, Industrial and Agricultural sectors. This program would offer a market-rate-interest loan from the serving utility (or its agent) for the entire cost of the conservation proposed, with end user repayment provisions designed so that savings from the conservation will equal or exceed the debt service on the loan. This offering should be phased in as reductions in BPA's incentive payments to end users are phased in. Over the same 3 years, find ways for BPA to reduce utility financial risk on selected loans issued by utilities and their agents.*

BPA could offer to contribute to this program in ways that utilities find helpful. Three possibilities that spring to mind immediately:

- a. Help the utility and the end user in determining what measures might be appropriate in any given end user's case, and in estimating costs and energy savings likely. This is the basic information needed for the utility to begin any loan process. This is something we now offer in both the commercial and industrial conservation programs. There is a growing and tested industry out there which can provide these services. BPA could play a major financial and technical role in making this service available to utilities and end users.
- b. Help in reducing the financial risk of the utilities in their loan offers, possibly by guaranteeing the loans, possibly by subsidizing the utility administration of the loan program. BPA's current prohibition against direct loans or loan guarantees restrict our possibilities here, but efforts are now underway to remove that prohibition. With decent luck, this prohibition may be possible before the start of FY 1995.
- c. Help build up demand for conservation among commercial and industrial end users with general awareness kinds of advertising and promotion programs, directed to the region as a whole. This has been done with great effectiveness in the Super GOOD CENTS program. This should help 'set up' the end user for utility efforts.

Whatever the contribution to the program, BPA's costs for this contribution plus all other costs of the conservation program would be restricted to half their current level, or less.

4. *At the end of 5 years, if all of the elements of this strategy are in place, utilities will be able to offer*
 - a. *their own residential conservation program or*
 - b. *the BPA residential program (the latter now offering incentive payments at about half of the current level).*

For the non-residential sectors, the same utility will be able to offer three options:

 - a. *a limited incentive approach offered by BPA,*
 - b. *a loan offered by the utility (with some assistance from BPA) for the entire cost of the project, or*
 - d. *the utility's own program.*

For BPA, this offering fairly responds to our market situation. We must reduce costs. Incentives as well as administration must be reduced. Where costs are relatively high (residential weatherization, for example) we want to reduce our offering so we are not as concerned with the reduction in participation we will get with the reduced incentive offering. Where costs are relatively low (industrial, for example) we want to increase our purchases of savings, so as we reduce the incentive payment, we will offer a full-cost loan and tailor the payments to the energy savings. This should protect against a reduction in participation in the commercial and industrial projects, even as the cash incentive is reduced. The result seems clear. We will undoubtedly see a substantial reduction in residential and other higher cost projects, while hopefully seeing little reduction in our low cost industrial and commercial projects.

The utility is absolutely crucial to this approach. Even if BPA could loan money, that may be the worst way to go. Utilities already do business with their customers. They collect money every month. They can most efficiently administer a loan program. And if the utility does not agree to offer this loan, or some other form of incentive to the end user, that is a judgment that BPA must accept. We certainly cannot any longer afford to try to buy the utility's acceptance. This is a case where the utility and the end user are central. What they can do, what they can't do, how they agree to do it is all up to them. BPA can help in ways they find helpful. And that is what we should do. We can help up to the limit of our costs--about 1/3 of the total cost of the measure.

5. During the next 5 years, BPA will turn its central staff away from the design of end user programs, toward the design of ways to influence markets and suppliers--in the same way that it has already influenced the market and suppliers in new housing construction and refrigerators.

Jennifer Williamson has already proposed a range of approaches to this opportunity:

(1) influence manufacturers directly to make efficient equipment. This would include codes and other mandated standards; and payments to the manufacturer for each efficient unit produced; guaranteed purchasing of the output of a manufacturer. (2) influence distributors to stock efficient equipment (i.e., influence manufacturers indirectly) through joint purchasing of many utilities or government agencies, codes or other programs. (3) get equipment to the site faster, solve regional equipment shortages. (See Memo dated 2/26/93). We should support her efforts with a lot of resources. This is the future of BPA conservation programs.

6. The ambitious conservation goals established by the Planning Council should be maintained, but the term of the program should be extended.

Attachment B

ABC: A Proposed New Energy Services Company

ABC is a revenue-generating, self-sufficient service of BPA. ABC offers major Northwest end users a reduction in their electric bill, in exchange for a portion of the savings generated by an investment in energy efficiency in their facility.

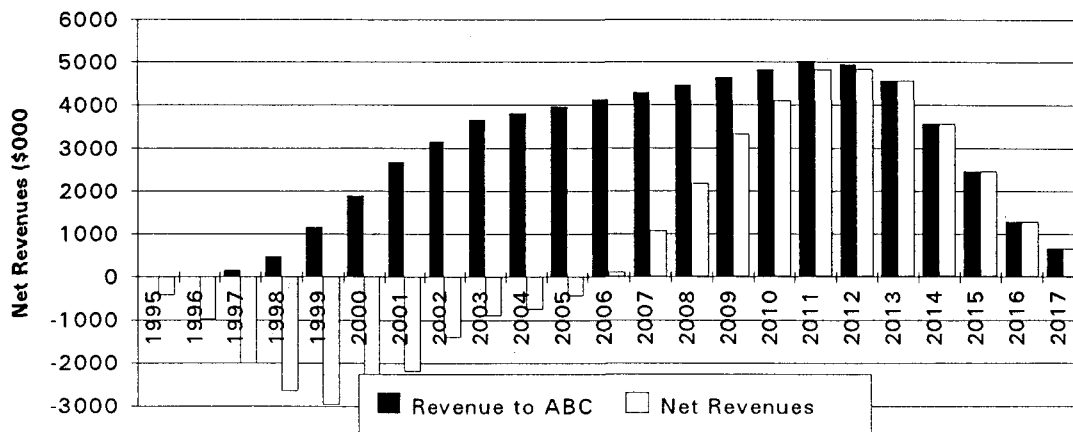
ABC offers a range of services;

1. Analysis of possibilities for saving energy in end user facilities;
2. Design, finance, procurement, installation and testing of equipment to save energy;
3. Technical guidance and training necessary to assure proper operation and maintenance of the equipment by end users; and
4. Verification of energy savings.

A brief, preliminary analysis of the business prospects of this company are attached. In the particular option offered, ABC installs a total of 9.5 aMW of energy saving devices over 7 years--at its own cost (an estimated 25c/installed kwh inflated at 4% annually). End users receiving that investment pay ABC 2/3 of the savings verified to have been realized by that investment for 15 years. Debt service on the capital needed to buy and install the energy saving equipment is the major expense of the company--figuring 10-year loans at 8% interest. Operating and administrative costs are assumed to be \$100,000 of annual fixed costs, plus annual variable costs of 15% of the cost of installing equipment and \$100,000 per kwh savings of already-installed equipment to cover maintenance. Net revenues are negative for 10 years, but internal rate of return is 6%.

ABC would need approximately 17 million dollars of start-up capital over 10 years from BPA ratepayers, and will use loans from the Federal treasury (at an estimated 8% interest rate) as the primary source of operating capital.

ABC Energy Services Company NET REVENUES



ABC Energy Services Company										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Annual New Savings (aMW)	0.5	1	2	2	2	1	1	0	0	
Cumulative Savings (aMW)	0	0.5	1.5	3.5	5.5	7.5	8.5	9.5	9.5	9.5
Retail Rate (\$/kwh)	0.05	0.052	0.054	0.056	0.058	0.061	0.063	0.066	0.068	0.071
Total Dollar Savings (\$000)		\$0	\$228	\$711	\$1,724	\$2,818	\$3,997	\$4,711	\$5,476	\$5,695
Revenue to ABC	\$0	\$0	\$153	\$476	\$1,155	\$1,888	\$2,678	\$3,156	\$3,669	\$3,815
Unit Cost of Measures (\$/kwh)	0.25	0.26	0.2704	0.28122	0.29246	0.30416	0.31633	0.32898		
Cost of Measures (\$000)	\$1,095	\$2,278	\$4,737	\$4,927	\$5,124	\$2,664	\$2,771	\$0	\$0	\$0
Annual Payment (95)	-\$163	-\$163	-\$163	-\$163	-\$163	-\$163	-\$163	-\$163	-\$163	-\$163
Annual Payment (96)		-\$339	-\$339	-\$339	-\$339	-\$339	-\$339	-\$339	-\$339	-\$339
Annual Payment (97)			-\$706	-\$706	-\$706	-\$706	-\$706	-\$706	-\$706	-\$706
Annual Payment (98)				-\$734	-\$734	-\$734	-\$734	-\$734	-\$734	-\$734
Annual Payment (99)					-\$764	-\$764	-\$764	-\$764	-\$764	-\$764
Annual Payment (2000)						-\$397	-\$397	-\$397	-\$397	-\$397
Annual Payment (01)							-\$413	-\$413	-\$413	-\$413
Annual Payment (02)								\$0	\$0	\$0
Total Annual Payment	-\$163	-\$503	-\$1,209	-\$1,943	-\$2,707	-\$3,104	-\$3,517	-\$3,517	-\$3,517	-\$3,517
Administrative Costs	\$264	\$492	\$961	\$1,189	\$1,419	\$1,250	\$1,366	\$1,050	\$1,050	\$1,050
Net Revenues	-\$427	-\$994	-\$2,017	-\$2,656	-\$2,970	-\$2,465	-\$2,204	-\$1,410	-\$898	-\$751
Internal Rate of Return	6%									
Notes: 1. ABC Revenues are 2/3 of all savings realized by the end user from the investment in energy conservation measures.										
2. Installation of measures is estimated to cost about 25c per kwh of savings generated, inflated at 4% compounded annually. (Compare to ESP at 12c/ kwh of savings).										
3. Annual debt service payments assume a 10 yr. loan at 8% interest.										
4. Administrative costs are assumed at \$100,000 of fixed cost, plus variable costs amounting to 15% of the Cost of Measures plus \$100,000 for each aMW in place.										
5. Retail electricity rate assumed to be 50 mills/kwh, inflated 4% compounded each year.										

9/22/93

TO WHOM IT MAY CONCERN

From: Ernie Bonner

Subject: **Making Sense of Conservation in the new BPA.**

Nowhere in the Strategic Business Objectives now under review do we find any mention of conservation. I assume that is so because the 'margin management' framework now being used to design the new BPA treats conservation as a cost burden on power supply, and recommends only that the costs of conservation be reduced. Of course, the ultimate realization of such a goal is no conservation at all. Further, this simple stricture does not ennoble any of the efforts we might make to conserve energy by using electricity more efficiently--an end that it seems to me is equal to that of cost reduction within the 'margin management' framework.

We need to add to our proposed Strategic Business Objectives. We are striving to reduce costs. That is good. But I have never felt that this emphasis on costs alone was correct. **We should also strive to increase the value of our product to our customers.** Both must work together to produce higher margins. You can't reduce the cost of a product enough if it is a product of no value. You don't have to reduce the cost of a product if it is of growing value.

This attention to the 'value of the product' is not covered by other objectives now being considered, like "... achieving customer satisfaction," or "... expanding the benefits BPA creates ..."

I propose that we state this new objective as follows:

"Increase the value of electricity to the end users of the Region."

How would we accomplish this objective? Obviously, we can increase the value of electricity by increasing its efficiency in use. This is what we might call a 'real' increase in value. But we can also increase the value of electricity by changing end users' perceptions of its value. Finally, we can increase the value of electricity by increasing the number of ways it can serve the end users of the Region.

Let's take each of these in turn.

1. Increasing the value of electricity by increasing its efficiency in use.

a. Producing a positive internal rate of return for BPA through the offer of products and services by a BPA enterprise.

BPA could make a start-up investment in an Enterprise (attached to the Resource Management Division) that offers one or more of the following products and services in the Northwest market:

- (1). Turnkey efficiency investments in plant or building (a BPAESCO):

Complete analysis of end user facility, estimation of energy savings and investment needed, specification of needed equipment and improvements, finance of the installation, tests of the installation, verification of the resulting energy savings, contract operations and maintenance. This product will have value to end users with major facilities. But the market for this product will be severely limited if it can only be offered at the request of the local utility serving the major facility. The Enterprise could, also, offer any individual portion of the package above.

(See attached feasibility spreadsheet showing analysis of ABC: Energy Services Company. An enterprise like the one analyzed would realize gross revenues (eventually) of about \$5,000,000 annually, with an internal rate of return of 6-7% over 20 years. Early years will see negative net revenues of as much as \$3,000,000 annually)

(2) Demand side management consulting: New DSM program design, program evaluation, and program management. Analysis of existing DSM programs, including evaluation of results. This product could have value to large utilities or to regulatory bodies in states with unusual interest in DSM.

(3) Evaluation and third party independent verification may be a good product to offer Energy Services Companies with contracts to produce verified energy savings. Utilities offering their own program might also want verification of this kind. I doubt if there is a lot of competition out there now, at least any with a level of experience equal to that of BPA, but there is certainly some-- including those who have done most of our evaluation in the past. This market is small (could it possibly be more than \$500,000?) but Bonneville has a decided comparative advantage in it, because of our emphasis on evaluation from the start, and our recent attention to verification as part of our competitive acquisition and billing credit acquisitions.

(4) Energy efficiency testing for new materials and devices: This would be a service offered to manufacturers, buyers or regulatory bodies interested in an independent assessment of the energy efficiency of a product. The market for this is undoubtedly small, but our credibility in that market should be high.

(5) Consultation with end users (at the request of their serving utility) on ways to avoid demand or other charges on time of day or year power service. If BPA elects to price peak and shoulder loads differently to utilities, and if the utilities decide to pass that rate structure on to their end users, this service may be valuable to our customers. Would a BPA effort to help our customers avoid our rates be trusted by a customer? Probably not.

b. Making electricity a more efficient (and more valuable) product by promoting the efficient construction or manufacture of new electrical homes, devices and equipment.

This effort would concentrate on voluntary changes in energy efficiency specifications for new construction and manufactured products which are sold in the Region.

C. Assisting end users with the investment needed to make their facilities more efficient users of electricity.

BPA recognizes that its power products can be made more valuable by making the power sold more efficient in its application. This can be accomplished in part by assisting end users financially with the investment needed to make their facilities more efficient users of electricity. In many ways, this is just what we have been doing all along. If we accept a limit on our costs for this activity (say, 10 mills/kWh: the approximate difference between the avoided cost of power and its priority firm rate), we could pursue 'acquisition' efforts in the commercial and industrial sectors much like we are now doing. There would be a reduction in our ability to deliver a certain amount of efficiency due to the cost restriction. One possible wrinkle: promote our environmental and economic development objectives with these investments. Another possibility: could a utility group be empowered to help us decide which investments to make?

2. Increasing the value of electricity by increasing end users' perceptions of its value.

It is a well-known perception among NW energy users that gas is the more 'modern' fuel. How did people get that idea? What, exactly, about electricity is old-fashioned? Nothing, really. That image was fostered among people by long-standing campaigns that the Gas Companies felt were necessary to deal with the extremely low cost of electricity in the NW.

BPA could at least organize, and maybe help finance, a region-wide campaign to build an awareness among the energy-using public of the Northwest about the value of electricity. This would not be a campaign to sell more electricity. It would be a campaign to instill in consumers the idea that the efficient use of electricity contributes value to the Northwest and to them as individuals. This effort would have the enthusiastic support of many of our utility customers. It need not be a gigantic campaign, but it should be a long-lived one.

3. Increasing the value of electricity by increasing the number of ways it can serve the end users of the Region.

Increase the value of electricity by finding new uses for it:

- Electric autos
- New electro-technologies which reduce toxic emissions of Northwest industry (microwave drying of paint powders reduces need for solvents which pollute ground water)

A Budget for the New BPA Conservation Effort

Increasing the value of electricity by increasing its efficiency in use.

ABC Energy Services Company:

This enterprise should have a limited goal of about 10 megawatts of energy savings over the first 7 years of its operation. (See attached feasibility spreadsheet). Budget requirements (in 1999, at their highest level) are \$6.5 million--\$5.1 million in capital and \$1.4 million in expense. Investment in this enterprise should be directly related to expected future power sales--say, not to exceed 1% of expected annual gross revenues from the sale of power (about \$24,000,000 annually).

Making electricity a more valuable product by promoting the efficient construction or manufacture of new electrical homes, devices and equipment.

This activity will not be self-sufficient. Investment in this activity should be limited to less than \$500,000 annually to cover the expenses of working with manufacturers and other utilities in the West to find ways that energy efficiency standards can be improved. This would finance a small staff in the region. When a particular investment is needed, and agreed upon, the funds needed for that project can be budgeted. The entire amount should be considered expense.

Assisting end users with the investment needed to make their facilities more efficient users of electricity.

This activity will not be self-sufficient. It will be a cost burden on ratepayers. The budget should be limited to 1/2 of 1% of current power revenues (about \$12,000,000 annually), should be supported by the utility community, and should serve the environmental or economic development objectives of the Agency as well as our efficiency objectives.

Increasing the value of electricity by increasing end users' perceptions of its value.

This activity will not be self-sufficient. It will be a cost burden on ratepayers. However, this is one enterprise with which lots of utility customers would agree to participate. Further, this is one activity which is best done at the regional, not local, level. Consider a strategy to start such a campaign with \$1,000,000 annually for the first year, and agree to reduce expenditures 10% annually, eventually matching only what utilities themselves are willing to contribute.

Increasing the value of electricity by increasing the number of uses to which electricity can be put.

Research and Development in ways to use electricity, not necessarily in ways to use electricity more efficiently. Would need lots of joint activity with other firms and agencies. Assume arbitrary budget of \$2,000,000 for first 2 years.

**ESTIMATED BUDGET
BPA ACTIVITIES TO INCREASE THE VALUE OF OUR PRODUCT**

	1996			1997	
	Capital	Expense	aMW	Capital	Expense
Increasing efficiency in use					
a. ABC: Energy Services Company	2.3	.5	1.0	4.7	1.0
b. Market Transformation		.5	0		.5
c. Financial Incentives		12.0	10.0		11.0
Change Perceptions of Value		1.0			.9
Increase # of Electricity Uses		2.0			2.0
Total Budget	2.3	16.0	11.0	4.7	15.4

Attachment B

ABC: A Proposed New Energy Services Company

ABC is a revenue-generating, self-sufficient service of BPA. ABC offers major Northwest end users a reduction in their electric bill, in exchange for a portion of the savings generated by an investment in energy efficiency in their facility.

ABC offers a range of services;

1. Analysis of possibilities for saving energy in end user facilities;
2. Design, finance, procurement, installation and testing of equipment to save energy;
3. Technical guidance and training necessary to assure proper operation and maintenance of the equipment by end users; and
4. Verification of energy savings.

A brief, preliminary analysis of the business prospects of this company are attached. In the particular option offered, ABC installs a total of 9.5 aMW of energy saving devices over 7 years--at its own cost (an estimated 25c/installed kwh inflated at 4% annually). End users receiving that investment pay ABC 2/3 of the savings verified to have been realized by that investment for 15 years. Debt service on the capital needed to buy and install the energy saving equipment is the major expense of the company--figuring 10-year loans at 8% interest. Operating and administrative costs are assumed to be \$100,000 of annual fixed costs, plus annual variable costs of 15% of the cost of installing equipment and \$100,000 per kwh savings of already-installed equipment to cover maintenance. Net revenues are negative for 10 years, but internal rate of return is 6%.

ABC would need approximately 17 million dollars of start-up capital over 10 years from BPA ratepayers, and will use loans from the Federal treasury (at an estimated 8% interest rate) as the primary source of operating capital.

ABC: Bonneville's New Energy Services Company										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Annual New Savings (aMW)	0.5	1	2	2	2	1	1	0	0	0
Cumulative Savings (aMW)	0	0.5	1.5	3.5	5.5	7.5	8.5	9.5	9.5	9.5
Retail Rate (\$/kWh)	\$0.050	\$0.052	\$0.054	\$0.056	\$0.058	\$0.061	\$0.063	\$0.066	\$0.068	\$0.071
Total Dollar Savings (\$000)		\$228	\$711	\$1,724	\$2,818	\$3,997	\$4,711	\$5,476	\$5,695	\$5,922
Revenue to ABC		\$152	\$474	\$1,150	\$1,879	\$2,664	\$3,141	\$3,650	\$3,796	\$3,948
Unit Cost of Measures	\$2,500	\$2,600	\$2,704	\$2,812	\$2,925	\$3,042	\$3,163			
Cost of Measures (\$000)	\$1,095	\$2,278	\$4,737	\$4,927	\$5,124	\$2,664	\$2,771			
Annual Payment (95) (\$000)	-\$163	-\$163	-\$163	-\$163	-\$163	-\$163	-\$163	-\$163	-\$163	-\$163
Annual Payment (96)		-\$339	-\$339	-\$339	-\$339	-\$339	-\$339	-\$339	-\$339	-\$339
Annual Payment (97)			-\$706	-\$706	-\$706	-\$706	-\$706	-\$706	-\$706	-\$706
Annual Payment (98)				-\$734	-\$734	-\$734	-\$734	-\$734	-\$734	-\$734
Annual Payment (99)					-\$764	-\$764	-\$764	-\$764	-\$764	-\$764
Annual Payment (2000)						-\$397	-\$397	-\$397	-\$397	-\$397
Annual Payment (01)							-\$413	-\$413	-\$413	-\$413
Total Annual Payment	-\$163	-\$503	-\$1,209	-\$1,943	-\$2,707	-\$3,104	-\$3,517	-\$3,517	-\$3,517	-\$3,517
Administrative Costs	\$264	\$492	\$961	\$1,189	\$1,419	\$1,250	\$1,366	\$1,050	\$1,050	\$1,050
Net Revenues	-\$427	-\$842	-\$1,696	-\$1,982	-\$2,246	-\$1,689	-\$1,742	-\$916	-\$770	-\$618
Internal Rate of Return	7%									
Notes: 1. ABC revenues are 2/3 of all savings realized by the end user from the investment in energy conservation measures.										
2. Installation of measures is estimated to cost about 25c per kWh of savings generated, inflated at 4% compounded annually. (Compare to ESP at 12c per kWh of savings)										
3. Annual debt service payments assume a 10-yr. loan at 8% interest.										
4. Administrative costs are assumed at \$100,000 of fixed costs, plus variable costs amounting to 15% of the Cost of Measures plus \$100,000 for each aMW in place.										
5. Retail electricity rates are assumed to be 50 mills/kWh, inflated at 4% compounded each year.										
	Internal									
Capital Cost/kWh	Rate Return									
33c	1%									
30c	3%									
25c	7%									
20c	12%									
15c	21%									
10c	36%									

11/18/93

TO WHOM IT MAY CONCERN

From: Ernie Bonner

Subject: **From Conservation to Energy Efficiency in the new BPA.**

Nowhere in the Strategic Business Objectives now under review do we find any mention of conservation. I assume that is so because the 'margin management' framework now being used to design the new BPA treats conservation as a cost burden on power supply, and recommends only that the costs of conservation be reduced. Of course, the ultimate realization of such a goal is no conservation at all.

Further, a simple cost reduction stricture fails to ennoble any of the efforts we might make to conserve energy by using electricity more efficiently--an end that it seems to me is equal to that of cost reduction within the 'margin management' framework. We need a way to continue our pursuit of energy efficiency which at the same time does not work against our commitment to a new BPA.

We can accomplish that by adding to our proposed Strategic Business Objectives.

We are striving to reduce costs. That is good. But I have never felt that this emphasis on cost alone was sufficient. **We should also strive to increase the value of our product to our customers.** Both must work together to produce higher margins. You can't reduce the cost of a product enough if it is a product of no value. You don't have to reduce the cost of a product if it is of growing value.

This attention to the 'value of the product' is not covered by other objectives now being considered, like "... achieving customer satisfaction," or "... expanding the benefits BPA creates ..."

I propose that we state this new objective as follows:

"Increase the value of electricity to the end users of the Region."

How would we accomplish this objective?

1. Obviously, we can increase the value of electricity by increasing its efficiency in use. This is not entirely different from what we have been doing since the Office of Resources got started a decade ago. It is in some ways consistent with (though not the same as) our traditional resource cost orientation. It could form the basis for a new partnership with the Planning Council, where we could pursue our business objectives without serious conflict with the Planning Council's pursuit of energy efficiency.

2. Increasing the value of electricity by increasing its efficiency in use is what we might call a 'real' increase in value. But we can also increase the value of electricity by changing end users' perceptions of its value. We should have lots of financial and other support from our utility customers in this effort and, if so, we would be truly serving our other strategic business objective of achieving customer satisfaction.

3. Finally, we can increase the value of electricity by increasing the number of ways it can serve the end users of the Region.

Let's take each of these in turn, recognizing the distinction between those activities which serve the new strategic business objective and are not a burden on cost and those which serve the objective, but at some BPA cost.

Increasing the value of electricity by increasing its efficiency in use:

a. Producing greater efficiency without incurring cost to BPA.

While we want to increase the value of electricity by increasing its efficiency in use, we don't want to burden our power rates with the cost of this activity. In short, we want end uses to be more efficient, and we want end users (not BPA) to make the investment necessary to realize that efficiency. That is the way to serve both the objective of reducing costs and the objective of increasing the value of electricity. To do that, we must successfully develop and operate an enterprise that offers one or more of the following products and services in the Northwest market:

(1). Turnkey efficiency investments in plant or building (a BPA Esco):

Offer to our direct serve and our utility customers a complete analysis of end user facility, estimation of energy savings and investment needed, specification of needed equipment and improvements, finance of the installation, tests of the installation, verification of the resulting energy savings, contract operations and maintenance. The Enterprise could also offer any individual portion of the package above--either directly to our direct serve customers or (by invitation of the serving utility) to an end user of one of our utility customers. The major market for such products and services would be large commercial and industrial facilities throughout the BPA service area.

[See attached feasibility spreadsheet showing analysis of ABC: Energy Services Company. An enterprise like the one analyzed would realize gross revenues (eventually) of about \$5,000,000 annually, with an internal rate of return of 6-7% over 20 years. Early years will see negative net revenues of as much as \$3,000,000 annually].

(2) Demand side management consulting: New DSM program design, program evaluation, and program management. Analysis of existing DSM programs, including evaluation of results. This product could have value to large utilities or to regulatory bodies in states with unusual interest in DSM.

(3) Evaluation and third party independent verification may be a good product to offer Energy Services Companies with contracts to produce verified energy savings. Utilities offering their own program might also want verification of this kind. I doubt if there is a lot of competition out there now, at least any with a level of experience equal to that of BPA, but there is certainly some--including those who have done most of our evaluation in the past. This market is small (could it possibly be more than \$500,000?) but Bonneville has a decided comparative advantage in it, because of our emphasis on evaluation from the start, and our recent attention to verification as part of our competitive acquisition and billing credit acquisitions.

(4) Energy efficiency testing for new materials and devices: This would be a service offered to manufacturers, buyers or regulatory bodies interested in an independent assessment of the energy efficiency of a product. The market for this is undoubtedly small, but our credibility in that market should be high.

(5) Consultation with end users (at the request of their serving utility) on ways to avoid demand or other charges on time of day or year power service. If BPA elects to price peak and shoulder loads differently to utilities, and if the utilities decide to pass that rate structure on to their end users, this service may be valuable to our customers. Would a BPA effort to help our customers avoid our rates be trusted by a customer? Maybe not.

b. Producing greater efficiency in use at cost to BPA.

These activities are not self-sufficient. Their cost is part of the cost of doing business and will be a burden on the power rates. We may find widespread agreement on their value in achieving our business objective of increasing the value of electricity. We will not likely find widespread agreement on how well they satisfy the objective, or how much we should spend in their accomplishment. Finding logical and legitimate limits to these costs will be important.

(1) Making electricity a more efficient (and more valuable) product by promoting the construction or manufacture of efficient new electrical homes, devices and equipment.

This effort would concentrate on voluntary changes in energy efficiency specifications for new construction and manufactured products which are sold in the Region. This is the so-called market transformation effort. It is a marketing activity. Its cost should be related to our sales.

(2) Assisting end users with the investment needed to make their facilities more efficient users of electricity.

In some cases, where serving other corporate objectives may be important, BPA may assist end users financially with the investment needed to make their facilities more efficient users of electricity. This could happen where environmental or economic development objectives might warrant such cost. This is a community service kind of activity. Otherwise, it differs from a(1) above mainly in that it is not self-sufficient.

(3) Increasing the value of electricity by increasing end users' perceptions of its value.

It is a well-known perception among NW energy users that gas is the more 'modern' fuel. How did people get that idea? What, exactly, about electricity is old-fashioned? Nothing, really. That image was fostered among people by long-standing campaigns that the Gas Companies felt were necessary to deal with the extremely low cost of electricity in the NW.

BPA could at least organize, and maybe help finance, a region-wide campaign to build an awareness among the energy-using public of the Northwest about the value of electricity. Though it may have that effect, this would not be a

campaign to sell more electricity. It would be a campaign to instill in consumers the idea that the efficient use of electricity contributes value to them as individuals and makes the Northwest a better place to live and work. This effort would have the enthusiastic support of many of our utility customers. It need not be a gigantic campaign, but it should be a long-lived one. Again, this is a marketing activity. Its cost should be limited, and annually reviewed.

(4) Increasing the value of electricity by increasing the number of ways it can serve the end users of the Region.

This is the least well-defined activity because it deals with the uncertainty of the future. It is an activity which is difficult to justify, but it is nonetheless important to our long term market strength. It would include research and development efforts in uses like electric autos, and in new electro-technologies which reduce emissions of Northwest industry in bakeries, wood preserving shops, electroplating shops, drycleaning plants, photofinishing labs, auto body paint shops, medical clinics and R & D labs.