

VERIZON NORTHWEST INC.

Bench Request No. 22 (Verizon)

General instructions

To the extent possible please provide all responses in electronic format on cd(s).

Part One

It appears that the 'How to...' files that Verizon provided the Commission in response to Bench Request 16 were developed (or based on templates developed) prior to the Bench Request being issued.¹ We assume that Verizon uses these types of step-by-step files to train its own staff on VzCost or that it developed such files in anticipation of requests from third parties and/or regulatory commissions.

Please provide all of the 'How to...' files Verizon has developed in support of VzCost so that the Commission can implement and evaluate the changes discussed below. If multiple versions of a process have been produced (e.g., three versions of the file that explains how to change the fiber/copper crossover point), only provide the latest version of the documentation associated with the version of VzCost that is being considered in this proceeding.

In addition, please provide any written instructions or other materials used to train Verizon's staff or third parties in the use of VzCost.

Please be sure that your response includes (preferably in detail comparable to Verizon's response to Bench Request No. 16) instructions on how to make the following adjustments in VzCost. If an adjustment specifies 'by density zone' but the model does not allow for density zone specific inputs please explain how to make the adjustment on a statewide basis.

1. Adjust the maximum fiber and copper cable sizes used by VzCost.
2. Adjust the source and/or value of the productivity and inflation inputs used by VzCost.
 - a. For example, assume productivity increased by 5% in 2000 and 4% in 2001.
 - b. For example, assume inflation increased by 3% in 2000 and 2% in 2001.
 - c. Please explain how to utilize different productivity indices and values.
 - d. Please explain how to utilize different inflation indices and values.
3. Adjust and/or eliminate the level of expense in certain accounts, for example Account 6533 marketing expense.
 - a. Please explain how to reduce the level of expenses, for example, in an account by 45%.
4. Non-switched private lines

¹ For example, see Verizon Response to Bench Request 16 (Exh 1166) How to Change Depreciation Livesv3.1.1.doc at page 70.

- a. Assign non-switched private lines to distribution terminals and LUIDs consistent with Exhibit 751TC, pages 48-52.
 - b. Adjust VzCost so that it assumes 4 lines per location. That is, each drop and NID will serve 4 lines.
5. Plant mix assumptions
- a. Adjust plant mix by density zone (where applicable, please use in your example the plant mix assumptions adopted in the FCC Inputs Order²).
 - b. Adjust and/or eliminate the maximum number of aerial and buried cables in a cable segment. For example, the model is currently set up to shift plant underground if there are more than 3 aerial cables or 2 buried cables in a segment. Please explain how these restrictions could be adjusted or removed.
6. Structure sharing
- a. Adjust the amount of plant placed in a trench [or any structure] provided by a developer or other third party. In your example please use the assumption that 10% of distribution plant is placed in a trench provided by a developer or third party.
 - b. Adjust structure sharing assumptions by density zone (where applicable please use in your example the sharing assumptions adopted in the FCC Inputs Order) with respect to:
 - i. Aerial facilities.
 - ii. Buried facilities.
 - iii. Underground facilities.
 - iv. Drops.
 - v. Sharing between interoffice and loop facilities.
 - vi. Sharing between feeder and distribution facilities.
7. Drops
- a. Adjust drop lengths by density zone.
 - b. Adjust drop structure mix by density zone.
 - c. Adjust the number of pairs per location by residential and business customer.
8. Adjust pole spacing by density zone.
9. Adjust the material prices and placement costs for
- a. Copper cable.
 - b. Fiber cable.
 - c. Poles.
10. Adjust the amount of bored cable and hand dug trench by density zone.
11. Adjust the copper/fiber crossover point.
12. Adjust the engineering factors used in VzCost.
13. Adjust the sizing factors for fiber and copper cables by density zone.
14. Adjust switching fill factors.
15. Adjust the amount of busy hour traffic per trunk, and thus, the number of interoffice trunks.

² In the Matter of Federal-State Joint Board on Universal Service CC Docket No. 96-45 and Forward-Looking Mechanism for High Cost Support for Non-Rural LECs CC Docket No. 97-160. Tenth Report and Order, released November 2, 1999. ("FCC Inputs Order") See Appendix A.

16. Adjust the sizing factor for IOF and/or require the model to assume a given fill level, for example, 47%.
17. Adjust the ratio of IDLC to UDLC loops, for example 7% UDLC.
18. Adjust the level of DLC Installation costs (see Exh. No. 228TC 130 (erratum) (filed May 26, 2004)).

Part Two

Regarding the Data Tables in VzCost, how do the tables whose names are listed in *ALL_CAPS* differ from those listed in *Upper_and_Lowcase*?

Part Three

Regarding the general operation and flow of the model:

Please provide a flow chart indicating the dependencies for all of the tables listed in the pull down menu on the left hand side of VzCost's Data Management screen.

Please provide the order of operations to follow (comparable to the Summary of Procedure shown on page one of the 'How to...' files in response to Bench Request 16) assuming the Commission adjusts VzCost in each area referenced above in Part One.

SUPPLEMENTAL RESPONSE:

Verizon Northwest Inc. ("Verizon NW") provides the following response to this bench request:

Part One

The "How to..." files that Verizon NW has developed in support of VzCost can be found on Bench Request No. 22, CD No. 1(Amended), in the Folder named "Training Material_Scripts_Examples." The names of those files are listed below. The names of the files can also be found on the CD index, provided with this response.

- Creating a Table – COM.doc
- Editing a BC Family.doc
- How to Change Depreciation Factors.doc
- Rerun Filing.doc
- Training Script Volume 1.doc
- Training Script Volume 2.doc
- VzCost Demo for Gabel.doc
- VzCost Flowchart 12_17_04(amend).doc
- VzCost Proceduresfor_Uploading_Large_Files_12162004.doc
- VzLoop Checklist w_ECF Report.doc
- VzLoop Checklist.doc

An additional resource for understanding how to use VzCost is the VzCost User Manual. The User Manual was previously provided with the June 2003 direct case filing. However, Verizon NW is providing the latest version of the manual in response to Bench Request 25

and this can be found on CD No. 1(Amended), folder labeled “WA UNE Bench Req25_VzResp_VzCost User Man.”

Subpart 1

In order to adjust the maximum fiber and copper cable sizes, two data (input) tables must be modified – the Options and the Material Tables.

The Options Table –

Within the Options Table, the user must adjust the following inputs to reflect the desired maximum copper cable sizes. Please note that there are two sets of maximum copper cable size inputs, one for feeder cable and one for distribution cable.

FEED_MAX_A_SIZE	(for aerial copper feeder cable)
FEED_MAX_B_SIZE	(for buried copper feeder cable)
FEED_MAX_U_SIZE	(for underground copper feeder cable)
DIST_MAX_A_SIZE	(for aerial copper distribution cable)
DIST_MAX_B_SIZE	(for buried copper distribution cable)
DIST_MAX_U_SIZE	(for underground copper distribution cable)

The procedure for revising an Options or any data table in VzCost is as follows:

1. Using “Data Management” in VzCost, identify the desired “Version Name” for the specific “Table” that will serve as the basis for the revised table.
2. Download the file with this “Version Name” into a folder in your PC. The downloaded file will be in csv format.
3. Make the desired changes on the downloaded file.
4. Delete the first row of the downloaded file – the row with the column names – and rename the revised file with an appropriate, distinctive name.
5. Again using “Data Management”, upload the revised downloaded file into VzCost under the same “Table”. For ease of identification, the user should provide the new “Data Version” with an appropriate, distinctive name. Please note that the file must be a csv file in order to upload it into VzCost.

Please note that detailed instructions on downloading and uploading a Data Version can also be found in the VzCost Users Manual in Section 12.

The Material Table –

The user must review the Material Table to verify that the desired maximum copper and fiber cable sizes are included in the Table. If the desired sizes are not included, the user must add these sizes by creating a revised Material Table using the same procedure detailed for the Option Table above. The user must enter all the necessary data, including an appropriate “UNIT_PRICE” for each new cable size. The following is a list of the various ‘MATERIAL_TYPES’ associated with fiber and copper cable:

CUAER24	(aerial copper cable)
CUBUR24	(buried copper cable)
CUUND24	(underground copper cable)

FIAER	(aerial fiber cable)
FIBUR	(buried fiber cable)
FIUND	(underground fiber cable)

After the revised Options and Material Tables have been loaded into VzCost, the user can proceed to produce new Loop Calculator Runs, etc. A detailed description of the various steps needed to produce a revised Loop Cost Study is provided in Verizon NW's response to Bench Requests 16 and 22. Recently, new reports have been created and added to VzCost that streamline the processes involved with the development of the ECF calculation (Step 2) and the Loop Constants Table (Step 4). A VzLoop/VzCost checklist (see attached file) that notes these process revisions is provided with this response.

Subpart 2

Attached is a step-by-step instruction on how to change any input on the Inflation_Indices table. The "script" file is called, "How to Change Productivity & Inflation Indices.doc." It is on Bench Request No. 22, CD No. 1(Amended), in the Folder "Factor_Productivity Expense Adjust Instructions." This document will help any user input any productivity or inflation index that the user would like to use in the cost studies for any period. The user can edit the source name also in the same way that Verizon NW shows to edit a value. "Editing" a table works the same for any of the inputs in any of the tables.

With respect to subparts 2(c) and 2(d), the Expense Factor Run utilizes the productivity and inflation indices within a predefined, VzCost "custom formula." As the script describes, the Account_Inflation table provides the map of each expense account to a specific inflation index and to the productivity index. For some accounts, Verizon NW uses the Bureau of Labor Statistics (BLS), non-farm business inflation index and for other accounts it uses the Consumer Price Index ("CPI"). Verizon NW applies the BLS' non-farm productivity index to all expense accounts. Please note that the productivity factor is entered as a negative number, since it deflates expenses.

Both inflation and productivity are applied by multiplying the vintage (or baseline) expense data by $(1+\text{Inflation}) \times (1+\text{Productivity})$ for each year of the planning period. Also, in the planning period inflation factor, the financial levelization process is applied in the predefined custom formula to average planning period inflation/productivity over the period, which is normally over three years. Therefore, when implementing an expense factor run it is important to designate the data vintage, first year of study, and planning period correctly in the assumption drop down list of the Expense Run, so that the custom formula picks the correct index for the years required over the planning period.

To use different inflation and/or productivity factors than what Verizon NW has proposed, a user needs to first determine what inflation/productivity factors he or she wants to use and from what source. The user can then follow the step-by-step instructional script that is provided in the file named above to edit the inflation and productivity indices Verizon NW used.

Subpart 3

Attached is a step-by-step instruction on how to change the level of expenses in the Expense Factor Runs within the VzCost model. The "script" file is called, "How to Adjust or Eliminate Expense.doc." It can be found on Bench Request No. 22, CD No. 1(Amended), in the folder "Factor_Expense Adjust Instructions."

If a user wants to eliminate or adjust expenses from all the cost studies, assuming that the expense will be non-existent in the forward-looking model, the adjustment can be made in an input table called Expense Adjustment. However, if a user wants to redirect expenses to one area of the business versus another, then the adjustment can be made in a table called Cost Pool Allocations. This alternate solution allows the user to adjust the expense for certain cost pools yet drive that expense to an alternate cost pool because it will not be completely eliminated in all cost studies. When a user eliminates an expense entirely in the studies, the expense will not be included in any numerators or denominators in the factors. Alternatively, if a user adjusts expenses using the cost pool methodology, the cost pool distribution will change (or adjust) only the numerators of certain factors; however, the cost will still be included in the denominators for expense recovery of items like Marketing and Common Overhead.

The reason that Verizon NW is providing the two scenarios is because of the specific example in this bench request of Account 6533. Account 6533 is testing, and testing is a good example of when a user would not want to adjust the expense account for ALL studies, but include only a portion of the account for some studies and include only a portion of the account for others. For UNE testing, Verizon NW wants to avoid the Trouble Report Testing in Account 6533 for *most* UNEs. However, the EEL UNE cost should include the additional testing expense because Verizon NW will provide trouble report processing for EELs. Therefore, instead of eliminating the expense entirely in an Expense Adjustment, Verizon NW makes the expense adjustment in the cost pool allocation by creating two cost pools for testing: Testing and EEL Testing. Since most UNEs only use the Testing associated with the Testing Cost Pool, they will benefit from the allocation percentage sent to just Testing. Only the EEL UNE will capture the expense in the EEL Testing cost pool. In this way, Verizon NW has adjusted testing for 99% of the individual studies.

To use different expense adjustments or cost pool allocation factors than what Verizon NW proposes, a user needs to first determine what adjustments he or she wants to use and from what source (this determination is made outside the model). And, then the user can follow the step-by-step instructional script that is provided in the file named above.

Expense adjustments and assumptions are based on special studies outside of VzCost. All adjustment studies can be found in the backup documentation files for the factors and loadings. Each percentage adjustment study is not mutually exclusive. This means that if a special study advises that the NRC adjustment should be 30% of the account, and another independent study says that the retail avoided study shows that the account should be reduced by 50%, the result is not a total 80% adjustment. In VzCost, both the

30% and 50% are inputs to the expense adjustment table, and the math will calculate the final number by using the following formula:

$$\$100 \times (1-30\%) \times (1-50\%) = \$35$$

This is because some of the 30% (NRC adjustment) is retail-related costs and some of the 50% (retail adjustment) is NRC costs. Taking a full 80% reduction would overstate the adjustment because of the overlap in expense adjustments. When developing the adjustments for specific accounts to be input into VzCost, these facts must be considered before making changes to the adjustment tables.

Subpart 4

Verizon NW has not exactly replicated the results made by Mr. Turner in Exhibit 751TC, pages 48-52. However, to adjust the appropriate table to reflect this bench request, Verizon NW provides the following response:

To augment the assignment of non-switched private lines to terminals and living units, the LOOP_DEMAND table must be adjusted. This table is a listing of customer service addresses for each wire center. It identifies the relationship between the customer address, represented in the table as living unit ID (LUID), and the serving terminal. It is also used to determine the quantity and size of service drops and NIDs required in the network, as each record in the LOOP_DEMAND table is considered for drop and NID placement.

Two adjustments were described in Exhibit 751TC, pages 48-52. The first involves the aggregation of all non-switched LUID records where more than one LUID is associated with a specific terminal. The second deals with reducing the overall number of records by wire center, where non-switched demand could not be associated with a given terminal. For these records, a derived terminal name was assigned.

- a. For the first adjustment, the LOOP_DEMAND table should be queried to identify the appropriate non-switched records. A simple way to capture these records is to search for LUIDs containing the string 'NSW'. The table (Example 1: Step 1) reflects the results of this query. Once this data is extracted, the demand (TOTALBUS) can be summed by terminal (TERM). These results can be seen in table (Example 1: Step 2). Per this example, the new LOOP_DEMAND table would now contain one LUID for terminal 605, instead of the original three. Note: To aid in the identification of adjusted records, it may be helpful to rename the LUID of this condensed record by associating it to its respective terminal as shown in this example, or some other convenient designation.

Example 1: Step 1

JURISDICTION	CLLI	TERM	LUID	TERMUBA	TOTALRES	TOTALBUS	VINTAGE	TOTALDS1
WA	ACMEWAXA	10481NSW	R		0	1	5/9/2003	0

WA	ACMEWAXA	10812NSW	A	0	1	5/9/2003	0
WA	ACMEWAXA	1733NSW	A	0	1	5/9/2003	0
WA	ACMEWAXA	6057NSW	B	0	2	5/9/2003	0
WA	ACMEWAXA	6058NSW	B	0	1	5/9/2003	0
WA	ACMEWAXA	6059NSW	B	0	2	5/9/2003	0

Example 1: Step 2

JURISDICTION	CLLI	TERM	LUID	TERMUBA	TOTALRES	TOTALBUS	VINTAGE	TOTALDS1
WA	ACMEWAXA	1048	1048NSW	R	0	1	5/9/2003	0
WA	ACMEWAXA	1081	1081NSW	A	0	1	5/9/2003	0
WA	ACMEWAXA	173	173NSW	A	0	1	5/9/2003	0
WA	ACMEWAXA	605	605NSW	B	0	5	5/9/2003	0

- b. For the second adjustment, the LOOP_DEMAND table should be queried to identify all non-switched LUIDs assigned to a derived terminal name. To capture these records, search where the LUID name matches the TERM name, and contains the string 'NSW'. The table (Example 2: Step 1) reflects the results of this query. Once this data is extracted, the demand (TOTALBUS) can be summed by wire center (CLLI) and divided by 4 to determine how many terminal and LUID records are required based on this assumption. These results can be seen in table (Example 2: Step 2). Any remainder from this step would be used to create one additional record. Per this example, the new LOOP_DEMAND table would now contain four LUIDs for ALGRWAXX, instead of the original fourteen. Note: To aid in the identification of adjusted records, it is helpful to rename the terminals and LUIDs of the condensed records.

Example 2: Step 1

JURISDICTION	CLLI	TERM	LUID	TERMUBA	TOTALRES	TOTALBUS	VINTAGE	TOTALDS1
WA	ALGRWAXX	30NSW	30NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	31NSW	31NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	32NSW	32NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	33NSW	33NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	34NSW	34NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	35NSW	35NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	36NSW	36NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	37NSW	37NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	38NSW	38NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	39NSW	39NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	40NSW	40NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	41NSW	41NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	42NSW	42NSW	B	0	1	5/9/2003	0
WA	ALGRWAXX	43NSW	43NSW	B	0	1	5/9/2003	0

Example 2: Step 2

JURISDICTION	CLLI	TERM	LUID	TERMUBA	TOTALRES	TOTALBUS	VINTAGE	TOTALDS1
WA	ALGRWAXX	TNSW54	TNSW54 B		0	4	5/9/2003	0
WA	ALGRWAXX	TNSW55	TNSW55 B		0	4	5/9/2003	0
WA	ALGRWAXX	TNSW56	TNSW56 B		0	4	5/9/2003	0
WA	ALGRWAXX	TNSW57	TNSW57 B		0	2	5/9/2003	0

Once these two adjustments have been completed, a new LOOP_DEMAND table must be created. This new table must then be loaded into VzCost as described in document, "VzCost Procedures for Uploading Large Files 1216."

Subpart 5

- a. The VzLoop model is not intended to use plant mix percentages as a global input. The plant mix used in Verizon NW's study is derived from the analysis of the Network table, which is developed from the real-world constraints reflected in Verizon NW's actual plant records. Thus, the selection of plant mix reflects municipal regulations and zoning rules, e.g., requirements for out-of-sight construction in urban areas and recent requirements that underground or buried plant be used in subdivisions even where aerial plant would be less costly. VzLoop does not have to model these requirements through use of plant mix assumptions by wire center or density zones. Instead, VzLoop relies on the existing structure type to account for the requirements imposed by municipal regulations and to reflect the actual possibilities of sharing structure with other utilities.

VzLoop does not use density zones in the same manner as HAI and the FCC Synthesis Model to account for differences in cost characteristics below the wire center level. Instead, VzLoop models characteristics such as plant mix by route segment. Thus, changing plant mix by density zone essentially entails grafting a top-down input approach onto the detailed, bottom-up approach used by VzLoop. This can be done only by developing a procedure to change the UBA (plant type) records in the Network Table so that these values reflect a different plant mix.

One way of doing so is to modify the UBA records in the Network table so that the desired plant mix for each wire center is reflected. The Network table for Washington includes approximately 190,000 records, each representing a terminal or node in the loop network. A UBA value is associated with each record and indicates the plant type for the segment between network nodes. This determines the plant structure type for the route distance between nodes, shown in the Network table LEN field, which -- when adjusted for route-to-air by the program -- becomes the Arc table ARCLENGTH field. If a systematic means of specifying the desired plant type for individual portions of the network is determined, a database program such as an Oracle SQL application or Microsoft Access could be used to effect the desired changes to the Network table. Without a systematic means of specifying the desired plant type for individual portions of the network, this approach would entail a manual editing of the UBA information.

However, whether such changes are made systematically or manually, they would lose the segment-specific plant mix information contained in Verizon's detailed cost study.

To modify the Network table to reflect the plant mix in the FCC Inputs Order, one must determine how the FCC Inputs Order's cluster densities can be correlated to changes in Verizon's Network Table UBA records. One way to do this is to define an SAI and/or DLC serving area as a cluster and compute the relative densities for each cluster -- and then simulate the plant mix desired for each cluster density by applying the respective plant mix to the UBA field. However because each record represents a cable segment between nodes which may have only one UBA value, a decision rule must be developed by the user to determine how the cluster plant mix is assigned or allocated to each segment. Once the Network file has been adjusted to reflect the desired plant mix, it must be loaded into VzCost as described in document, "VzCost Procedures for Uploading Large Files 1216" on the CD submitted with Verizon NW's response to Bench Request No. 22.

Another alternative for performing the procedure specified in 5(a) of this bench request is to change the UBA (plant type) records in the Network Table so that these values reflect three different plant mixes corresponding to 100 percent aerial, 100 percent buried, and 100 percent underground. These results could be averaged at the wire center level based on the desired density zone weightings and a mapping of each wire center to the desired density zone. This approach is similar to that used by Verizon for ICM in its compliance filing in Docket UT-003013. However, this weighting would have to occur outside of VzCost and (like the option described above) would ignore the segment-specific plant mix information contained in Verizon's detailed cost study.

- b. See Response to Subpart 1 regarding downloading and uploading data versions in VzCost. To adjust the maximum number of aerial and buried cables in a segment, the user would revise the following inputs in the Options Table to the desired values:

MAX_NUM_ACABLES	(for aerial cable)
MAX_NUM_BCABLES	(for buried cables)

The user would also revise the following inputs in the Master Table. In the Master Table, the user has the capability to provide wire center specific inputs.

MAX_NUM_ACABLES_WC	(for aerial cable)
MAX_NUM_BCABLES_WC	(for buried cables)

The Options table values are used if the Master table values are set to zero or are left blank. If the user wishes to remove the restrictions entirely, a high value (say 99) should be entered as the input.

Subpart 6

- a. See Response to Subpart 1 regarding downloading and uploading data versions in VzCost. To establish a percentage of trench provided by a developer or third party, the

user would enter the desired percentage in the “PER_TRENCH” input in the Options Table. In the example noted above, the value of 0.10 should be entered to reflect that the developers provide 10% of the trench. VzCost does not provide an opportunity to make this adjustment to other structure types.

b. i. Aerial facilities

VzCost is not designed to adjust structure sharing assumptions by such density zones. Assuming that this request is directed to sharing with other utilities, VzCost does provide the user the capability of adjusting aerial structure sharing with other utilities at the jurisdiction or state level. Within the Options Table, the user can vary the percentage of poles owned by Verizon that are shared with the electric companies by entering the desired percentage in the input “SA”. This factor determines the mix of “POLE” (35’) and “POLESH” (40’) from the Material table. Also within the Options Table, the user can vary the portion of poles that are not owned by Verizon and that Verizon attaches to through lease or joint-use arrangements by entering the desired percentage in the input “SF_POLES”. For example, assume that there are 1,000 poles. If the value of “SF_POLES” is 0.60, then 600 poles are owned by the electric company and 400 poles are owned by Verizon. Now, assuming the value of “SA” is 0.40, of the 400 poles owned by Verizon, 160 poles are 40 foot poles with electric attachments and 240 poles are 35 foot poles without electric attachments. See Response to Subpart 1 for additional details on loading data tables and producing cost studies. Similar to the approach used in the UT-003013 compliance filing, these changes could be made at a wire center level via successive runs of VzCost. The wire center results could be mapped to the desired density zones and weighted accordingly to obtain average results by density zone or at the state level.

ii. Buried facilities

VzCost is not designed to adjust structure sharing assumptions by such density zones. Assuming that this request is directed to sharing with other utilities, VzCost does provide the user the capability of adjusting buried structure sharing with other utilities at the jurisdiction level. Within the Options Table, the user can vary the percentage of buried trench that is owned by Verizon and shared with other companies by entering the desired percentage in the input “SB”. Also within the Options Table, the user can vary the number of users in a trench (including Verizon) by entering the desired value in the input “STU”. See Response to Subpart 1 for additional details on loading data tables and producing cost studies. Similar to the approach used in the UT-003013 compliance filing, these changes could be made at a wire center level via successive runs of VzCost. The wire center results could be mapped to the desired density zones and weighted accordingly to obtain average results by density zone or at the state level.

iii. Underground facilities

VzCost is not designed to adjust structure sharing assumptions by such density zones. Assuming that this request is directed to sharing with other utilities, VzCost does provide the user the capability of adjusting underground structure sharing with other utilities at the jurisdiction level. Within the Options Table, the user can vary the percentage of trench feet of conduit that is owned by Verizon NW and shared with other companies by entering the desired percentage in the input "SC". The number of ducts used by all other parties must then be entered in the Options table input "SCU". For example, if the assumption is that two other parties will use one duct each in 75% of Verizon's conduit structures, the value "SC" will be 0.75 and the value "SCU" will be 2. See Response to Subpart 1 for additional details on loading data tables and producing cost studies. Similar to the approach used in the UT-003013 compliance filing, these changes could be made at a wire center level via successive runs of VzCost. The wire center results could be mapped to the desired density zones and weighted accordingly to obtain average results by density zone or at the state level.

iv. Drops

The VzCost methodology does not include any sharing of drops. However adjustments can be made to the material and placement rates for drops if deemed appropriate. Again, these changes could be made at a wire center level via successive runs of VzCost. The wire center results could be mapped to the desired density zones and weighted accordingly to obtain average results by density zone or at the state level.

v. Sharing between interoffice and loop facilities

VzCost is not designed to adjust structure sharing between interoffice and loop facilities by such density zones. However, VzCost does provide the user the capability to adjust structure sharing at the jurisdiction level. Within the Options Table, the user can vary the numbers of fibers assigned to loop facilities per optical DLC system (NUM_FIBER) and the number of fibers assigned to other services (including interoffice needs) per optical DLC system (NUM_FIBER_IOF). The input NUM_FIBER_DSL must not be used; any fibers desired to serve DSL should be included in NUM_FIBER_IOF. As the structure associated with these two sets of fibers is determined based on relative proportions, these two input values will determine the amount of structure sharing between loop and interoffice and other services. See Response to Subpart 1 for additional details on loading data tables and producing cost studies.

vi. Sharing between feeder and distribution facilities

In the VzCost methodology, the sharing of structures between feeder and distribution facilities is determined based on relative proportions of feeder and distribution capacity requirements. In addition, there are adjustments made in the Loop BC Runs that reflect the sharing of aerial structures (poles) between loop

feeder and distribution facilities. Within the 2 Wire, 4 Wire and DS1 Loop BC Families, the pole investments associated with copper and fiber feeder facilities are first halved and then subtracted from the pole investments associated with copper distribution facilities. This adjustment is applied to both the residence-related and business-related pole investment components. The user has the capability of altering this adjustment by revising these formulas. The following is a list of the BC families and the specific Formula IDs associated with this adjustment in pole investment.

BC Families -	NAL_2W_VZ_BIC_V7 NAL_4W_VZ_BIC_V7 NAL_DS1_VZ_BIC_V7
Formula IDs -	B_POLE_FDR COPAER_S_WSHARE B_POLE_FDR FBRAER_S_WSHARE B_POLE_DIST COPAER_S_WSHARE B_POLE_DIST FBRAER_S_WSHARE R_POLE_FDR COPAER_S_WSHARE R_POLE_FDR FBRAER_S_WSHARE R_POLE_DIST COPAER_S_WSHARE R_POLE_DIST FBRAER_S_WSHARE

These Formula IDs represent the pole investments that are combined with other structure related investment components in subsequent Formula IDs in the Loop BC Families. The following is a list of those subsequent Formula IDs. There is no need to make any adjustments to these subsequent Formula IDs; any adjustments made to the previously listed Formula IDs will flow through.

Formula IDs -	_FDR_COP_B_S _FDR_FBR_B_S _FDR_COP_R_S _FDR_FBR_R_S _DIST_COP_B_S _DIST_FBR_B_S _DIST_COP_R_S _DIST_FBR_R_S
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Verizon NW does not believe that sharing should occur for underground or buried facilities, but similar adjustments can be made to the underground and buried BC formulas.

Subpart 7

- a. See Response to Subpart 1 regarding downloading and uploading data versions in VzCost. The Master Table provides the user with the capability to adjust the drop

lengths for each wire center. There are separate input columns for aerial drop lengths (DROPLENGTH_A) and buried drop lengths (DROPLENGTH_B). In order to input the drop lengths on a density cell basis, the user would need to determine the density cell assignment for each wire center. The user would then input the appropriate density cell drop length for each wire center.

- b. The VzLoop model does not use drop structure mix percentages as a global input. Each customer address is classified as aerial, buried or building in the TERMUBA field of the Loop Demand table. The Loop Demand table stores information regarding the demand and structure type for the distribution terminal for each living unit that Verizon serves in Washington. To make the change described in this subpart, one must follow a procedure similar to that described in response to subpart (5): to apply zone-specific structure inputs, each record in the Loop Demand table must be categorized into a density zone. Then to change the drop structure mix, the user can convert locations from aerial to buried or vice versa until the desired mix is attained. Note that drops are not placed to building terminals (TERMUBA value "R"). See document "VzCost Procedures for Uploading Large Files 1216" for uploading the Loop Demand table.
- c. The VzLoop model does not use the average pairs per location as an input. The Loop Demand table includes the number of working lines, separately for residence, business and DS1, for each customer address. Multi-tenant locations are shown as a single address. For this reason, the average lines per location for residential premises is 1.33, while the average lines per residence customer (from WA_DIST_CA_FILL.xls on CD # 2, section 5, of the June 2003 filing) is 1.14. (Residential premises are defined in this example as addresses with no business or DS1 lines.)

Although it may be possible to change the average lines per location by adjusting the number of working lines in the Loop Demand table, the process would be arbitrary and approximate. Also, if the demand is changed, the sum of the demand by terminal must be posted to the Network table so that cable and terminal sizing corresponds to the new demand.

Subpart 8

See Response to Subpart 1 regarding downloading and uploading data versions in VzCost. The Master Table provides the user with the capability to adjust the pole spacing for each wire center. The pole spacing values should be entered into the column labeled "POLE_SPACE". In order to input the pole spacing on a density cell basis, the user would need to determine the density cell assignment for each wire center. The user would then input the appropriate density cell pole spacing for each wire center.

Subpart 9

See Response to Subpart 1 regarding downloading and uploading data versions in VzCost. The Material Table provides the user with the capability to enter material prices

for various items, including different sizes of copper and fiber cable. Differing sizes of cable are noted in the column "SIZE_PR_UNIT". Copper cable sizes are identified by the number of pairs in the cable; fiber cable sizes are identified by the number of strands in the cable. The Material Table also allows the user to enter specific material prices for aerial, buried and underground cables. The following is a list of the "MATERIAL_TYPES" associated with copper cable, fiber cable, and poles. The Material Table also includes a more detailed "DESCRIPTION" of each of these "MATERIAL_TYPES".

a. Copper cable

MATERIAL_TYPE

CUAER24	(aerial copper cable)
CUBUR24	(buried copper cable)
CUUND24	(underground copper cable)

b. Fiber cable

MATERIAL_TYPE

FIAER	(aerial fiber cable)
FIBUR	(buried fiber cable)
FIUND	(underground fiber cable)

c. Poles

MATERIAL_TYPE

POLE	(Pole – 30 Foot, Class 5)
POLESH	(Pole – 40 Foot, Class 4)

The Placement Table includes a number of input items associated with the placing of cables and poles. These items are designated as "LABOR_TYPES". The following is a list of the "LABOR_TYPES" associated with copper cable, fiber cable and pole placement.

a. Copper cable

LABOR_TYPE

LP18A	(place strand)
LP22AL	(place aerial cable larger than 600 pairs)
LP22AS	(place aerial cable 600 pairs or less)
LP43A	(place copper cable in conduit)
LP49A	(place cable / conduit direct)
LP49B	(place additional cable / duct)
LP51A	(plow cable – jobs greater than 1000 feet)
LP51B	(plow cable – jobs less than 1000 feet)

LP51C	(plow cable – add additional 6 inches of depth)
LP52A	(pre-ripping)
LP54A	(trench at 30 inches – jobs less than 1000 feet)
LP54B	(trench at 30 inches – jobs greater than 1000 feet)
LP54C	(increase trench depth by 6 inches)
LP55A	(backhoe at 36 inches and place cable)
LP55B	(increase backhoe depth by 12 inches)
LP57A	(hand dig trench)
LP59A	(initial bore)
LP70C	(plow additional cable)
LP73B	(well points for trench line)

b. Fiber cable

LABOR_TYPE

LP18A	(place strand)
LP43C	(place fiber cable in conduit)
LP49A	(place cable / conduit direct)
LP49B	(place additional cable / duct)
LP51A	(plow cable – jobs greater than 1000 feet)
LP51B	(plow cable – jobs less than 1000 feet)
LP51C	(plow cable – add additional 6 inches of depth)
LP52A	(pre-ripping)
LP54A	(trench at 30 inches – jobs less than 1000 feet)
LP54B	(trench at 30 inches – jobs greater than 1000 feet)
LP54C	(increase trench depth by 6 inches)
LP55A	(backhoe at 36 inches and place cable)
LP55B	(increase backhoe depth by 12 inches)
LP57A	(hand dig trench)
LP59A	(initial bore)
LP70C	(plow additional cable)
LP73B	(well points for trench line)

c. Poles

LABOR_TYPE

LP01A	(place 30 foot pole)
LP03A	(place 40 foot pole)
LP07A	(place anchor and guy)
LP70A	(cut solid rock – per hole)

Subpart 10

VzCost is not designed to adjust the amount of boring and hand dug trench by such density zones. However, VzCost does provide the user the capability of adjusting the amount of these two items at the jurisdiction level. Within the Options Table, the user can vary the percentage of buried trench that requires boring (tunneling) under pavement or other obstructions by entering the desired percentage in the input "PER_BORING". Also within the Options Table, the user can vary the percentage of trench that requires hand digging by entering the desired percentage in the input "PER_HAND". See Response to Subpart 1 for additional details on loading data. Again, these changes could be made at a wire center level via successive runs of VzCost. The wire center results could be mapped to the desired density zones and weighted accordingly to obtain average results by density zone or at the state level.

Subpart 11

Several factors affect the copper/fiber crossover point.

The primary factor is the Master table input, CU_FI_CROSSOVER. This input may be changed to any value (in feet). See Response to Subpart 1 on instructions to modify the Master table.

Existing DLCs in Verizon's actual network below the copper/fiber threshold will remain DLCs in Verizon's forward-looking network design. To remove them, the TERMTYPE field in the Network table must be changed from "F" to "1" where DISTOCO (which represents distance from the Central Office) is less than the value for CU_FI_CROSSOVER.

The Economic Crossover calculation will override the CU_FI_CROSSOVER if the result of the calculation is less than that value. To disable this, enter a high value (e.g., 5) in the ECF_DLC row of the Placement table, while leaving the remaining ECF factors as zero. In this case, only one run of the Element Calculator will be required. See Response to Subpart 1 on instructions on modifying data tables such as the Options and Materials Table the Placement table.

Existing SAIs below the threshold will be converted to DLCs if any of the dependent terminals are further from the wire center than the distance represented in the Options table OMD factor. This factor may be changed, but should be handled cautiously as it also applies to the maximum distance from an RT to its furthest distribution terminal, and therefore affects the sharing of RTs across multiple SAIs. See Response to Subpart 1 on instructions on modifying the Options table.

Subpart 12

Engineering factors are stored in the "EFILoad" table in VzCost. Instructions for changing an EFILoad table are in the document named "Training Script Volume 2," section IV, page 54. This document can be found on Bench Request No. 22, CD No. 1(Amended), in the folder labeled "Training Material_Scripts_Examples."

Subpart 13

VzCost is not designed to adjust the cable sizing factors by such density zones. However, VzCost does provide the user the capability of adjusting the sizing factors at the jurisdiction level. Within the Options Table, the user can vary the factor used to determine the number of installed pairs in copper distribution cable by entering the desired factor in the input "DIST_CA_FILL". Also within the Options Table, the user can vary the factor used to determine the number of installed pairs in copper feeder cable by entering the desired factor in the input "FEED_CA_FILL". In both cases, the factor is multiplied by total demand to produce the number of installed pairs. In the VzCost methodology, there are no sizing factors associated with fiber cables. See Response to Subpart 1 for additional details on loading data tables. Again, these changes could be made at a wire center level via successive runs of VzCost. The wire center results could be mapped to the desired density zones and weighted accordingly to obtain average results by density zone or at the state level.

Subpart 14

The instructions in response to Subpart 14 can be found on Bench Request No. 22, CD No. 1(Amended), in the folder "Switching Adjustment Instructions," document named "Bench Req22 Part 14 (change switching fills) – Issue 2(amend).doc."

The files have been amended, as discussed during the December 16 VzCost tutorial.

Subpart 15

The instructions in response to Subpart 15 can be found on Bench Request No. 22, CD No. 1(Amended), in the folder "Switching Adjustment Instructions," in the document named "Bench Req22 Part 15 (change trk CCS) – Issue 2(amend).doc."

Subpart 16

The instructions in response to Subpart 16 can be found on Bench Request No. 22, CD No. 1(Amended), in the folder "IOF Adjust Instructions," in the document named "IOF_Fill_AdjustInst(amend).doc." The IOF script document includes the references to the 2003 and 2004 filings, as discussed at the December 16 VzCost tutorial.

Subpart 17

In order to adjust the IDLC and UDLC percentages, one data (input) tables must be modified – the Loop Constants Table found under the "IOF_CONSTANTS_VALUE" Tables. There are three input values (noted as "ITEM_KEY") in this table associated with UDLC and IDLC percentages:

ITEM_KEY

UNIV_PERCENT (the percent of DLC that is universal)

TR08_PERCENT (the percentage of DLC that is integrated TR08)
 TR303_PERCENT (the percentage of DLC that is integrated GR303 with a 4:1 concentration)

Please note that these 3 percentages should total 100%.

The procedure for revising a data table is noted in the response to No. 1. After the revised data table has been loaded into VzCost, the user can use the revised data table to produce a cost study. It is not necessary to produce a new Loop Calculator Run and /or a new Loop BC Run to create a cost study with revised IDLC / UDLC percentages.

Subpart 18

Exh. No. 228TC (erratum filed May 26, 2004) on page 130 describes the inclusion of minor material in the DLC material prices and that the EF&I factor should be applied to DLC investments without minor materials. Accordingly, the DLC minor materials that should be excluded from DLC investments in the EXCEL file³ used to create the material table are identified below:

Minor material Items to be zeroed out:

Item	Part Number	Appears in file. WA_Vzmatl_C07_2003_121503.xls, worksheet and cells
Expansion Bank Fibers (3M length pair)	04100003	"AFC detail" & "AFC ADSL detail", col. D, rows 17,55,93,136
23" CBA Projection Mount (5") Adapt.Kit	2100005	"AFC detail" & "AFC ADSL detail", col. D, rows 8,29,46,67,84,105
DMAX1120 Front Cover Kit	2100118	"AFC detail" & "AFC ADSL detail", col. D, rows 9,30,47,68,85,106
MESA 2 Pad Mounting Template	F1003888	"AFC detail" & "AFC ADSL detail", cell D149. "Alcatel detail", cell D168. "Alcatel ADSL detail", cell D170
MESA 4 Pad Mounting Template	F1004238	"AFC detail" & "AFC ADSL detail", cell D150. "Alcatel detail", cell D169. "Alcatel ADSL detail", cell D171
MESA 6 Pad Mounting Template	F1004239	"Alcatel detail", cell D170. "Alcatel ADSL detail", cell D172

See response to subpart1 regarding downloading and uploading data versions in VzCost.

Further adjustments to DLC Installation costs, such as using different EF&I factor(s) or actual installation costs can be made as follows:

- a. Adjust the EFI table prior to running the Element Loader (e.g. see page 54 of VzCost Training Script Vol 2. doc).

OR

- b. Disable (zero out) the DLC account (223200) in the EFI table, then add installation costs to each DLC size and type in the material table before uploading it to VzLoop and re-run cost study. The installation costs added should include all costs needed to convert DLC equipment into systems or components ready for the provision of services.

³ The EXCEL file used to create the original material table, filename: WA_Vzmatl_C07_2003_121503.xls, was included on CD#2, under subdirectory, Cost Study Support Files/Loop/Supporting Doc/Material

Part Two

Naming the Data Table with ALL_CAPS instead of Upper_and_Lowercase names plays no role in what the tables represent. Different naming conventions were used by different users doing the initial construction of the tables.

Part Three

Several flow charts regarding VzLoop in response to Part Three of the above request can be found on Bench Request No. 22, CD No.1(Amended), in the folder named "WA UNE Bench Req22_VZ Resp_Part Three," subfolder "Data Dependency Flow."

The file included on the CD contains the following amendments, as discussed at the December 16 VzCost tutorial.