

David Krech, FCC

Thank you Joel. John.

John Schrottenboer, Southwestern Bell Telephone Company

I think that you need to look again at the actual data that might be available. We have, in Southwestern Bell, a cost study by wire center that shows the cost investment, the expenses that are allocated to that. Those need to be the test of how well a model determines the cost for those particular areas. The areas for support may be different than the way want to model the areas for cost. If you need to go below a CBG to determine the cost for an area, where a company can't provide that cost information, that may be something that needs to be done, but you need to also consider the area that's going to be used, and ultimately will determine the support, whether it's a wire center or larger. We would advocate that you don't need to go any lower than a wire center to determine the overall support amount.

David Krech, FCC

Thank you. Page.

William Page Montgomery, Montgomery Consulting

I would say basically that in response to what I've heard from other people, I haven't heard anything that really changed what I said before and that is that you can talk about these

issues for an extremely long period of time, but there are some underlying policy issues that have to be decided. And what really interests me from this discussion the most is the possibility that within the next year or so, the ability to go below the CBG in some areas, or the ability to aggregate at a higher level, will help one address some of the small company issues, because I think the inability of people to have scaled down to the small company level at this point is an issue that has to be considered when you go through this, even though nominally the small companies aren't going to come back into the process for a couple more years, theoretically at least. I think you need to be able to address those issues as soon as possible and have the capability to do that. But once again, in saying this, I don't think that you have a macro choice to make between creating the perfect model or creating a policy mechanism that will allow competition and pricing reform to go forward at some point.

David Krech, FCC

Thank you. Lisa.

Lisa K. Hanselman, GVNW Inc./Management

We've talked about CBGs a lot. I guess just so I back and reiterate, I think we need to use the size or whatever, that's going to produce a reasonable result in the model, be it CBGs, grids, whatever. And the only other thing I would say in terms

of presenting to the Board would be as the models migrate down to maybe give some guidelines as to how they're going to attack doing that so maybe we get a feel for the results fairly early on.

David Krech, FCC

Thank you.

Laurits R. Christensen, Christensen Associates, Inc.

I certainly agree with Jeff Rohlfis that you do the bulk of your validation over large geographical areas and that's where you get comfort and confidence that once you've constructed a model that it will work for small pieces of territory, down to CBG or pieces of telephone companies, particularly small independent telephone companies, but I don't think you can just stop with your validation at this more macro level and say, "okay, we've got it and now let's apply it." I think it's important to do some testing, do some implementation for small pieces of geography, and, in fact, I would encourage the FCC staff to ask the model builders to give them results for a few selected small pieces of geography. Choose five or 10 areas that would be representative in one way or another and say, "okay, model builders, give us what your model will spit out for these pieces of geography," to find out whether these models will really do what they're advertised to do. Most of you heard Peter Martin from BellSouth's example yesterday where they got the

output of the Hatfield Model for a CBG in Georgia and it turned out to have only one-tenth as much cable as there were roads in the CBG which really cast a lot of doubt as to whether the model was doing an adequate job.

David Krech, FCC

Thank you. Trevor.

Trevor Roycroft, Ohio University

Very briefly, I think that whatever areas are ultimately decided on, that the potential impact of competition on the cost of servicing those areas, especially in situations where, perhaps, the new market entrants choose not to be eligible carriers is something that should be — that would be desirable as part of the model. And to the extent that Ben Johnson's model allows market share to be addressed, you know, I think that's a desirable feature that would allow for better predictions about what sorts of costs might be incurred in a competitive environment with only one eligible carrier.

David Krech, FCC

Thank you. Jeff.

Jeffery H. Rohlfs, Strategic Policy Research

Since Laurits agreed with me, I guess should say I agree with him that I think it is correct that some validation can and should be done at small levels of disaggregation, although most validation needs to be done at a more aggregate level.

David Krech, FCC

Thank you. Vin, the last word before our break.

Vincent Callahan, NYNEX

The only concern that I would have is that whatever you decide to do as far as aggregation is concerned, should be done, as Joel mentioned before because of the arbitrage issue in the same fashion. For example, in New Pauls, New York, where I have CBGs for \$149, and they're zoned at \$38, that means that somebody can come in and make \$111 before they give out dial tone. That doesn't make a lot of sense if you're the incumbent LEC. That's like, what you see is, you know, "you're losing on every sale and make it up in volume."

Trevor Rohlfs, Strategic Policy Research

I wanted to say one thing before the break is, we have copies of our study here, the top-down cost study and it's also available on our Web site which is SPRI.COM, so I invite you to get the study if you haven't gotten a copy of it yet.

David Krech, FCC

All right, we appreciate that.

John Schrottenboer, Southwestern Bell Telephone Company

Can I say one more thing?

David Krech, FCC

Okay, John.

John Schrottenboer, Southwestern Bell Telephone Company

Just briefly, in term of the rural areas, I think it's important to note that there's a lot of large companies that have very rural areas too, and very large CBGs that are served by those companies. Southwestern Bell is one of those in Texas. We have CBGs that we serve that are 400 square miles of nature, somewhat equivalent to the small LEC, but it's a problem for those areas also.

David Krech, FCC

Okay, let's take our break, we'll reconvene at 3:20 with the fourth question.

(Break)

David Krech, FCC

If we could take our seats please, get started again. Okay, we're going to start up again now. I know how much you love your breaks, but I figured getting out of here on time is probably a little more important. Okay, we move on to the last of the prepared questions for this workshop which happens to be the shortest question, but possibly the most interesting and controversial question: What procedure would you establish that would enhance the FCC's ability to validate the models?

Now, we've been going in an extremely linear fashion here and following procedures, and I'm going to completely break that now and go in a scatter-shot approach in terms of asking people. So, we'll start with Dr. Christensen.

Laurits R. Christensen, Christensen Associates, Inc.

Okay, my main point is that I think given what we've heard over the last two days, it's really time for the FCC staff to start getting their hands a little dirty in this whole area. And I think they see where the areas of disagreement are, where the areas are that we need some narrowing of the debate. And, I must say, I liked the staff paper a lot that came out last week, January 9, that kind of gave an overview of what they saw as the areas that need further development, that need closure. For what it's worth, I would recommend that the FCC staff seek comments and on the basis of those comments make some decisions earlier rather than later in terms of saying, "okay, from here on we want

to see models with X for a cost of capital." You know, it's fine — if and when we get together again I'd hate to see us spend as much time as we did these two days discussing whether the cost of capital ought to be 9 or 10 or 11 or 13. At some point, the model's going to have a number put in there. Wouldn't it make it a lot easier to compare models going forward if there is a small number of areas which are driving the big differences in the models that could be closed sooner rather than later.

And, you know, I've got a little list, none of these will be any surprise, it's been talked about and I've talked about, but these questions about — a lot of time spent today about market share and entry scenarios. You know, what is the FCC's interpretation of what the Joint Board is saying this model ought to model. And, rather than us model-makers or model-analyzers endlessly kick around the options, let's see if we can narrow it down. Similarly with depreciation rates. You know, there's no big mystery that some depreciation rates are higher than others and it's going to make a difference in the model. You know, let's pick some and then the models can be run on that basis. Similarly, the structure sharing and overhead allocations which I pointed out based on my analysis really drove the differences more than anything. If, in fact, the FCC staff could find a way to get to lay down some values for the models to use in those areas, I think that that would move the ball further and faster forward than anything else that could be done at this time.

David Krech, FCC

Okay, great. Thank you. And continuing the scatter-shot, Jeff.

Jeffery H. Rohlfs, Strategic Policy Research

I think the best way for the Commission to proceed in terms of validating models is to reconcile top-down and bottom-up approaches to cost estimation. That's the procedure that was used by OffTel in the U.K. and used very successfully. They had two models; the top-down model yielded higher costs than the bottom-up model. That's almost always the expectation. After the reconciliation process, OffTel re-estimated the models on a consistent basis and then analyzed the remaining differences in set values.

Now, let me just describe a few things that could be done in terms of this reconciliation process. One thing that could be done as Laurits said, to use a consistent cost of capital. Obviously, the results will differ if you use different costs of capital. That maybe makes a dollar a month difference in the loop model. A second issue is sharing of structures. If you want to validate a bottom-up model on real world data, the sharing structure assumption you should put in the model is the actual existing sharing structures, then you can see whether the model gets the right answer. If it gets the right answer there, then you may have confidence that it would get the right answer using different sharing assumptions. But, if it doesn't get the

right answer in a real life situation, then you would have less confidence that it would get the right answer in a hypothetical situation.

There also are a number of issues regarding economic depreciation which I referred to earlier. In general, the Hatfield Model, so far as I read it, shows that the economic value of LEC plant is about half the rate base value. That's the most stinging indictment that I've heard of regulatory capital recovery showing that it's been extremely inadequate and it's therefore wholly inconsistent for the Hatfield modelers, with that investment model, to be using regulatory depreciation expense. One of the things that you should insist on, I think, in a reconciliation process is that the models use consistent assumptions about rate base valuation and depreciation expense. And I think after making those sort of assumptions, the answers will come closer together and then it's a question of explaining the remaining differences, whether it's model error or whether it's some other factors that can be analyzed differently.

David Krech, FCC

This side of the table. John.

John Schrottenboer, Southwestern Bell Telephone Company

I think I would go along with Dr. Christensen in terms of, he talked about have a set of standard inputs that could be specified. Another approach that might help — I think would

help the whole process — is to have a set of standard output reports similar to the responses to the questions that were filed on January 7. If everybody had the same set of outputs to come up with in terms of cable and wire statistics, all of the information that is necessary, it would certainly make these models easier to compare one to another and into other data that might be available and help validate that process or provide the basic inputs to do the validation. If you have equivalent embedded cost data, you could make the comparisons to that. So, I think that it's important to not only look at what standardized in a set of inputs for purposes of eliminating any differences that might exist there, but also to look at a set of standard output reports, or at least a format for the reports that gives you a similar set of information so you don't have to go fight your way through 18 workbooks to find the summary sheet that gives you the information.

David Krech, FCC

Thank you. Lisa.

Lisa K. Hanselman, GVNW Inc./Management

Okay. I think that there should be required a specific level of disaggregation so that variability can be isolated. I think that they really need to truly open all the formulas of regressions, everything up, supply all the supporting data, provide the regression diagnostics that really demonstrate that

you really do have fit. I think that we should take on one of the gentlemen's comments yesterday in that I think an engineering team should be appointed to look at the reasonableness of design. I think in terms of not only standard output on the input side, design it so that it's in a fashion that the independents can also provide data because we do report — we do not have the same reporting requirements that a large company has. I think that telephone plant price indices at a physical plant level might be useful in measuring the effects of changing impacts and I think some qualitative information from the developers as to how they're going to move forward with their designs as technology changes might be helpful in the future.

And one last comment has to do with the fact that although our analysis kind of shows a reverse where many people are saying that costs are understated, for us they're overstated. And some might say, "well, why do you want to say anything, I mean, that's going to create a bonanza from the independents," but, what I'm afraid of is might unduly cause some competition where otherwise it wouldn't be necessary and it would be simply for the wrong reasons and that is to obtain the money where otherwise they wouldn't need to.

David Krech, FCC

All right, thank you. Trevor.

Trevor Roycroft, Ohio University

First of all, with regard to the issue of validation, it seems unlikely that given the May deadline that the model, any model, will be validated by May. And given that fact, I think that there are some things that could be done by the FCC to ensure that the process that follows May is as smooth as possible. I would agree that taking control of some of the inputs at this point would be a good idea, that if we could specify, or end some of the debates, that would help things move between now and May. But given the view of the world after May, I think that selecting a model that would be as flexible as possible would be a valuable path for the FCC to pursue. And the flexibility should include specifications of service area, the impact of competition, the ability of the model to perform well on both a disaggregated and aggregated basis. Also, the model should be user friendly to the point of being open to the user, and that would require that workpapers that clearly explain the model's operation should be included as well. And, the states are ultimately going to be influenced by these models and I think that a model that is as open as possible will facilitate the true validation process that occurs down the road as the individual case evaluations of the Universal Service Funding are undertaken at the state level.

David Krech, FCC

Thank you. Page.

William Page Montgomery, Montgomery Consulting

I just (inaudible) agree with everything I've heard on this question so far. It is very important to specify a set of inputs. It is important to resolve some of the factual questions. I think it's important for the FCC staff at this point to answer some of the questions that arise from this process about what is really being done with this model and what will be the next stage of its use. Because I think Trevor's probably quite correct that May 8 may come and go without the final answer to these questions being known. In fact, I'm pretty sure that's true. So, at this point maybe we should be simplifying the process.

It's also important to keep, I think, an eye on the larger question here and that is, what we're really creating for the first time in the United States is a Congressionally-mandated explicit subsidy system for basic telephone service. And, we're doing that at the same time that we're trying to create a competitive marketplace. Those two concepts, although we understand why they're married in the Telecommunications Act, those two concepts are not completely consistent. And a competitive market it tends to drive out subsidies. So, to the extent we are creating a government transfer mechanism, or a subsidy mechanism, it's important that we start out conservatively, it seems to me, and not overstate the amount of the market that will be affected by the subsidy system. By taking some more time for small telephone companies to gather the

data, and I agree with Lisa, it would be very useful — and I agree with something Joel said at the break, it's very useful to begin to address the small telephone issues right away and not wait for two and a half years to start to address them, because that's where the money really is going to be, that's where the impact is going to be. And that is, there are clusters of weaknesses that have been identified in this workshop with respect to those issues. So, that needs to be done right away as well.

David Krech, FCC

Thank you. Vin.

Vincent Callahan, NYNEX

Well, let me just talk a minute about inputs through any model. I mean, for those of you who have not yet experienced the extreme exhilaration of running these models — (laughter) — let me just make it — you can safely assume that if somebody asks you to suggest a cost of capital of 2% and a depreciation rate of 95 years and a fill factor of 100%, that there's a great chance, without running a model, that they're looking for some very inexpensive unbundled network elements. (Laughter) A great chance. Having said all that, on a serious note, I think what you've got to do here when it comes to looking at the model, I think first of all, you've got to validate the results against something. Now, when I say "something," if you're really not

interested in actual costs, okay. But the model should reflect some percentage of cost. I mean, if it's 10% in one area and 150% in the other, there's something wrong. So, somehow you've go to get a standard to measure it against.

The next thing is, is the model competitively neutral, are you not going to disadvantage somebody, whether it be an incumbent or a competitive carrier. Is it viable? Does it provide universal service without having arbitrage in it? Are you going to be able to audit this model? And I guess these are the things that I would be concerned about. Does it prejudice one area of the country against another? These are things that have got to be looked at.

David Krech, FCC

Thank you. Joel.

Joel B. Shifman, Maine Public Utilities Commission

First of all, for the three-year date for independent company implementation to have any meaningfulness, the models have to continue to evolve. We can't say May 8 is when everything is decided by. At the very least, it's not ready yet. If we have to decide on May 8, it should be tentative and interim. That we should continue to evolve the models. We must validate them against some real ascertainable data. A lot of it's available in the public record. From independent phone companies, you can look and see what suburban and rural costs.

Urban costs don't matter much unless you're looking at unbundled network elements. For the purpose of universal service, we don't really have to worry about urban. With regard to validation, we really have to validate against real data, we have to validate against — I agree with Jeff, we have to validate against bottom-down data.

Why am I concerned? People asked me during the break why, being from a rural State, why am I concerned that the models in many cases are overstating costs in rural areas? My concern is that the fund is going to be huge if costs are overstated in rural areas. It may be so huge that it's larger than is politically acceptable. My concern is that if we cut back on the fund, either set the benchmark too high, or cut back on the fund pro rata, those areas that really need the money, that are really high cost, aren't going to get it and the wrong areas are going to get the money. So, we really have to make the fund work.

The last point I want to make is that those who have the most experience with costs are companies and state regulators. And we might want to set up a series of something analogous to the three-way meetings for depreciation where we get together the state regulators from any given state, the FCC people, as well as the companies, to come up with some sort of validation of model inputs that we can use for the purpose of developing distribution of money. This is so important that the states are so vitally concerned that the amount of money that gets distributed that I think — at least I know a lot of states who can't be here today,

but who will gladly participate — Vermont as one example, New Hampshire as another example — that if the FCC sets forth a three-way meeting to try and get the numbers right, they will work to try and develop correct numbers. And in many cases states are already working on these numbers and trying to get the numbers right in the course of our arbitration proceedings and own costing proceedings. So, the states have a lot of data.

David Krech, FCC

Thank you, Joel. Ben.

Ben Johnson, Ben Johnson Associates

Okay, what I would first suggest is a mandatory data request to all incumbent LECs in the nation that they provide the number of business and number of residence lines, by sili-code as of a date certain, such as mid-1995, some date that you think's realistic. We're going to need that data to truly validate these models and to improve them. It's silly that they consider this secret, I'm not sure it would be, but certainly I think that public interest in knowing where the customers are, at least at the wire center level, outweighs any possible competitive advantage they gain by keeping it secret where the customers are. Okay, secondly, I would suggest that you have additional rounds of comments and that the staff, that both the Joint and the FCC and state staff work in being very specific about what kinds of comments you want. For example, pick the inputs that you now

realize are the most controversial and be very specific about "this is your best shot, tell us everything you want to tell us about why you think this is either A or B, high or low, whatever." Similarly, you could set up a set of criteria that you've learned over the last two days for evaluating these models and ask the commentators to specifically comment on the strengths and weaknesses of the three models as against the criteria that the staff thinks important.

I would reiterate the point about standard outputs. As to the model builders, I don't think there's any problem asking the model builders to give you a standard set of outputs. Just tell us what you want and we can format them the same so that they'll be easy to compare and contrast. Similarly, you could ask model runs be done for a standard set of inputs. You could pick sort of a plausible high and low value on those inputs that you realize you're going to have to wait to get full knowledge on, but at least you can get some directly comparable studies done with a set of inputs that you might think collectively would give you fairly high-end costs and a set that would give you low-end costs, but keeping everything within the plausible range of what you think, in your own judgment, is worth running.

And then finally, if you already realize there is some modifications that you want to see, tell us that as well as soon as possible. Thank you.

David Krech, FCC

All right. Dan.

Daniel Kelley, Hatfield Associates

Thank you. First, in response to comment about rural areas, I think — I want to clear up on thing and that is the model does generate costs for rural areas not. It generates capital costs for every CBG. And the model will shortly be able to do the full costs for independents. The data needs to be put in and then the model will generate those costs, so we've made a lot of progress there. And I agree, we have to go forward with that.

In terms of the question, the question is how we're going to validate the model. And I would submit to you that the Hatfield Model has been validated. In fact, I would submit to you than no model in the history of the universe has received more attention from so many parties as this one. It's been submitted in dozens of state arbitrations, litigated arbitrations. It's been subjected to discovery by lawyers and economists and we've answered literally hundreds of pages of questions. The model developers have sat in depositions. The model developers have withstood cross-examination by ILECs. And the bottom line is, for purposes of unbundled network elements, the model has been adopted in a number of states.

How can the Commission go forward from here? Well, I would agree with Ben Johnson. We need some verifiable, non-proprietary

information from the ILECs. If they think our information is wrong, they need to give us forward-looking cost data. I'm a little bit surprised that economists find it surprising that there's such a large difference between embedded costs and forward-looking costs. Economists have been telling this Commission for 10 years that we need to go to price caps because the LECs are inefficient and they need more incentives to become efficient. Consequently, let's put embedded costs aside, let's move forward with forward-looking cost models that have been verified. We have 400 inputs in the Hatfield Model. They're ready, willing and able to put in the inputs you want to put them in to test them for whatever you want to test them for. Thank you.

David Krech, FCC

I must confess that part of the reason for changing the order here was to allow Rick's notes some time to dry out after a small industrial accident after the break. (Laughter) So, hopefully they've dried out and he can give us some good input right now.

Richard Emmerson, INDETEC International

Yes, my notes say GRMSONEWIAEJASIDNF. (Laughter) I listed some criteria as well which I feel are criteria that should be used for the validation purpose. The first is that I think it's very important that it be verified that the models do what they

claim they can do. Each party, for example, could submit a list of things each other model claims to do and ask for a demonstration that it can, indeed, do so. And I think that list could either be developed by the parties themselves, or by the FCC. Second, I think that it's important that the models demonstrate the flexibility they claim to have. If a model is capable of handling a geography other than the census block group, demonstrate that capability. If the model claims to generate output at the census block plot group level, demonstrate that capability. Much of this has been demonstrated, but not all.

I think it's important to build the network which is capable of providing the universal service at the quality and standards specified. Can the network so specified in the model deliver the right band width? Can it do it with the right quality of service, etc.? I think it's very important here that the components of the model be examined closely. Do the components really meet? For example, if we select a price for a loop in one area where the loop does not include any main distribution frame, and a price of a cross-connect from a loop to a switch in another area where the cross-connect does not contain any main distribution frame, we lost the main distribution frame. We need to verify that the components of the model and the prices chosen indeed do meet. We also need to verify the changes in the model generate reasonable changes in output, that the models are sensitive to the right things in the right way. And we need to explain major, or substantial, or counter-intuitive deviations

between the model outputs and embedded or actual cost data. Finally, I should remind us that the ultimate validation is going to be provided by the marketplace. That the Commission should watch very closely the market response to their decisions to the results of the model, and determine whether that is the market response which is reasonable for accurate models. Thank you.

David Krech, FCC

Thank you. We'll now move to our second round of comments, the one-minute variety, and I did keep track of what order I went in, so Dr. Christensen.

Laurits R. Christensen, Christensen Associates, Inc.

I think I used my extra minutes in the first time around, so I'll pass.

Jeffery H. Rohlf, Strategic Policy Research

I think it's worthwhile to state specifically what validation is. Validation is making sure that the model gets accurate answers in the real world. In the case of these cost models, the validation means that you verify that a real firm would be able to provide incremental output on a forward-looking basis at the costs that are estimated in the model. And what you'd be looking for under validation is empirical proof that that's the case. And, let me describe some of the ways that you cannot validate a model. You cannot validate it by comparing

different bottom-up models with each other because what's necessary is to compare it to the real world, not to other models that are also, until they're validated, mind exercises. A second way you cannot validate a model is looking at the reasonableness of the inputs. Although reasonable inputs are a necessity for a good model, they don't necessarily mean that the model yields accurate answers in the real world. And, I guess that the final point I would make is that validation is not an optional exercise. Models should be validated — real world prices should be set on the basis of real world data and analysis of the real world. I think that analysis of the real world could be substantially extended through the use of bottom-up models, but if those bottom-up models have not been validated in terms of reconciling them to the real world, they're not suitable for practical use.

David Krech, FCC

John.

John Schrottenboer, Southwestern Bell Telephone Company

I think that one of the tests, again, should be a comparison against actual data to determine whether or not these models are producing reasonable outputs given the standard set of inputs, the same geography, any of the criteria that we've talked about here before. I think all of those would be important in terms of developing the models. But I think again, that there has to be a

comparison to what actually exists in the real world, and some judgments made to determine whether or not those costs are reasonable and should be used in light of the way universal service is being structured and in light of how the proxy models may be used for access reform, interconnection and all these other things that are going on. There has to be that test against actual to determine whether or not we are really providing a set of costs that only produce half of what exists today that may be translated into, in some worst imagination, prices for some of these services. And I think it makes a question as to whether or not companies can operate with that type of environment ahead of them.

David Krech, FCC

Thank you. Lisa.

Lisa K. Hanselman, GVNW Inc./Management

Two comments. First, I just want to mention that just because a model is being used by an outside source shouldn't assure its validity. And secondly, kind of off the mark, I think the whole open market when we look at the competition we're looking at it from the provider, from the telecommunications standpoint, but I think that it also has some application to the supplier side of the equation and I think that we could create an environment that also may have some implications there.