A G E N D A

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METRO

MEETING: Solid Waste Advisory Committee

DATE: February 16, 1994

DAY: Wednesday

TIME: 8:30-10:30 a.m.

PLACE: **Metro Headquarters, 600 NE Grand Avenue**
Room 370

1. **Approval of Minutes** — Ruth McFarland

2. **Review of recent developments in the proposed amendment to the contract with Oregon Waste Systems for waste disposal at Columbia Ridge Landfill** — Bob Martin

3. **Regional Facilities Plan** — Terry Petersen

   A. Discussion of key issues & objectives

      See memo from Ruth McFarland

   B. Proposed decision-making framework

      See memo from Terry Moore, Eco Northwest

4. **Other Business/Citizen Communication** — Ruth McFarland

5. **Adjourn**

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SOLID WASTE ADVISORY COMMITTEE (SWAC)
Meeting Minutes January 19, 1994

MEMBERS PRESENT:

Doug Coenen, Oregon Waste System
Ralph Gilbert, East County Recycling
Ken Spiegle, Clackamas County
Dave Kunz, DEQ
Lex Johnson, Oregon Hydrocarbon
Jeff Grimm, Grimm's Fuel
Tom Miller, WCHA
Judy Ashley, Yamhill County
Estle Harlan, OSSI
Emilie Kroen, Washington County Cities
Tom Zelenka, Schnitzer Steel
Steve Miesen, BFI
Chris Boitano, East County Cities
James Cozzetto, Jr., MDC/ERI
Steve Schwab, CCRDA
Jeanne Roy, Citizen
Bob Kincaid, Clackamas CountyCities
Lynne Storz, Washington County
Susan Keil, City of Portland

GUESTS

Tim Perri, Best Buy In Town
Joe Cassin, Sanifill
Lynda Kotta, City of Gresham

METRO STAFF

Ruth McFarland, Chair, Metro Council
Terry Petersen
Connie Kinney
John Houser, Council Staff
Doug Anderson

Chair McFarland: The minutes from the December 15, 1993 Solid Waste Advisory Committee meeting were approved as submitted.

Mr. Anderson: Presented the Solid Waste Revenue System Study report. Mr. Anderson told the Committee this report was prepared by staff in response to Council's ordinance directing a study of financing options that might be feasible or at least worth studying for implementation by Metro. Mr. Anderson asked Committee members to make any comments, changes and/or suggestions and then vote on whether or not they wish to present the report to the Council Solid Waste Committee at a February meeting.

Chair McFarland: Suggested that a member of the Committee present the report to Council Solid Waste Committee if the Committee chose to adopt the report. Chair McFarland asked the Committee for volunteers who might wish to take part in the presentation.

Mr. Anderson: Said there was nothing contained in the report, which was mailed to the Committee in their Agenda packets, that had not been discussed at length. He said the main thing to focus on is the "draft findings, principles and recommendations in the first section of the report." He asked if the Committee liked what the report was saying, is the wording all right, is the report stated in a way that satisfies the Committee, and is there something not said that needs to be added.

Chair McFarland: Asked if all the Committee members had read the report or did they need to have it read at this time? Ms. McFarland concluded that Mr. Anderson could continue with the discussion as the Committee members appeared familiar with the contents of the report. Chair McFarland asked Mr. Anderson if it was okay for Committee members to interrupt him with questions as he discussed the report.

Mr. Anderson: Said this would be a good idea.

Ms. Roy: I'm looking at the recommendation that is on page 3 (the last page in the handout).

Chair McFarland: Recommended to the Committee that they start discussion at the beginning of the report and ask questions in the order that they came to the topic they were concerned with.

Mr. Anderson: The problem statement is saying that the Solid Waste Department is funded by disposal charges and as time goes on we are accruing more and more nondisposal related charges, some of them by mandate, some of them by RSWMP, etc. As those non-disposal activities begin to attack the wastestream, they are actually undermining their own financial basis; thus a conflict between the management objectives of an integrated system and how you finance that. In brief there is no one "best" solution to this. In the basic conclusions and recommendations I have tried to set forth the problems stated in this Committee. Basically we are looking for diversification and at several different funding sources. It was my understanding that the Committee would like to continue looking at most all of the recommendations discussed as long as they pass the legal tests. You wanted staff to discuss options with interested and affected parties, work out details and bring those results back to you.

Mr. Anderson moved to "Financing Philosophies." He said the first four are the principles behind usage charges, system benefits charges, generator fees and special disposal fees. The last, linkage, is general. Mr. Anderson continued to talk about the different types of funding sources the Committee asked staff to investigate.

Chair McFarland: Said that when we talk about the systems benefits and the enterprises that directly (or maybe indirectly) benefit from activities of Metro, she thinks some of us have come to an awareness that there were a lot of subtle and secondary benefits that the people both within and without the region do get from some of this activity.

Ms. Roy: When we talked about the various possible ways to fund the Metro system, I agreed on the basis that they were possibilities to later look at them. I am not ready to adopt these as philosophical approaches to the Solid Waste System Financing.

Chair McFarland: We have already talked about the fact that we have to look at these ideas. I believe these are ideas that are being brought to you. We do not have to adopt anything we don't want to. But I think we have to look at each of them.

Ms. Roy: She said that when the Committee talked about all the various possible ways to fund the Metro system, she agreed to them on the basis that they were looking into them as possibilities and when they got more details then they would have a chance to say whether or not they thought that was a good idea or not. She said she was not ready to adopt those ideas as philosophical approaches to the Solid Waste System Financing. She said she objected to the word "adopted." Ms. Roy said she can agree to these five things as things we want to explore as possible financing

Chair McFarland: She said the Committee did not have to adopt anything they didn't want to. She said these were ideas to be discussed, but that we must move through it in order to present something to the Council. She asked Ms. Roy if she thought she could adopt some of the ideas or did she just want to wait and talk about them some more?

Ms. Roy: She said she just objected to the words that say: The following philosophical approaches to the Solid Waste Financing System be adopted. She said she could agree that these five things are areas that the Committee wants to explore as possible financing mechanisms.

Ms. Harlan: How about using the word "considered"?

Mr. Anderson: This report belongs to this Committee. If you want to back off, explore, weaken, whatever -- that is why he is here.

Ms. Harlan: She said the underlying concern that comes to her mind is whether any of this will deal with the underlying argument they heard last year that "I just can't afford it." The people that came forward last year said they just couldn't afford that. How do we deal with that?

Chair McFarland: We keep coming back to the premise that when recycling becomes profitable somebody takes it themselves, takes it out of the wastestream. So that part of recycling that we are still doing through out system actually always has a cost to it. She said that the alternative question is that if we ask for those contributions this way will it be more expensive it that way than if they do just go back to throwing it all in the garbage? If getting rid of what is recycled costs more than getting rid of it as just plain garbage, then we are being very self-defeating. Tell me how what we suggested makes it more expensive than simply disposing of it as garbage?

Ms. Harlan: Said she was not suggesting that any of what Chairperson McFarland said was not correct. She said that those processors that we were going to assess a System Management Fee (SMF) said that they weren't getting much benefit, and I believe we are getting past all of that, but they just can't afford it. She is wondering how do we deal with the argument, the more emotional statement which prevailed last year, that we just can't afford it?

Chair McFarland: We don't want to put people out of business.

Ms. Harlan: She said that her concern was that we cannot keep listening to that argument. She said they need to become a part of the system. But she is wondering how we are going to get from here to there using these words.

Mr. Coenen: He said he thought Estle's point is well taken but we are only making recommendations. He said there will be plenty of opportunity for people to come forward and be heard after we make our recommendations about a whole range of issues that relate to these things. He said that presumably, at that point, there will be elected officials who will add balance to some of those things. He said that for instance, if they tend to be sympathetic at that point to those sorts of arguments, then the Council may have to divert more of the funding responsibility to generator charges instead of system benefits charges.

Chair McFarland: We need the collective wisdom of this group and others like it. She said that the way to arrive at that is to voice their concerns, say what they feel and to talk it about it among themselves. She said they were not bound by a report that is handed them, that it was merely a place to start talking. The power is in your hands to give this report your collective wisdom. The Council needs your information.

Mr. Anderson: Please recall we are going to get together with the affected parties. We are talking about multiple ways of financing the system. The ordinance we are operating under has two evaluation criteria that we talked about at first: Economic impacts and affordability. The criterion under "affordability" refers to "the ability of those paying for the programs to bear those costs if it they are determined to be responsible for." We don't want to impose a fee on people that would have a general effect.

Chair McFarland: Said that some of them have responded to and said it isn't affordable, and we have to listen to them.

Mr. Gilbert: Said that Jeff (Grimm) and I are affected by this as much as any here. He said yeah, he would like to avoid any kind of a cost. He said he didn't think anyone did any kind of an evaluation on whether any of them would go broke or not, they just said this was a big cost and they would go broke. He said, however, that they are receiving a benefit from the system and there should be a cost associated with that benefit. He said that by discussing this as they were that they hoped to come up with an equitable charge that did not do irreparable damage to people. He said there is still something owed to the system. He said he thought the words philosophical approaches, which means your only adopting a philosophical approach, not adopting a hard approach. Mr. Gilbert said he liked the word adopted.

Mr. Zelenka He said this was not the end of the process. He believed that staff was trying to put down what their sense is as to where the group was at in terms of objectives. He suggested that rather than going back and forth and never being able to put your arms around it and come to agreement but to go through the objectives and if there is a problem with one lets talk about it and be specific and then move on. He said that at the end they could look at whether or not they agreed on the total document or not.

Mr. Grimm: Said he had a couple of comments. He said it was hard to make a recommendation or tear the document apart when these are only objectives. He said one main problem with the former SMF is that it was too harsh. That it focused on a narrow group of recyclables and it was excessive, that it represented 40% of our tipping fee. He said they could neither afford to give Metro 40% of their tipping fee or tack it on to their fees and pass it on to the customer. He said that in principal these things are good as long as they are reasonable, doesn't put one particular class at a competitive advantage or disadvantage of another, as long as it was reasonable and broad based, as well as a cost benefit.

Chair McFarland: Said she was very glad to hear his point of view. She said that on the other hand, Metro has these overhead costs and if we continue to as in the past, the last load of garbage will cost an exorbitant amount of money. She said that somewhere along the line we need to figure out something that we perceive as equitable and we hope effective. Let us let Doug go through his report. If we can't agree we will set up a special meeting to discuss nothing else.

Mr. Anderson: The next page on financing approaches are the financing options as specific as this group and staff were able to get them. No. 1 is not a lot of change from the current system. This says that the tipping fee is still going to be a primary funding source. But you told us to look at the flat fee at transfer stations -- how we really charge. Should there be a differential between small vehicles, etc. This is much more of an operational issue and our engineering department is already looking into it. No. 2 is a System Management Fee - like concept. This relates to the philosophical concept that says if you receive benefit from those activities then we should look at assessing those benefits into an equitable charge.

McFarland: What kind of benefits are we talking about. I believe that everybody that lives in this region benefits at a certain level.

Mr. Anderson: No. 3 is the Generator Fee idea. This is another way of looking at how to fund those general benefits that we just spoke to. The last meeting we were directed to look at mechanisms of billing which would pass the legal hurdle. Mr. Sadlo produced a memo that addresses one of the questions that explicitly can up last time which is: Can we work a fee through the property tax billing system. The answer is yes. It has been done once in the State of Oregon. That is a very technical criterion. Generator fees have four billing mechanisms: Property tax, utility bills, jurisdictions and haulers.

Mr. Kincaid: He said that to assume that other jurisdictions will have some sort of fee, bill it and collect it for Metro is just not in the cards. He said that not only would it be almost impossible from an administrative standpoint but that politically that will never happen and frankly it is not worth talking about. He said it would be much more efficient for Metro to build its own billing system through their own GIS.

Mr. Anderson: I appreciate your comments. One of our consultants is looking at those issues. Some of our preliminary findings are that it is not too optimistic, in the sense that you want to reach everybody with generator fees; through jurisdictions you think you get a lot of people, and it turns out you've only got 80%. So it becomes a real issue about the equity on the 20% that aren't paying and how you balance things like how do you make sure people get only one bill; what is the mechanism for delinquencies.

Mr. Kincaid: Said he didn't think you have to give it much thought at all. I believe our council would tell Metro no, they aren't going to do it.

Chair McFarland: She said he may be accurate in his political assessment. She said her political assessment is that more and more people in this society want all the benefits of a civilized and rational society and all the things that go with it without paying for it.

Mr. Kincaid: Said he didn't say an overall fee was not appropriate. He said that asking jurisdictions to do the billing for Metro was just not in the cards, politically.

Ms. Kroen She said that technically she thought it was impossible. She said that with regard to No. 3, billing generator fees to jurisdiction and haulers, it was a clear consensus that "to" would be inappropriate but "through" would be appropriate In other words using the City as the collecting agent and having to pay Metro 100% of what it bills and they the City only collects, say 90%, that was not palatable, but through, in her mind was still feasible.

Mr. Coenen: Said he though the concept of the Generator fee is to try to really spread it out. So I believe that "through" is more accurate.

Mr. Schwab: He said he had two points: one is that with the haulers you are only reaching the affected parties that are currently in their system and are paying already. He said you are still not reaching the unaffected people which he thought was the target. He said it didn't matter whether you billed to or through the haulers, you are actually just adding another franchise fee. He said that with No. 2, to take out the part that says: "should consider the facilities ability to pay." He said he wished Metro would consider his ability to pay when they send him the bill. He said if Metro bills through them, they then must adjust their rates in order for them to be able to pay the bill.

McFarland: She said she agreed and didn't know how we assume who has the ability to pay and who doesn't.

Mr. Schwab: He said if you take the one part "should consider . . .." He said he liked: should minimize the negative impact, and he agrees. He said the ability to pay is not an issue here.

Chair McFarland: She said the ability to pay is an important question, but not our question. She said that she insists that we can start this report assuming that: Because we all live in a society in which we want to be able to walk down the street without encountering rats, etc., eating undisposed of garbage, that we all have an interest in this.

Mr. Anderson: So, the following changes are: No. 2 we strike: "should consider the facilities ability to pay." No. 3 striking the words so it reads: "billing generator fees through property tax bills, utility bills, jurisdictions and haulers."

Chair McFarland: If we spread this around to everybody that benefits, it may not be that onerous to anybody. She said she believed there was yet another change.

Mr. Anderson: No. 4 on the same page, financing options are the Advanced Disposal Fee and other forms of special fees as funding sources for special and identified programs. Last page is other recommendations. The group wanted to make clear to the public that this is a revenue neutral issue, and we are not looking for new money That we are looking simply for a different way of funding existing programs. He said we should consider that certain things will take a long time to hammer out and come to agreement on and others may be relatively easier and that we should implement pieces of the program as they are available.

Ms. Roy: On revenue neutrality, the way this is stated it sounds like either we would reduce tip fees and put in some fee or other fees, or else we would not do anything until we establish a new program. She said that her interest in these new possible charges was in case the tipping fee needed to be raised at some point and then we look at changing the structure so that we don't have to increase the tip fee, that we have some other ways of changing the system. She said she does not want to lower the tip fee because I can see we would backslide on recycling. She said she is also not sure that she wants to have to wait for a new program. She said she was not sure of what was considered a newly approved mandated program.

Mr. Anderson: He said that the way this is stated we would raise our revenue requirements only with new programs. He said he understands her concern is what about expansion of existing ones if in fact that falls in the same category.

Ms. Roy: She said yes, particularly if they are already mandated, but we find that in order to implement them we have to get more funds than we have with the present tip fee.

Mr. Anderson: So if we add to the list, expanded," to read: are intended to fund newly approved, expanded, or mandated programs."

Ms. Roy: She said she thought that would help, but she just didn't want to get locked in with this so that we either have to lower the tip fee or establish new programs in order to implement some of these things.

Mr. Zelenka: He said he believed that government had to constantly look at can you do more with less, and the notion that we've got to keep whatever fees we've got and just build I believe is the wrong way to go and that this will cause a real backlash with the consuming public. He said that the notion of having it revenue neutral so that you don't engage in program bashing at this juncture, which turns into budgetary issues, that's a Council issue. We need a way to broaden the base so that you in fact reduce the pressure instead of bashing programs. He believes we need to broaden the base so that everybody is paying their share of the program.

Chair McFarland: Said she believed Ms. Roy wants to know if this means that we have to be adopting something new and different in order to shift and change this or are we always looking at new and different ways, hopefully better. She said not to misunderstand what she said about not lowering the tip fee because that would reduce the amount of recycling. She said that people recycle because it costs less to recycle than it does to pay the full tipping fee. She said she believes that if we hold the line on the tipping fee that it will be a relatively major feat on our part because we are fighting inflation, etc. She said that she believes that the action last year on holding the line on tipping fees brought us some additional kinds of activities that would not have come had we raised the tipping fee.

Ms. Roy: Said she agreed that government needs to learn how to do with less money. But I don't want to get locked into a situation where in order to make some of these changes we have to either decrease the tip fees or establish a new program.

Mr. Miller: Said one of the objectives perhaps was to move closer toward the cost of service in developing these rates and that addresses somewhat Jean's concern about expansion. If you have a unit cost for delivery of service and you are required to deliver more services, the unit cost should cover the additional cost that is delivered -- if you are close to cost of service in the first place. He said he has a concern with the additional program portion. He said one of the reasons we are where we are is because we have a fixed funding source, tip fees, based on tons and additional programs that continue to come on without funding mechanisms. He said he would like to add to the revenue neutrality paragraph: That substitute programs or proposals should not be considered without accompanying funding plan or source.

Ms. Kroen: Said she felt strongly that to come to some conclusion there has to be revenue neutrality so that you can even determine what the impact is at a given point in time on whatever changes are being made. She said that if that also allows for new programs other than those that are required that is fine, but that is after the fact.

Chair McFarland: Basically, what we have right now is that our recycling efforts do not pay for themselves and they are being subsidized by costs that are levied chiefly against the haulers, as well as the people who are throwing away that garbage.

Ms. Harlan: As Metro comes into its new life under the Charter, there is something that we have not breached today and that is that solid waste will become, at least in the minds of those candidates for elected positions at Metro, less of a focus. And that and all this other planning that Metro does will come into the front. Our concern in talking with them is how will that be paid for. Right now you have no source to pay for all that planning and you are paying for it out of the excise tax on tons collected. That is a picture we haven't even touched upon that makes all of this pale. So this policy becomes even more important that Metro not engage in those activities that are mandated under the Charter unless they are ready to pay for it without using the tipping fees.

McFarland: I agree with you on that and I believe that the political climate right now for new taxes is very dismal.

Ms. Harlan: Some of these candidates don't want a niche tax or to be assessed any more. They think tip fees are just fine. There is a larger issue under the Charter and you will be mandated to do this under your Charter have no money. This group needs to come out with a much bigger statement saying tonnage can't pay for it.

Chair McFarland: The candidates and the public must be made to understand that what Metro does primarily has to do with disposing of the garbage from this metropolitan area.

Mr. Martin: The Charter also has language in it relating to the necessity for user fees to be directly related to the service provided -- and I am paraphrasing a lot. What I think that means is that you can't simply use the tipping fee as a cash account for things that are not arguably related to garbage. Also, the tax study committee came up with a niche tax that had to do with development and real estate issues which was not well received. It doesn't look like a new source of revenue will emerge within the next year. Which means we will do a lot less than contemplated in the area of planning and other activities in Metro or we will have to increase the excise tax. The excise tax is on revenue of which over 80% comes from solid waste. He said he believed that people ought to look more closely at the policies that committee came up with. Regardless of the sources of revenue, some of the policies contained in that report are extremely valuable and worth looking at. One of those policies is that no one enterprise activity in Metro ought to provide more than the majority of funding for whatever under the excise tax for whatever activities are funded under the excise tax. That one principal would reduce the exposure in the tipping fee to the excise tax revenue.

Mr. Gilbert: Maybe we should take a look at how much money is taken from the Solid Waste Department to fund other activities. How much money is taken from SW to fund other projects?

Chair McFarland: Actually, that was why the Rate Review Committee was formed. She said that some people had the idea that money was somehow taken and used for other things, things other than solid waste kinds of things. In our budget there is a very clear document that shows every penny, where it goes and how it goes.

Ms. Harlan: To follow up on Ralph's comment, I would like to see that at the next meeting. I would like to see the excise tax on there because the $75/dollars per ton includes the excise. Lets see what the whole $75/ton pays for.

Chair McFarland: She said it would be interesting to see how much money comes in at the $75/ton and see how much is found in the SW budget.

Mr. Martin: That is exactly what RRC has asked us to do for their next meeting on the 26th of January. They will be presented a document on what the excise tax goes for. Right now at 7% is roughly $5.00 of the $75.00. They want to know: 1) How much of our rate is excise tax and what kinds of things does that fund. And Chair McFarland is correct -- that is the only part of our solid waste revenue that goes to non-solid waste activities. In fact, it is not a solid waste revenue at all it is a separate fee -- an excise tax. Secondly, the RRC wanted to know how much money we are transferring to other departments of Metro to provide direct services in support of solid waste activities.

Mr. Boitano: We seem to be aimlessly skirting all these issues. Someone originally mentioned adoption of new financing options should be something that changes and really what we are saying is that adoption of new financing options should be rate neutral. The impact may be a rate impact in another generating area or it could be the rate base -- the base upon which the revenue is generated. I don't think it is appropriate to get down and say I really don't want tip fees to be doubled because that is not what this is doing. This is just a high-level statement indicating that if we adopt any new financing options, I'm suggesting that they say they should be revenue neutral. There may be impact on rate areas or rate base -- maybe but not necessarily and drop it at that. Let's try to close on this so we can move on.

Ms. Roy: Are you suggesting that we just have that one sentence that says any solution should be revenue neutral?

Mr. Boitano: Yes, could we say: "Adoption of any new financing options should be revenue neutral." Impacts may be seen in areas of other rates or rate bases. Because we are not just talking about rates here. Rates may not necessarily change. It is the rate base upon which we derive the rate revenue.

Mr. Anderson: I don't have it wordsmithed but let's see if I can get the essence of what you are saying. What you are saying is that the statement is okay as it stands and perhaps needs some clarification. We are not talking rate neutrality but more of a general revenue to Metro neutrality. This may mean that we can design a program that doesn't necessarily change the tip fee but accomplishes objectives in other ways. We are not saying "rate neutral 'but' revenue neutral."

Chair McFarland: Do you want to pass on this document today?

Committee: Yes.

Mr. Schwab: It sounds like we are saying we aren't going to lower the tip fee and I don't want that to be in this document. I thought the whole point of this study was to spread the cost across a different base and end up with revenue for Metro to operate. In other words: cost of service vs. unfairly putting up the tip fee.

Mr. Anderson: So striking up to the last sentence. Beginning the last sentence: Adoption of any financing options should be revenue neutral unless the new programs are intended to fund newly approved, expanded or mandated programs.

Ms. Roy: I would suggest dropping that last sentence and using the first two sentences.

Chair McFarland: Okay, is it the will of this group to keep those first two sentences and drop the rest of the paragraph?. "Any solutions should be revenue neutral. Metro is not seeking new funding, rather it is seeking to redress inequities, establish a more stable revenue base and satisfy the other criteria listed in Council Resolution No. 1824A."

The Committee concurred unanimously.

Chair McFarland: So, I am to understand all of the changes we have made so far have been with the agreement of the group, right?

Mr. Petersen: Does the group want to make a stronger statement about funding non SW projects than what we have here? Do you want to propose a fourth general recommendation?

Chair McFarland: How about the one on public education, are you comfortable with that?

The Committee concurred with the public education statement.

Mr. Coenen: Perhaps some suggested wording would be something along the lines of: Reliance upon SW revenues to fund non-SW programs would exacerbate the problem statement on the beginning of this report.

Ms. Harlan: No, it won't exacerbate, it is unacceptable.

Mr. Zelenka: Item 3, I am assuming that is a loose definition of the word, "program" and you are not really talking about implementing a new program.

Mr. Martin: Use the word endeavor instead of program and I think you will be allright.

Mr. Anderson: "Accordingly, Metro should communicate this project to its broader audience of customers and the public at large."

The Committee concurred.

Mr. Anderson: No. 4. Let me read back what Doug said: "Reliance upon the Solid Waste revenues to fund non-solid waste programs will exacerbate the problem statement we have made at the beginning of this report." Estle added to change "exacerbate" to "unacceptable."

Ms. Harlan: ". . . non-solid waste activities should not be funded by solid waste revenue, including the excise taxes."

Chair McFarland: No, we can't do that. We can't say what the excise tax is going to go for -- that's not our purview. That excise tax is not only on solid waste but other things as well.

Mr. Martin: This is the wrong forum to talk about what the excise tax is, how its used, how it is administered.

Ms. Harlan: Okay, we can argue that on another day. So we can just say: "non-solid waste activities should not be funded by solid waste revenue."

Mr. Anderson: So, we are adding another recommendation 4 that currently reads: "non-solid waste activities should not be funded by solid waste revenue."

McFarland: So, the only thing we are still not in agreement on is whether or not to use the word "adopted," "considered," or what in our opening statement.

Ms. Roy: Considered.

Chair McFarland: I would like a vote:

The Committee voted in the majority for the word "adoption," Ms. Roy objected.

Chair McFarland: On the page about financing options "through" instead of "to" No. 2, cross off "should consider the facilities ability to pay". On the next page on recommendations, we marked everything but first two sentences. Wants the last sentence of no. 3. Metro should communicate to a broader audience of customers and the public at large and No. 4 we said:

Mr. Anderson: "non-solid waste activities should not be funded by solid waste revenues."

Ms. McFarland: Okay, is this the document you want to adopt? Okay, it has been moved to adopt this document.

Mr. Johnson: I second the motion for adoption.

All but one of the Committee agreed.

Jeanne Roy opposed.

Chair McFarland: Who would be willing to come forward and be a representative from this group to present it to the Council?

Tom Zelenka and Estle Harlan volunteered.

Chair McFarland: Said why didn't we have Tom and Estle both present it?

Chair McFarland asked the Committee their opinion and everyone agreed.

Ms. Harland: Said it would depend on when it came before Council as she had a trip to Washington, D.C. that would take a couple of weeks.

Mr. Petersen: He said he thought it would be possible to work around her schedule.

Chair McFarland: She introduced the next agenda item: Proposed amendment to the Oregon Waste System Contract for Disposal Services at Columbia Ridge, to be presented by Mr. Martin. She said that Ms. Gorham was going to give an update on waste reduction planning activities, but she asked Ms. Gorham if that could be postponed until next meeting.

Mr. Martin: He said that the Solid Waste Department had been working for some time on some amendments to the disposal contract with Oregon Waste Management. He said this issue takes a lot of study to understand and he was going to try to explain and it may sound a little over-simplified to some and complex to others. He said our existing agreement with Oregon Waste Management is essentially a 20-year contract and we can extend it depending on tonnage. The agreement provides for a dollar per ton price and is adjusted depending on what the Consumer Price Index does -- basically an inflation adjustment. Oregon Waste Management's initial concern was that if they are going to put "X" millions of dollars into developing a major new facility they wanted a guarantee of tonnage each year, or pay them as if we had sent that tonnage and referred to as "put or pay." Metro didn't want to get locked into that system. After negotiation with Waste Management we ended up with the formula referred to as the 90% flow guarantee (of all acceptable waste Metro delivers to a general purpose landfill, but doesn't include building material, industrial waste, etc.). A general purpose landfill is different from a limited purpose landfill.

A second major provision is the "most favored rate agreement." The rationale for this provision was that back in 1987 when we negotiated all provisions, the concern was that Waste Management would build this new landfill, they anticipated paying for it through our fees, but they also intended to market that landfill capacity to other Northwest customers. Metro felt that since they were paying for that landfill off of the backs of our ratepayers, the rate we agreed to in our contract was sufficient for them to capitalize their investment in that landfill and if they received additional customers they could cut their rate and Metro would essentially be paying for a landfill that everyone else was using and benefiting from. So, the way the "most favored rate agreement" works is, essentially, that WMO must offer to Metro the same rate they offer any other future customers at that landfill. At that time there was one landfill in Eastern Oregon and possibly one other, the status of which was uncertain. We now have three landfills: Columbia Ridge in Oregon (receives Portland, Seattle and Kenniwick garbage), Finley Butte and Roosevelt in Washington. Roosevelt receives about 2 million tons, Columbia Ridge receives about 1 million tons, and Finley Butte receives quite a bit less. There is a fourth landfill being proposed in Adams County, proposed by Waste Management as part of their Seattle contract to eventually shift Seattle's waste to a Washington landfill. Seattle is somewhat fearful of being whim to the Oregon legislature, or to host fees over which they have no control. There is enough capacity in the three existing landfills to handle waste for the entire Pacific Northwest for a number of years.

Mr. Martin presented diagram/explanation boards with the following information:

The proposed amendment to Council does the following:

Reduces disposal rate in exchange for waste disposed of at the Riverbend Landfill;
Replaces "Most Favored Rate Agreement" with a per ton credit for non-Metro waste;
Lowers rate of adjustment of disposal fee due to inflation;
Eliminates claims under 90% clause of agreement for previous years;
Removes bonding requirement.

Mr. Martin also reviewed the proposed financial changes:

McFarland: She said that the prior evening at the Council Solid Waste Committee meeting, we were presented with a report from an independent group (Professional Financial Management) indicating a savings of one to two percent higher than the estimates Mr. Martin is indicating.

Martin: He said that in addition, this same group determined that the analytical process and assumptions the Solid Waste staff used were all reasonable. Mr. Martin said he believes this answers the questions of what we can do to save our rate payers some money in the future as well as what we can do to protect our rate payers from continuing escalation of rates.

McFarland: Have you had time to make dollar amounts returns for years one through five?

Martin: Not yet.

Ms. Ashley: Could you explain what the next steps of the process are?

Martin: We have presented this to Council Solid Waste Committee twice now. Next step will be to have an additional hearing before Council Solid Waste Committee on Feb 1. Hopefully the Committee will have what it needs to make its recommendation to the full Council at that time.

Ms. Keil: Have we been as tough on this as we can possibly be on this?

Chair McFarland: I think we have done as well as we can as soon as we can.

Ms. Harlan: How does it relate to Seattle?

Mr. Martin: I anticipated this question. Suppose that we keep the "most favored rate" agreement in place under the theory that Waste Management is really stuck and will have to send Seattle's waste to Columbia Ridge, which is a risk and I don't believe they will continue to do that. We would gain about $10 million dollars under that arrangement and I have already shown you that we get $14 million dollars out of the adjustment that we are proposing. Does that mean that Seattle will get a better rate than Metro? Yes, but just barely and only for a few years.

Their contract negotiates a rate reduction over the next couple of years. For a little while they will be a few cents below. In 1998 we will catch up and thereon we will be below. This assumes that Seattle stays and no new additional business comes into Columbia Ridge. If they do get additional business, our rate will always be below Seattle's.

Chair McFarland: I have not spoken to anyone at Columbia Ridge, but let me speak to the assumption that they <u>have</u> to take the garbage to Columbia Ridge and nowhere else. My personal assessment is that I do not believe they will build another landfill in Adams

County. But they do have Roosevelt, there is one at Finley Butte and there may be others I don't know about.

Chair McFarland: I am pleased that we got through this document today. There will be another meeting in this room at exactly 10:30 so we will now have to adjourn.

M E M O R A N D U M

METRO

DATE: February 8, 1994

TO: Solid Waste Advisory Committee

FROM: Ruth McFarland, Chair

RE: Facility Planning

On Tuesday, February 15, the Council Solid Waste Committee will consider a resolution to revise the Facilities Chapter of the Regional Solid Waste Management Plan. I would like to discuss this project at the February 16 meeting of the Solid Waste Advisory Committee.

At that meeting, I want SWAC to help identify key issues to be addressed in the plan. I would also like the Committee to agree on a general decision-making framework that will guide staff work.

As a starting point for the discussion, I suggest the following "ground rules":

1. The facilities plan should be regional in nature.

2. The plan should address all types of solid waste facilities including those that are not currently regulated by Metro (e.g. yard debris processors).

3. SWAC will be the advisory group that develops the plan and presents it to the Metro Council.

The planning process will be more efficient if we stay focused on key issues. I suggest the plan should address the following two questions:

1 What are the costs and benefits of facilities compared to non-facility options (e.g. waste reduction and recycling) for handling the same waste?

2. What regulatory control should Metro exercise over solid waste facilities?

A decision-making framework for facility and waste reduction planning is proposed in the attached memo from Terry Moore to Terry Petersen. Please review the memo and be prepared to either approve the framework or suggest alternatives at the February 16 meeting.

RM:jc

Attachment
cc: Bob Martin, Solid Waste Director
Terry Petersen, Planning & Technical Services Manager
pete\swac\swac0208.mmo

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February 8, 1994

To: Terry Peterson
From: Terry Moore
Subject: **Technical Memorandum: Least-Cost Planning for Solid Waste**

WHY THIS MEMORANDUM?

Metro asked ECO Northwest to provide an overview of least-cost planning, the economic logic that underlies some of its techniques, and how those techniques can improve decisions about the correct configuration of solid waste facilities, programs, and rates. This memorandum provides that overview at the conceptual level—it does not describe specific techniques as they apply to Metro and the Portland region. Thus, it is only a starting point for a discussion about the advantages and disadvantages of shifting from Metro's current planning process toward one based more on least-cost planning principles.

The views expressed in this report are those of ECO Northwest. Metro staff have not reviewed this version of the technical memorandum and may disagree with some of its conclusions. I will be available at a meeting on 16 February to respond to comments from the SWAC and staff.

SUMMARY OF CONCLUSIONS

As the public's demands for waste management increase, so does its scrutiny of local public agencies charged with that management. Metro must increasingly demonstrate that its decisions about capital improvements, operations, and rates are both efficient and fair. The techniques of least-cost planning can assist with that task.

Most of the techniques have been developed by electric energy utilities: not only was electricity more important than solid waste to begin with (more customers, more visibility, and more significant as a percent of the average household's and firm's budgets), but the public perceived a crisis in energy at least ten years before it perceived one in waste. The techniques energy utilities use for determining a least-cost mix of generating resources and conservation, for including environmental effects in that determination, and for setting rates are all applicable to long-run planning *for* solid waste management.

The basic steps of least-cost planning are similar to those of all comprehensive planning:

1. Estimate the benefits and costs of all resources in comparable terms

2. Identify and screen alternative resources to eliminate obviously inferior ones

3. Bundle resources into competing portfolios, each of which meets expected demand for waste handling

4. Compare, rank, and select the portfolios

The chief difference between least-cost planning and techniques formerly used by utilities are that they explicitly consider all programs and facilities simultaneously, and attempt to identify and quantify where possible all the benefits and costs of these programs and facilities so that they may be compared to the end of selecting a mix of programs and facilities that minimizes total system cost for a given level of service.

The principle advantages of a least-cost framework for making decisions about additional solid waste facilities and programs are that it:

1. Provides a logical and economically correct framework for decisionmaking, which is, therefore, an explainable and defensible one.

2. Encourages a consideration of all costs and benefits, and the inherent uncertainty of their values. Even if they cannot all be measured, just *thinking* about policy decisions in a least-cost framework will improve decisionmaking.

3. Treats explicitly the tradeoffs and feedbacks among facility options and program options.

LEAST-COST PLANNING
FOR SOLID WASTE MANAGEMENT: AN OVERVIEW

SYSTEMS FOR MANAGING SOLID WASTE ARE MORE COMPLEX THAN THEY USED TO BE

Thirty years ago, planning for the disposal of solid waste was straightforward. Managing waste efficiently meant disposing of it cheaply. Concerns about nuisances and health led to the replacement of open dumps with sanitary landfills, despite their greater cost. Until recently managing solid waste meant building and operating a sanitary landfill, the least expensive disposal option under the then-existing regulations.

In the 1980s managing solid waste got more complicated. Economic and environmental conditions changed, as did the public's values. Public opposition to the siting of landfills exacerbated a mounting problem with lack of capacity. Decisionmakers looked at alternative solutions like incinerators and found more opposition. The failure to site facilities strengthened the position of advocates of recycling and waste reduction, who argued that *programs* could substitute for disposal *facilities*.

THE TRADEOFFS BETWEEN WASTE REDUCTION, RECYCLING, AND DISPOSAL REQUIRE INTEGRATED PLANNING

Building and maintaining a solid waste management system is no longer a case of finding the least expensive landfill. Solid waste utilities need a decisionmaking framework capable of dealing with the complexities and uncertainties of their planning problem—a framework for determining a *least-cost mix* of disposal, recycling, and waste reduction options. Moreover, as the public's demands on waste management systems increase, so does its scrutiny of public agencies charged with that management. Solid waste agencies must increasingly demonstrate in a manner that is both rigorous and comprehensible, that their decisions about capital improvements, operations, and rates are not only efficient, but also fair in both process and outcome. Least-cost planning provides a framework for solid waste decisions that is logical and defensible. It can be applied either to large-scale, bottom-up system redesigns, or to the evaluation of incremental changes in facilities or programs.

MANY UTILITIES USE A LEAST-COST FRAMEWORK FOR DECISIONMAKING

Energy utilities have already faced problems similar to those of solid waste management agencies. Not only was electricity more important than solid waste to begin with (more customers, more visibility, and more significant as a percent of the average budget of households and firms), but the public perceived a crisis in energy at least ten years before it perceived one in waste. Policymakers forced utilities to consider conservation (the energy equivalent of recycling) as a substitute for some generating capacity. The requirements of the Public Utility Regulatory Practices Act that investor-owned utilities purchase the output of small generators made an analysis of *avoided cost* (the resources saved by <u>not</u> having to develop new capacity through traditional public projects) essential. The energy utilities were no longer isolated monopolies trying to operate a single facility at minimum cost. Rather, they had to compare simultaneously several facilities and programs that had different costs, generating capacities, and expected lives.

To make these comparisons, energy planners developed the least-cost planning approach as a framework for comparing and selecting the least-cost mix of resources from a diverse pool of resource options. As that planning process evolved, so did its name: the Energy Policy Act of 1992 calls it *integrated resource planning*,[1] which it defines as:

> "...a planning and selection process for new energy resources that evaluates the full range of alternatives [not just generation, but alternative energy sources and conservation]...to provide adequate and reliable service...at the lowest system cost."

The statute makes it clear that such planning should consider risk, uncertainty and life-cycle costs, and that all resources must be evaluated on a consistent and integrated basis. These resources range from traditional resources, such as coal or nuclear plants, to non-traditional resources, such as conservation programs and load shaping. According to the Act, a majority of states, including all the states in the Northwest, are using integrated resource planning.

That planning framework is at the heart of the work done by the Northwest Power Planning Council. The framework has helped the Council clarify its purposes: it is trying to provide the benefits of electric power (heating, lighting, and so on) in a way that minimizes costs to the society it serves.

Integrated resource planning in electric utilities emphasizes incorporating *demand-side management* in a planning process that has historically been dominated by supply-side solutions (new power plants). Similar ideas have occurred in other utilities like transportation, where *transportation demand management* now gets attention. In Seattle and the Oregon Department of Transportation, planners are beginning to look at the application of least-cost planning to transportation.

LEAST-COST PLANNING CAN IMPROVE SOLID WASTE MANAGEMENT

Here are some examples of how solid waste management can be improved with least-cost planning:

- A goal common to all utilities using least-cost planning is to provide a system that minimizes *all costs* to the society it serves. A solid waste agency cannot demonstrate that it is meeting this goal if it does not attempt to estimate all costs for several reasonable configurations of facilities and programs. Some of those costs go beyond those that affect generators and consumers through rates.

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[1]The subtle differences, if any, between least-cost planning and integrated resource planning are not worth pursuing here. In the rest of this paper, I'll use the terms as if they were synonymous.

- The number, size, and function of transfer facilities depends on the amount of waste heading for disposal, which in turn depends on markets and programs for recycling and waste reduction.
- The net value of waste reduction and recycling programs depends not just on how much waste they pull from the disposal stream, but on what it costs on a per ton basis.

There are many variations on integrated resource planning, and many different levels of detail to which it can be carried. The specifics are rightfully the decision of the regional, local, and private entities charged with planning for and managing solid waste. In my opinion, however, the *framework* is essential. Solid waste agencies have outgrown their previous role as low-cost, anonymous service providers. They will have to adopt least-cost planning techniques for evaluating the efficiency and fairness of their waste management system—accountability to increasingly vocal ratepayers and interest groups will demand it.

Many solid waste agencies have already adopted a least-cost planning framework: large metropolitan areas like New York, Toronto, and Seattle, and, on the west coast, counties like Snohomish and Santa Barbara.

WHAT ARE THE GENERAL STEPS IN LEAST-COST PLANNING?

A least-cost framework can be used both to redesign an entire system from the bottom-up, and to make decisions about adding new facilities and programs to an existing system. In this section I describe the bottom-up process because it best illustrates the concepts. I recognize that most solid waste agencies, including Metro, have systems that are mostly developed: the marginal case uses all the same principles; only the scope is different. I give an example of marginal decisionmaking in the next section; in this section I focus on bottom-up system planning to illustrate the concepts of least-cost planning.

As the regional solid waste agency, Metro makes decisions about committing its capital and labor—and those of firms and households that ultimately pay for solid waste management—to facilities, programs, or policies. At the heart of least cost planning is the belief that all benefits and costs of such decisions not only *should* be identified and estimated, but also that, to a tolerable approximation, the major ones *can* be. To the extent possible, least-cost planning tries to represent these benefits and costs in dollars, which facilitates comparison across alternatives (e.g., by allowing a comparison of the cost per ton of waste removed from the waste stream by program).

Least-cost planning uses standard economic techniques to make sure that cost for different years and for facilities and programs with different lives and risks are handled consistently.[2] In theory, all costs should be included in this economic representation of facility and program options; not only readily-measurable economic and environmental costs, but also the less tangible costs of environmental risks and uncertainty. In practice, judgment is needed to augment the quantitative process to incorporate intangible costs and benefits.[3]

Used properly, these techniques place an even footing all potential facilities and programs (which I'll refer to as resources, to connote both that they are things Metro can call on to manage solid waste, and that they use capital and labor and, hence, have a cost). Those resources can be screened, selected, and combined into least-cost groupings of facilities and programs (which I'll refer to as resource portfolios). This process typically has four basic steps,[4] and is illustrated in Figures 1 and 2.

1. *Estimate the benefits and costs of all resources in comparable terms*

   Resources as diverse as landfills, transfer stations, yard-debris centers, recycling programs, and waste reduction programs have different development costs, different streams of economic and environmental benefits and costs, different life expectancies, and different decommissioning costs. To make these resources comparable one begins by estimating the cost and revenue streams for each individual resource at equilibrium levels of demand for that resource. For each resource these revenue and cost streams are then combined, adjusted to constant dollars, and finally levelized. This process yields a standardized measure—the levelized cost per ton over the life of the resource—for comparing resources in the subsequent steps. Figure 3 shows the results of this kind of process for energy supply in the Northwest.

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[2]For example, three standard techniques, used in combination, allow the comparison of benefits and costs that accrue in different time periods. *Constant dollar accounting* ensures that all future benefits and costs are not over- or under-estimated because of inflation. *Discounting to present value* accounts for the fact that society and its members prefer consumption now to consumption later. *Unit cost levelization* ensures estimates of unit costs (e.g., costs per ton) for facilities and programs with different lives and different flows of benefits and costs are, in fact, comparable. As applied to solid waste systems, for example, a levelized cost per ton is the amount that, if charged for every ton when that ton was processed, would just cover all costs by the end of the project's lifetime.

[3]My point is not the one often attributed to economists: that they think everything can and should be measured in dollars. Rather, it is that agencies cannot ignore some significant costs just because they cannot measure them. The least-cost framework reminds and requires analysts to identify those costs, and to quantify and monetize them to the extent possible.

[4]Assuming that an agency, in choosing a least-cost framework, has agreed on the basic goal it implies: minimizing total societal costs for a given level of waste handling service.

Figure 1

Steps 1 and 2
Evaluation of Alternative
System Components (Resources)

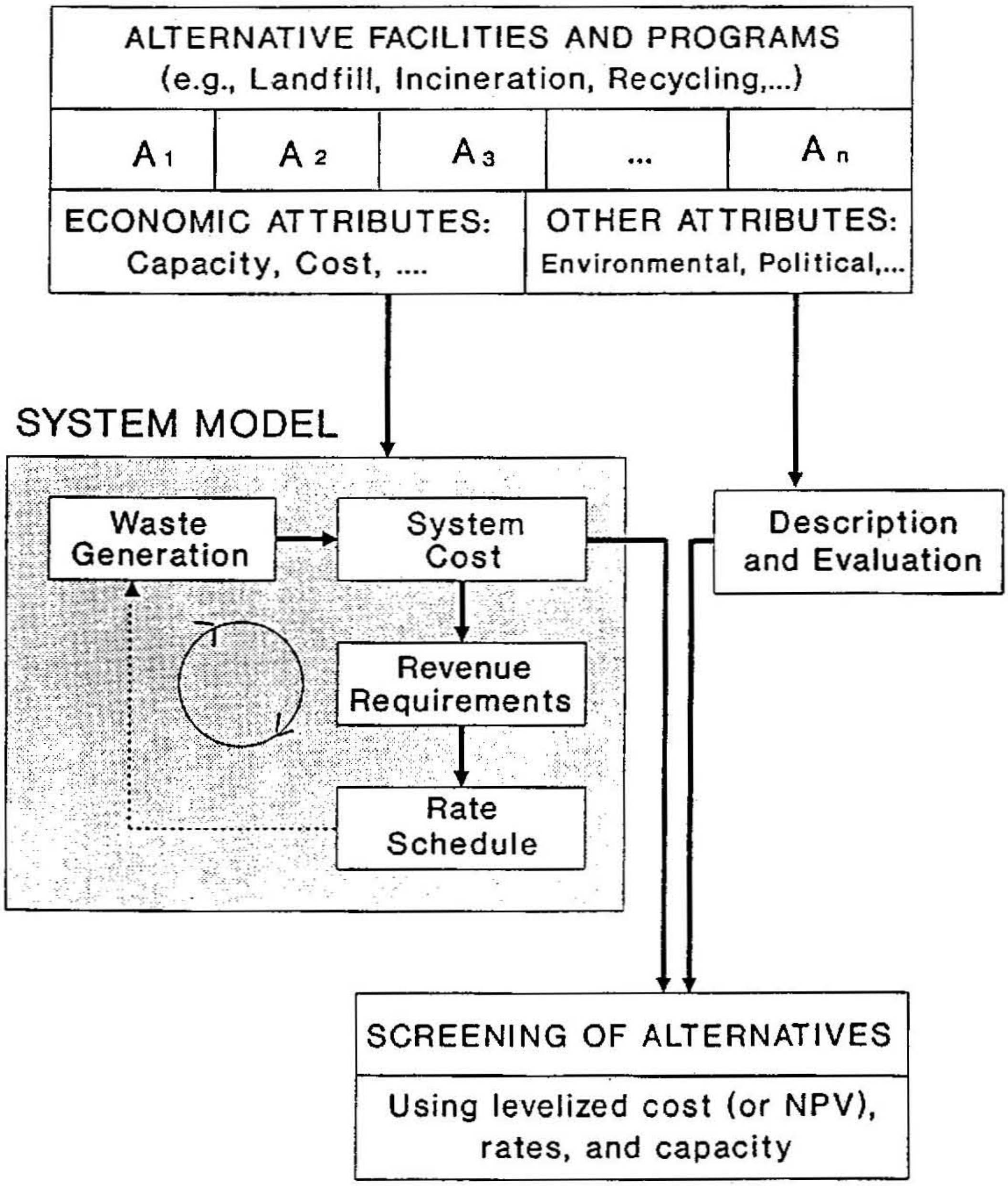


Figure 2

Steps 3 and 4
Evaluation of Total Systems
(Portfolios of Resources)

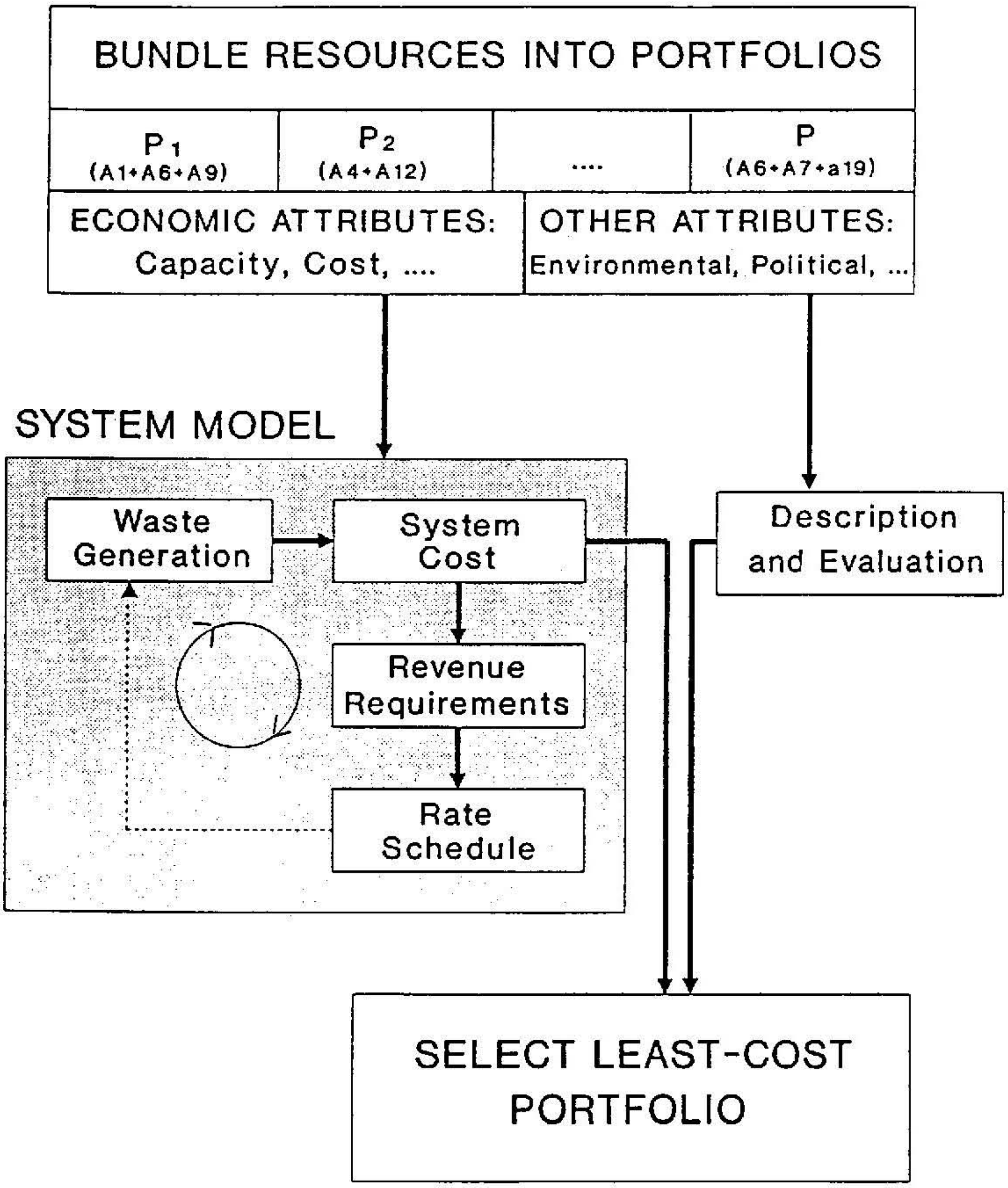
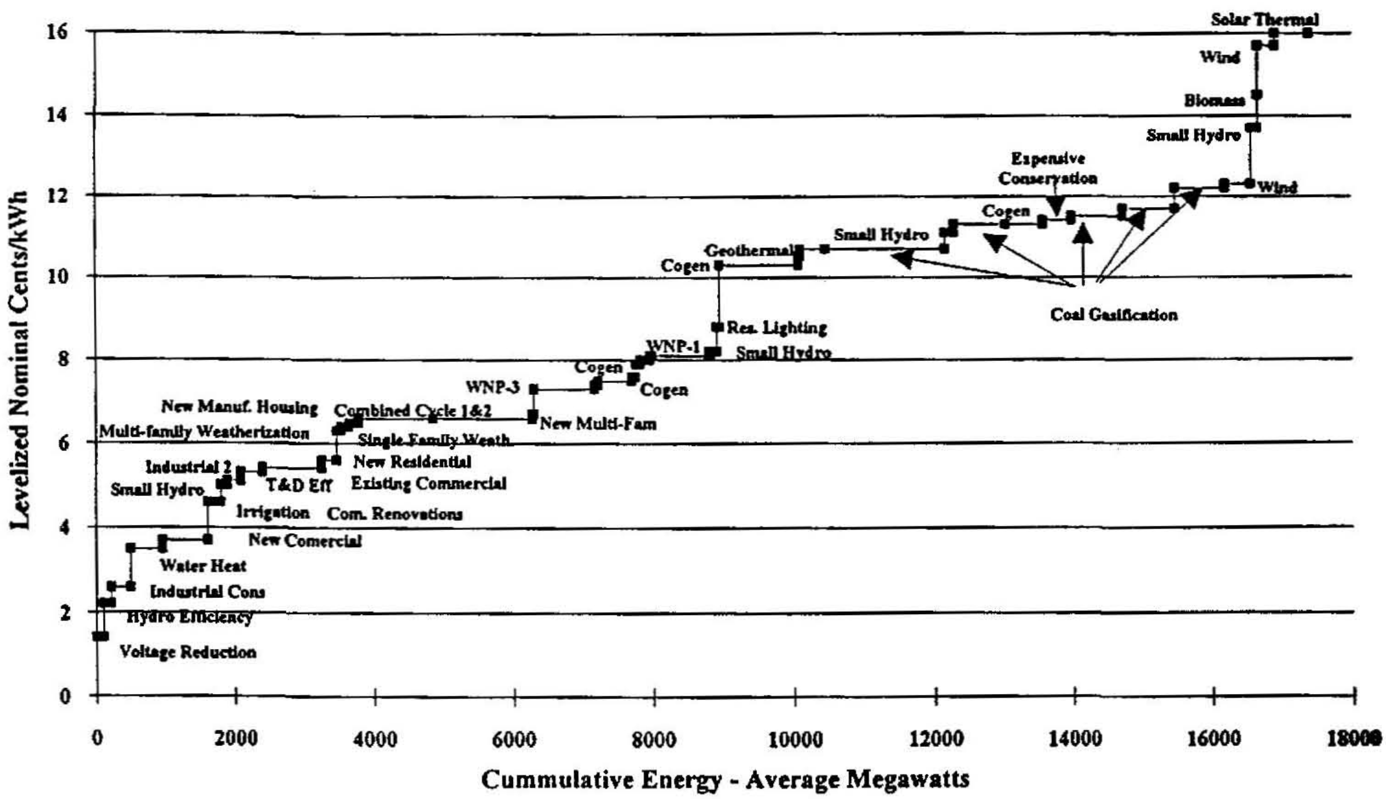


Figure 3

Resource Supply Curve,
Northwest Power Planning Council
1991 Plan



For example, in its decision about Bacona Road or Columbia Bridge, Metro had to compare two very different types of disposal options: (1) building, owning, and operating a local landfill with a design capacity of 40 years; and (2) a 20-year contract with a private developer for disposal at a distant landfill in eastern Oregon, at a price per ton that did not include the obviously higher costs of transporting the wastes. By developing detailed models to specify all costs and tons handled by year and by function (e.g., collection, transfer, disposal), and by properly discounting and levelizing those costs, Metro was able to compare tolerable approximations of costs-per-processed-ton across alternatives.[5]

2. *Identify and screen alternative resources to eliminate obviously inferior ones*

   Resources are screened for cost effectiveness using the levelized cost measure developed in the first step. In addition to the cost criterion, planners sometimes screen for the *amount* of waste a resource can take from the waste stream, eliminating programs expected to have an insignificant impact on total waste. The implicit assumption in that case is that the fixed costs of a program that will handle very low tonnages will probably make its cost per ton too high to merit consideration in any resource portfolio. Once inferior resources have been eliminated through this screening process, remaining resources are categorized into resource categories (e.g., transfer stations, recycling programs) and then ranked.

3. *Bundle resources into competing portfolios, each of which meets expected demand for waste handling*

   Individual resources are combined to form two or more alternative system portfolios, each providing a comparable capability (e.g., 1 million tons per year). For example, four portfolios might be constructed, the first meant to attain an 30% level of recycling, the second a 40% level of recycling, and so on. Once defined, resources consistent with the portfolio and complementary to one another are nominated for inclusion into each portfolio. The ultimate selection of resources from this pool of resource candidates is determined by the economic ranking of individual resources (conducted in Step 2), the technical features and impacts of the resource not captured in the economic estimate, and other political considerations.

4. *Compare, rank, and select the portfolios*

   To compare the portfolios, the same process is applied to the entire portfolios that was used to produce cost estimates for individual resources. One must evaluate the cost and revenue streams for the entire portfolio at predicted levels of demand. Once these streams have been summarized into a levelized cost, the comparison of the portfolios on

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[5]In this example, as in all decisions, the cost performance was only one criterion of a multi-criterion decision: other considerations about the environment, politics, and risk may ultimately lead decisionmakers to choose an alternative with higher quantifiable costs. This fact does not mean that least-cost planning has not worked. The main purpose of least-cost planning is to make the tradeoffs as clear and quantifiable as possible. Least-cost planning aids decisionmaking; it does not make decisions.

economic grounds is straightforward. But nonmonetizable attributes (like some environmental concerns) and nonquantifiable attributes (like political acceptability) must also be considered. The evaluation must consider the barriers to implementing a least-cost portfolio and make adjustments accordingly. Once one admits the existence of impacts (costs) that are important, potentially large, and very difficult to measure in dollars (as I believe one must), then least-cost planning must be seen as the multi-criterion problem that it is. To repeat, it is not a black box that produces an unambiguous economically correct decision; it is a framework for a more rigorous evaluation of not only economic criteria, but all other criteria as well.

HOW CAN LEAST-COST PLANNING HELP WITH DECISIONS ABOUT ADDITIONS TO AN ESTABLISHED SYSTEM?

Least-cost planning is not limited in its application to questions about total system design. It applies equally well to an evaluation of potential additions to or subtractions from existing programs and facilities. For example, suppose Metro's transfer stations reach capacity in 2000 and Metro would like to develop a resource capable of accommodating 10 years of tonnage growth. Suppose further that there are three competing solutions, each capable of handling Metro's expectations about tonnage growth:

- Aggressively pursue new recycling programs in the residential and commercial sectors and at Metro's transfer stations
- Build a new transfer station and sign a new disposal contract
- Allow private development of transfer and disposal services equal to the waste quantity anticipated, but absorb the cost of environmental insurance for these ventures.

The similarities with the bottom-up case are evident. First, the decision process itself is wholly equivalent—there are three competing methods that ostensibly produce equivalent results; a key criterion for selecting among them should be minimizing total cost (collection, disposal, environmental spillovers, and so on) to the relevant society (probably Metro ratepayers). Second, note that each option actually consists of two or more resources that are equivalent to the portfolios of the bottom-up case. Third, to fairly compare these options, one must quantify the their constituent resources in comparable terms, both within an option and across options.

Seattle has used the least-cost framework in the two manners described above. In 1988, it did a bottom-up system design involving eight resource portfolios, which it termed *packages*. It ultimately chose one package for staged implementation, and built its comprehensive plan around this package.[6]

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[6]This package produced a recycling level of 58%, and is the genesis for Seattle's 60% recycling objective.

Upon adoption of this comprehensive plan, a number of residential programs were implemented in the first phase. Commercial and transfer station programs were to be implemented in a second and third phase. As Seattle approached each phase, it conducted a marginal least-cost analysis of these programs, considering resource alternatives not originally included in the 1988 analysis. It is currently engaged in this type of analysis as it moves to implement new transfer station recycling measures.

WHAT ARE POTENTIAL OBJECTIONS TO APPLYING LEAST-COST PLANNING TO SOLID WASTE?

I'll briefly restate the three main advantages before discussing problems of least-cost planning:

1. Provides a logical and economically correct framework for decisionmaking, which is, therefore, an explainable and defensible one.

2. Encourages a consideration of all costs and benefits, and the inherent uncertainty of their values. Even if they cannot all be measured, just *thinking* about policy decisions in a least-cost framework will improve decisionmaking.

3. Treats explicitly the tradeoffs and feedbacks among facility options and program options.

That said, there are clearly obstacles to its implementation that Metro must consider. Following are some that Metro staff and I have identified.

Modeling the feedbacks among all the facilities, programs, and market forces in a solid waste system is too uncertain

It is axiomatic among utilities doing least-cost planning that the future is uncertain and that ones ability to predict it deteriorates rapidly the farther one tries to look. Changes in preferences, prices, technologies, and policies can make last year's reasonable forecast appear unrealistic.

Acknowledging uncertainty is not, however, the same as abdicating to it. Utilities use a diversity of techniques to deal with uncertainty in modeling.[7] The literature on integrated resource planning from the electric utilities is in agreement that a forecast of load (or, by analogy, waste generation) is the logical starting point for planning, and that the uncertainty of a long-run load forecast is likely to dominate the uncertainty about resource costs, and may dominate the costs of unpriced environmental effects (see subsequent section of this memorandum). Those points imply that, despite the difficulties, a least-cost planning process should start with and focus on developing a reasonable range of estimates

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[7]In general, both the development of future waste scenarios and resource portfolios can be subjected to simple sensitivity analysis or more refined probabilistic analysis.

for future generation, disposal, and recycling, given some basic assumptions about economic growth, system configuration, and prices.

Such models must deal with the fact that waste flows at disposal facilities and participation rates for recycling programs will change in response to changes in rates. The least-cost planning approach can address these variables directly by creating an interactive demand model (see Figures 1 and 2): such models have been developed over the last 10 years, though much work remains. Analysts now have some reasonable, if approximate, ideas about how consumers will respond to changes in rates.

For example, suppose a utility has chosen a mix of programs and disposal options and then sets high rates on a disposal option: consumers will shift to the recycling options. How much they shift depends upon what economists call *price elasticities* or what recycling planners talk about as *participation rates* in recycling programs. Those participation rates depend upon the relative prices of the various recycling options (where those prices are measured not only in direct out-of-pocket costs but also in terms of the time a consumer must spend to do the recycling). Consumers' responses will depend on the rate being charged for the resource in question, the cost of alternatives, their income levels, and their attitudes. Increasing rates have effects not only on the demand side, but on the supply side response: increased prices for disposal encourage the market to develop recycling substitutes. Moreover, the demand side, consumer response to increased disposal rates will depend on the availability of supply-side substitutes.

The data requirements of least-cost planning make it too expensive.

Least-cost planning can be expensive. In its full glory, it would quantify all the significant benefits and costs of all resources and combinations of resources (portfolios) to estimate a least-cost portfolio. Such estimates require forecasts, and good solid waste forecasts require good models and a lot of data. Do these demands make least-cost planning necessarily an expensive exercise? The answer is: not necessarily; it depends.

These demands, however, do not necessarily make least-cost planning exorbitantly expensive. The *framework* of least-cost planning can be implemented at any level of detail, and it is the framework that matters most. If data are sparse, one acknowledges that as a fact of life and proceeds to focus on just the benefits and costs likely to be most significant with the best data available, acknowledging the uncertainty of the estimates.

It is my understanding, however, that Metro is in relatively good shape on data. It has the information about disposal and recycling by type, by location, and by generator class to support its current development of forecasting models that would fit into a least-cost framework.

I have been told by Metro staff that an area of particular concern about data is in estimating the costs of different programs: Metro does not have all the data it wants on cost, and must rely on private operators for part of the system cost. I'll make two points. First, Metro has estimated those costs before in different ways (e.g., by having staff build a hypothetical transfer station, by getting bids, by interviewing operators, by using standard costs from the professional literature, by calling other public agencies elsewhere in the nation that operate similar facilities or programs). Second, in the larger scheme of things, the uncertainty about direct operating cost and the impacts of that uncertainty on the estimates of total cost are small compared to the uncertainties related to the demand forecast (of tonnage to be handled by resource).

Quantifying and evaluating environment risk and uncertainty is too speculative

Utilities that adopt a least-cost planning process always define costs not just as their expenditures, or even as their expenditures plus others made to make the system function (for example, in Metro's case, the costs incurred by firms and households for collection). Rather, they also include *external benefits and costs* (*externalities*): costs and benefits that don't show up in market transactions. The biggest category of externalities of interest to utilities are negative environmental impacts or risks.

The concern with environmental issues in the 1970s stimulated the refinement of economic techniques for analyzing them. The National Environmental Protection Act required that environmental impacts be described: economic analysts took the next step of estimating what the value of those environmental impacts would be, if they occurred. Government agencies and academicians explored the theory and developed practical techniques of benefit-cost analysis (pioneered in the public sector by the Army Corps of Engineers), especially for large development projects involving water resources. Some energy utilities attempt to include some of those environmental costs in its least-cost planning models, under the assumption that these environmental costs are better included, if possible, as a cost-per-kilowatt-hour than simply listed as additional environmental impacts. BPA, for example, did studies that tried to estimate the value of potential health effects of air emissions from coal-fired generators, or of losses in water quality and fish populations from hydroelectric plants. It then used the same levelizing techniques I just described to include those environmental costs as cost-per-kilowatt-hour in its models for selecting among facility and program options for meeting expected load requirements.

The steps for estimating environmental costs are easy to explain in concept. Natural scientists first must estimate whether, to what extent, and with what probability an environmental effect will occur. Economists then must estimate the value of that effect given the estimated probabilities and magnitudes, and the likely expected value (the cost, should damage occur, times the probability of it occurring).

Risk, and its value, depends on perspective. While engineers and scientists may agree that the mortality risk of operating a facility is one in a million (for example, the risk of a potentially fatal event occurring is one in a ten thousand and, if it were to occur, the probability of a death resulting would be one in one hundred), a local resident may estimate that risk at closer to one in ten. Even if the technicians and the resident agree on the value of avoiding a death, they will estimate the cost of the risk posed by the facility very differently. Or, even if they agree on what the physical impacts of a facility will be, they may have widely different opinions on how those impacts should be valued. Research into risk perception and valuation has advanced substantially in the 1980s, but incorporating risk (especially of low-probability, high-value events) into a least-cost planning approach remains highly judgmental.

Related to how people perceive and value the risk of environmental damage is the direct cost of citizen involvement. To get facilities built or programs approved, planners must pay increasing attention to communication with affected parties. That communication has a real cost. Those costs may be measured either by the costs of citizen involvement programs (assuming those programs lead to successful siting) or by the opportunity costs of not having those programs.

The fact that Metro has large components of its total system built does not obviate the need for an examination of their full impacts. In other work I have done for Metro and elsewhere, I have argued that the external effects of well sited and designed transfer stations and landfills are likely to be small. Nonetheless, citizens will demand that the type of potential costs be identified and estimated because it is precisely these costs that waste reduction and recycling programs might avoid.

Quantifying external costs and benefits is a difficult and uncertain job, but making some attempt at it is better than assuming away the problem of environmental cost.[8] Ultimately, Metro's decisionmakers will answer, either explicitly or by default, some questions that have no obvious right answer:

1. Is it appropriate to consider environmental externalities when making resource decisions? Does Metro bear a responsibility for seeking resources that minimize its revenue requirement or those that minimize societal costs? Do its short-run and long-run interests differ?

2. What is the best method for considering environmental externalities. For example, should Metro adopt percentage adders or monetized values?

3. If externalities are to be reflected, which ones should be included? Which externalities should be evaluated on a site-specific basis?

4. If externality values are to be monetized, which approach should be taken, (e.g., damage-value or control-cost based)?

5. Should externalities be used to determine the cost-effectiveness of waste recycling and reduction options? Of supply-side resources? Should they be used to justify new resources on the basis of avoided variable costs (including environmental ones) rather than need for capacity *per se*? Put another way, should environmental costs accelerate need determinations?

6. Should the evaluation of externalities be applied to existing resources as well as to incremental ones?

7. What limit, if any, should be placed on short term rate impacts from using externalities in resource decision-making?

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[8]See *Externalities and Electric Utility Regulation*, a report for the National Association of Regulatory Utility Commissioners, for a review of the state of the art of estimating the value of environmental effects.

Though I do not think that least-cost planning can answer the specific question "What is the value of environmental quality?", it is the right framework for getting environmental issues into the decisionmaking process. It informs and influences the decisionmaking—it will never substitute for what are ultimately subjective judgments by appointed or elected decisionmakers about the tradeoffs among alternative courses of action.

Least-cost planning may show existing programs for recycling and waste reduction to be expensive

This point is potentially true, but it is by no means inevitable. For example, suppose that Metro were to find that some of its outreach programs showed no measurable impact on the amount of recycling for some target material, either because the outreach was having no effect or because its effect could not be measured with the data and models available. Would least-cost planning require that the program be scrapped?

While scrapping the program is one possibility, there are others as well I'll give some examples. First, the program may be a legal or political requirement. In that case, law or politics may argue for its continuation despite its relatively poor performance. Second, least-cost planning is not static: it looks into a dynamic future. It may be that the performance of the program is expected to increase. Third, it may be that technicians and policymakers can make a case that the program is contributing indirectly to other programs and objectives that it is not getting credit for. Fourth, it may be that when the *full* costs and benefits of the program are considered, it is still a candidate for inclusion in a least-cost portfolio (for example, if the avoided cost of the next resource is high).

Suppose that Metro is legally or politically obligated to the program——how would least-cost planning acknowledge this fact? One possibility is that Metro simply decide that it will take certain programs as given (for example, household curbside recycling seems to be in this category—no amount of economic analysis will remove it from the portfolio) and include them in a base system. Least-cost planning could then be applied at the margin to *new* resources, with the existing system of facilities and programs as a given. Least-cost planning would undoubtedly put pressure on programs to show results, but that, I think, is as it should be.

Least-cost planning is difficult when a utility does not control all the pieces of the system

Does least-cost planning only work when there is broad regulatory control of service production and delivery? Do economic and market issues such as the effects of competition (e.g., on MSW disposal prices) or structural shifts in service provisions (e.g., shifts from wet to dry facilities) fit into the least-cost planning framework. I think so. For example, deregulation (increased privatization) can be explicitly considered as a resource option. If waste handling services can be provided more cheaply by the private sector, that is one point in favor of deregulating. Least-cost planning can address this issue and others like it explicitly.

Metro manages waste in a mixed system: it is both public and private, and the private side is affected by all levels of government. The fact that it does not have control over every aspect of the waste handling system does not eliminate the need or Metro's responsibility for planning at a system level. I understand and sympathize with the fact that cost data about parts of the system operated privately are spotty at best. But Metro has made estimates of costs for these components of the system before (through modeling, surveys, RFPs, and so on). As long as it treats the system as a system (i.e., as long as it looks at total cost) and treats all resource options consistently, Metro should be able to use a least-cost framework to make recommendations about the facilities and programs that it should consider adding to the region's waste management system.

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