

ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Investigation into Pricing of)
Unbundled Network Elements)
_____)

Docket No. 990649-TP

DIRECT TESTIMONY OF

DAVID G. TUCEK

ON BEHALF OF

GTE FLORIDA INCORPORATED

SUBJECT:

COST STUDY REQUIREMENTS
AND GUIDELINES

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GTE FLORIDA INCORPORATED
DIRECT TESTIMONY OF DAVID G. TUCEK
DOCKET NO. 990649-TP

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is David G. Tucek. My business address is 1000 GTE Drive, Wentzville, Missouri.

Q. BY WHOM ARE YOU EMPLOYED, AND IN WHAT CAPACITY?

A. I am employed by GTE Service Corporation as Staff Manager - Economic Issues. In this capacity, I am responsible for supporting GTE's incremental cost studies for all of GTE telephone operating companies, including GTE Florida Incorporated.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A. I have a Bachelor of Science Degree in Mathematics and Economics from Southeast Missouri State University and a Master of Arts Degree in Economics from the University of Missouri. I also have a Master of Business Administration from St. Louis University. I began my career in the telecommunications industry as a Senior Cost Analyst with Contel Service Corporation in 1979. I became an employee of GTE in 1991, at the time of the merger between the two companies. During the course of my career, I have held various positions dealing with cost analysis and modeling, rate design, tariff development,

1 carrier billing, and demand analysis. I assumed my present position
2 in August of 1996.

3

4 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE ANY STATE OR**
5 **FEDERAL REGULATORY COMMISSIONS?**

6 A. Yes. I have testified as an expert witness before the state utility
7 commissions in Alabama, Arkansas, Florida, Hawaii, Illinois, Indiana,
8 Iowa, Kentucky, Michigan, Missouri, Nebraska, New Mexico, North
9 Carolina, Pennsylvania, and Washington. I have also sponsored
10 expert testimony before the Interstate Commerce Commission.

11

12 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

13 A. My testimony responds to issue number 3(a) identified for resolution
14 in Phase I of this investigation into the pricing of unbundled network
15 elements (UNEs). That issue asks what guidelines and specific
16 requirements should be imposed on the cost studies filed in this
17 proceeding. I understand that the Commission will require the
18 submission of cost studies in Phase II of this docket.

19

20 Please note that my testimony discusses only the Total Element Long
21 Run Incremental Cost (TELRIC) studies for UNEs; it does not discuss
22 the appropriate rates for UNEs. This issue – including GTE's
23 proposed deaveraging adjustment charge – is discussed in the
24 testimony of GTE witnesses Dennis Trimble and Michael Doane. As
25 explained by Mr. Trimble, GTE does not believe that UNE rates

1 should be based solely on TELRICs plus some arbitrary mark-up of
2 forward-looking common costs. Rather, GTE believes that properly
3 calculated TELRICs provide a reasonable starting point for developing
4 UNE rates, but that the rates themselves must reflect GTE's actual
5 costs. As noted by Mr. Trimble, this issue is currently before the
6 Court of Appeals for the Eighth Circuit.

7
8 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

9 A. The remainder of my testimony discusses the following three topics:

- 10
11 (1) Cost Study Objectives;
12 (2) General Requirements for the Phase II Cost Studies;
13 (3) Specific Requirements for Recurring Cost Studies.

14
15 While the general principles I discuss should govern both recurring
16 and nonrecurring cost studies, I do not address specific nonrecurring
17 cost study requirements. As GTE's policy witness Trimble points out,
18 nonrecurring cost studies are necessarily linked to the issues
19 surrounding Operations Support Systems (OSS). As I understand it,
20 OSS issues are not within the scope of this proceeding, but have
21 instead been assigned to ongoing workshop proceedings. GTE
22 believes that it will be more productive to discuss the specific
23 requirements for nonrecurring cost studies in conjunction with the
24 OSS issues.

Cost Study Objectives

Q. WHAT IS THE OBJECTIVE OF THE TELRIC STUDIES TO BE FILED IN PHASE II OF THIS DOCKET?

A. The TELRIC studies to be filed in Phase II of this docket should assist in the development of the rates for UNEs (including deaveraged UNEs and UNE combinations) to be provided out of a specific company's network. As explained by GTE Witness Trimble, these rates and their re-balanced retail counterparts must be designed to promote efficient competition subject to the preservation of universal service. In order to help achieve this pricing objective, the cost studies must produce estimates of the forward-looking, economic costs each company expects to incur in provisioning UNEs and telecommunications services out of its own network.

Q. WHAT IS MEANT BY "FORWARD-LOOKING ECONOMIC COSTS"?

A. Forward-looking economic costs reflect the cost of provisioning a service or an element on a go-forward basis, without regard to past input prices or investments in plant and equipment -- that is, without regard to embedded or sunk costs. So, even if existing assets are used to provide a service or an element, the forward-looking economic cost is the cost of providing the service or element using today's technology and today's input prices, including the cost of capital.

1 **General Requirements for the Phase II Cost Studies**

2

3 **Q. WHAT GENERAL REQUIREMENTS FOR THE COST STUDIES TO**
4 **BE PRESENTED IN PHASE II ARE IMPLIED BY THE COST**
5 **STUDIES' OBJECTIVE?**

6 A. There are four major requirements that a sound cost study must meet:

7

8 (1) The costs for each unbundled or nonrecurring element must
9 reflect the Total Element Long-Run Incremental Cost (TELRIC)
10 of the element;

11

12 (2) The cost model must reflect company-specific inputs for labor
13 and material costs, as well as company-specific operating
14 characteristics and practices;

15

16 (3) The costs must be based on forward-looking capital costs;

17

18 (4) Recurring costs for loops and switching should be based on
19 existing wire center locations, and non-recurring costs
20 associated with ordering and provisioning UNEs should be
21 based on existing operation support centers.

22

23 **Q. WHY MUST THE COST OF EACH ELEMENT REFLECT ITS**
24 **TELRIC?**

25 A First, TELRIC reflects the costs of provisioning the entire quantity of

1 the element. Consequently, TELRIC encompasses both volume-
2 sensitive and volume-insensitive costs; if it did not, then the costs
3 would be understated and the resulting rates would likely signal
4 distorted incentives for entry.

5
6 Second, TELRIC is a long-run cost measure, which means it includes
7 both operating costs and capital costs. This means that TELRIC
8 reflects the costs of capital assets like poles, cables, switches and
9 buildings, even if these assets already exist in the network. Again, if
10 it did not, costs would be understated and the incentives for entry
11 would likely be distorted.

12
13 Third, TELRIC only includes costs that are incremental to the
14 provisioning of the particular element. Conceptually, TELRIC equals
15 the cost of providing all of the services of a company, including the
16 element in question, minus the cost of providing all of the services of
17 a company, excluding the element in question. Consequently,
18 TELRIC encompasses only those costs that are directly caused by
19 the element in question.

20

21 **Q. WHY MUST THE COST MODEL REFLECT COMPANY-SPECIFIC**
22 **INPUTS AND COMPANY-SPECIFIC OPERATING CONDITIONS**
23 **AND PRACTICES?**

24 A. Quite simply, if it did not, then the resulting cost estimates would not
25 represent the forward-looking costs the company expects to incur in

1 provisioning UNEs. For example, if a common set of input prices
2 were chosen based on the lowest values from among all those offered
3 in a proceeding, the resulting set of input prices would likely not be
4 attainable by any one company. Consequently, the resulting cost
5 estimates would not be representative of the costs any company
6 expected to incur in provisioning UNEs. The same is true of
7 company-specific operating conditions and practices, unless the cost
8 model incorporates inputs and assumptions consistent with each
9 company's own experience, the resulting cost estimates will not be
10 reflective of anything.

11

12 **Q. WHY MUST THE COST STUDIES BE BASED ON FORWARD-**
13 **LOOKING CAPITAL COSTS?**

14 A. Capital costs are the costs associated with the capital used by the
15 firm. These costs include both a *return on* and a *return of* the
16 invested capital. The *return on* component of capital costs is called
17 the cost of capital or the cost of money. The providers of a
18 company's capital do so on the basis of their required expected, or *ex*
19 *ante*, rate of return. This required rate of return is largely determined
20 by the risk associated with investing in a local telecommunications
21 carrier. This risk has increased because of several factors: the
22 prospect of increased competition and the attendant loss of market
23 share; the uncertainty surrounding the prices to be charged for resale
24 services and for unbundled network elements; the magnitude of
25 implementation costs and the question of how or whether they will be

1 recovered; the loss of geographical diversification of regulatory risk
2 due to the simultaneity of cost proceedings among the states; and the
3 possibility that prudently made historical investments will not be
4 recoverable. Unless the cost estimates are based on a risk-adjusted,
5 forward-looking cost of capital, they will not reflect the long-run costs
6 of provisioning telecommunications services and elements in the
7 given company's network.

8
9 The *return of* component of capital costs is called depreciation. This
10 component reflects the using up of the service potential of an asset.
11 It accounts for the change in the market value of an asset due not
12 only to its utilization in providing a service, but to other factors as well.
13 For example, the loss in the market value of a machine may be due
14 to wear and tear resulting from the provision of the service or element,
15 or it may simply be due to obsolescence resulting from changing
16 demand conditions or technology. While obsolescence may not
17 physically destroy an asset, it nonetheless reduces its economic or
18 market value. Depreciation lives that account for such a loss in the
19 value of an asset are called economic lives. Again, unless cost
20 estimates are based on the economic lives of the underlying assets,
21 they will not reflect the long run costs of provisioning
22 telecommunications services.

23
24 **Q. WHY SHOULD THE COSTS BE BASED ON EXISTING WIRE**
25 **CENTER LOCATIONS AND OPERATION SUPPORT CENTERS?**

1 A. To be useful, the cost studies must be grounded in reality. Although
2 the cost estimates should reflect the forward-looking economic costs
3 of provisioning elements, the existing network cannot be ignored.
4 With respect to wire center locations, a wholesale, across-the-board
5 reassignment is neither plausible nor feasible; any cost estimates
6 based on such an assumption would be useless for the purposes of
7 designing UNE rates. Likewise, in GTE's case, existing operations
8 centers are located in areas that reflect the requirements of the entire
9 GTE system, and a wholesale reassignment is not feasible. In any
10 event, an operation center's proximity to an adequate labor pool is
11 more important than its proximity to a particular serving territory.

12

13 **Specific Requirements for Recurring Cost Studies**

14

15 **Q. WHAT SPECIFIC REQUIREMENTS MUST BE MET BY THE**
16 **RECURRING COST STUDIES?**

17 A. The Commission has not yet determined which UNEs the incumbent
18 LECs should submit cost studies for -- that is, in part, the purpose of
19 this proceeding. GTE witness Trimble explains GTE'S position on
20 unbundling parameters. However, for purposes of this testimony, I
21 will conservatively assume that companies will be required to submit
22 recurring cost studies for unbundled loops, ports, switching and
23 transport. These cost studies must meet seven major requirements:

24

25 (1) even if the model *designs* the network all at once, the model

1 inputs should not be based on the assumption that the network
2 is *built* all at once;

3

4 (2) the model should reflect structure sharing parameters based on
5 each company's actual operating experience;

6

7 (3) the model should be based on the forward-looking technology
8 mix that each LEC expects to employ in its network;

9

10 (4) the model inputs should be consistent whether the costs of
11 UNEs or of retail services are being estimated;

12

13 (5) input prices for switches should reflect a blend of the pricing for
14 switch replacements and switch additions;

15

16 (6) Utilization rates, or fill factors, should be based on average
17 levels of utilization, and not on objective levels or the fill at relief;

18

19 (7) The model must be able to yield results at the wire center level
20 or lower, for use in such analytical tools as spreadsheets and
21 database programs.

22

23 **Q. WHY SHOULDN'T MODEL INPUTS BE BASED ON THE**
24 **ASSUMPTION THAT THE NETWORK IS BUILT ALL AT ONCE?**

25 A. Again, for the model results to be useful, they must be grounded in

1 reality. All of the models that are currently being proffered to the FCC
2 and to state commissions that I have seen design the network in its
3 entirety, or all at once. For example, if a particular situation requires
4 a 400-pair cable, the models will base the costs on the placement of
5 a 400-pair cable, even if the evolution of demand in the real world
6 required a 300-pair cable followed by a 100-pair cable. This is not a
7 requirement of a forward-looking cost model. Rather, it reflects a
8 limitation of the underlying demand information -- the data do not exist
9 to track (or forecast) the growth in demand through time and space.
10 In the real world, the network is built and evolves through time as
11 demand changes, and the model inputs should reflect this. In
12 particular, input prices should not be developed on the basis of a
13 widespread rebuild of the network.

14
15 **Q. WHY SHOULD THE COST STUDIES REFLECT STRUCTURE**
16 **SHARING PARAMETERS BASED ON EACH COMPANY'S**
17 **ACTUAL OPERATING EXPERIENCE?**

18 A. Unless these parameters are based on actual operating experience,
19 then the resulting cost estimates will not reflect the long run forward-
20 looking costs of each company's network. In other proceedings,
21 some parties have attempted to justify levels of sharing that
22 substantially exceed actual experience based on the conclusory
23 statement that opportunities for sharing will be greater in the future.
24 Such proposals conveniently overlook the fact that each company's
25 network is in place today. They assume that the LEC (or other

1 utilities) would have had the foresight to install poles and conduit
2 systems that were large enough to accommodate these greatly
3 expanded levels of sharing. With respect to buried cable, these
4 parties apparently believe that the LEC will dig up its existing cable in
5 order to rebury it in a shared trench. Even if one takes the position
6 that the costs which should be modeled are that of some hypothetical
7 new entrant that is going to rebuild the entire network, greatly
8 increased levels of sharing still cannot be supported. Even under this
9 hypothesis, the required coincidence of demand in space and time
10 among the sharing utilities must be assumed as well. However, there
11 is no hypothetical new entrant that will completely rebuild the electric
12 power and cable TV networks in the LEC's serving areas. Like the
13 LECs, their networks are already in place along with sharing
14 arrangements that made sense at the time. Indeed, in FPSC Order
15 No. PSC-99-0068-FOF-TP, the Commission found the LEC's sharing
16 percentages to be reasonable surrogates for an efficient level of
17 sharing and also rejected sharing inputs that relied on the assumption
18 that power and cable companies would rebuild their networks. (Order
19 at pp. 125-126).

20
21 **Q. WHY IS IT APPROPRIATE FOR THE COST STUDIES TO BE**
22 **BASED ON THE FORWARD-LOOKING TECHNOLOGY MIX THAT**
23 **EACH LEC EXPECTS TO EMPLOY IN ITS NETWORK?**

24 **A.** To use a forward-looking technology mix other than the LECs would
25 mean there would be no reasonable expectation that the resulting

1 cost estimates will reflect the long-run costs of provisioning
2 telecommunication services in the LEC's network. Switching costs in
3 particular must be based on the technology and host/remote mix
4 found in LEC's network, assuming that any existing non-digital
5 switches are replaced by the appropriate forward-looking switch. It
6 would be inappropriate to base the switching costs on a different
7 technology mix or network configuration, or to base switch input
8 prices on some composite of other companies' experiences.

9
10 **Q. WHY SHOULD THE MODEL INPUTS FOR UNE COST STUDIES BE**
11 **CONSISTENT WITH THOSE FOR RETAIL SERVICES?**

12 A. As noted above, the UNE rates that will ultimately be determined in
13 a later stage of this proceeding, and their re-balanced retail
14 counterparts, must be designed to promote efficient competition
15 subject to the preservation of universal service. Unless the UNE and
16 retail cost studies are based on a consistent set of inputs, it will not be
17 possible to bring both sets of rates into alignment with respect to their
18 individual relationships to forward-looking economic costs.

19
20 **Q. WHY SHOULD THE INPUT PRICES FOR SWITCHES REFLECT**
21 **THE PRICING FOR BOTH SWITCH REPLACEMENTS AND**
22 **ADDITIONS?**

23 A. It would be incorrect to base switching inputs solely on the pricing
24 associated with additions to existing switches, or solely on the pricing
25 associated with a replacement of technology. The reason for this is

1 that the investment representing the switches in the network resulted
2 from both types of switch pricing. In particular, the position that only
3 replacement pricing should be used is based on the notion that the
4 network should be costed as if it fell from the sky and that in each
5 instance the technology of the switch changed. As I explained above,
6 in the real world the network is built and evolves through time as
7 demand changes. The switching inputs should reflect this by
8 accounting for both types of switch pricing.

9
10 **Q. WHY SHOULD UTILIZATION RATES OR FILL FACTORS BE**
11 **BASED ON AVERAGE LEVELS INSTEAD OF OBJECTIVE**
12 **LEVELS?**

13 A. It is incorrect for a cost study to reflect utilization levels consistent with
14 objective fills. Objective fill, or "fill at relief", reflects that level of
15 utilization at which plant is reinforced. With respect to distribution
16 plant in particular, the proposition of basing costs on objective fill is
17 nonsensical since there is no objective fill associated with distribution
18 plant. Distribution plant, that portion of the local outside plant that is
19 closest to the end-user, is built to serve ultimate demand. That is, it
20 is not built with the expectation that it will require reinforcement. To
21 do otherwise would require the LEC to go back into established
22 neighborhoods to place additional cable, resulting in increased costs
23 and service delays. This would mean that the cost estimates would
24 have to reflect such things as multiple trenching along the same route
25 -- a circumstance that sound engineering practices seek to avoid.

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Unlike distribution plant, feeder plant is built with the expectation that it will be reinforced. However, it is incorrect to base costs on the level of capacity utilization consistent with objective fills. For one thing, to do so would mean that the costs would be based on a network in which the feeder plant would immediately require reinforcement everywhere. If such a circumstance ever existed in the real network, it would certainly be a transitory phenomenon since most routes would subsequently be reinforced and the actual fill would decrease below the objective level.

The level of utilization upon which costs are based should be the **average** level, which will be less than the objective level. To see that this is so refer to the attached Exhibit DGT-1. This diagram depicts the problem of determining inventory holding cost. In the diagram, the level of inventory falls through time until it hits some predetermined level labeled as the reorder point, when the inventory is restocked. Obviously, the cost of holding inventory is not based on the level just before it is restocked or at the level just after restocking. It is based on the **average** level of inventory. The reorder point in this example is analogous to the objective fill -- it is the level of utilization (or the level of remaining capacity) that triggers relief, or restocking, of the plant. Likewise, the average inventory is analogous to the average fill level. As in the inventory example, costs must be calculated using average fill (average inventory level), not objective fill (reorder point).

1 Basing the costs on objective fill means the modeled network would
2 require reinforcement of every feeder route at the same time. This is
3 a totally hypothetical situation, since it would not be possible to
4 reinforce every route in the network simultaneously.

5

6 **Q. WHY MUST IT BE POSSIBLE TO EXTRACT MODEL RESULTS AT**
7 **THE WIRE CENTER LEVEL OR LOWER?**

8 A. As explained in the testimony of GTE Witness Trimble, one of the
9 pricing issues in this proceeding is the deaveraging of UNE rates
10 below the statewide level. For this to be possible, the model must
11 produce cost estimates at least at the wire center level, since the
12 deaveraging will at a minimum correspond to two groups of
13 exchanges defined by differences in size and/or density
14 characteristics. The information to be extracted should include not
15 only the UNE costs, but also such information as distribution and
16 feeder fill factors, and the amount of investment in different types of
17 plant. If the model results are to be analyzed below the wire center
18 level, the distinguishing characteristic should be related to the cost of
19 providing service. Possible cost drivers at this level are loop length
20 and the need to limit the copper portion of the local loop to 12 kilofeet.

21

22 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

23 A. The Phase II cost studies are to be used as a starting point for the
24 development of the rates for unbundled network elements provided
25 out of a specific company's network, and must produce estimates of

1 the forward-looking economic costs each company expects to incur
2 in provisioning these elements and other telecommunication services.
3 Forward-looking economic costs are the costs of provisioning an
4 element on a go-forward basis using today's technology and today's
5 input prices.

6
7 The cost estimates produced in Phase II must reflect the TELRIC of
8 each unbundled element. This means that the cost estimates must
9 reflect the entire quantity of the element, reflect both operating
10 expenses and the cost of capital assets even if the assets already
11 exist in the network, and that only the costs that are directly caused
12 by the element in question be included. Additionally, the Phase II cost
13 studies must: (a) reflect company-specific inputs for labor and
14 material, along with company-specific operating characteristics and
15 practices; (b) be based on a forward-looking cost of capital and
16 economic depreciation; and (c) be based on existing wire center and
17 operation support center locations.

18
19 With respect to the recurring cost studies, even if the cost model
20 *designs* the network all at once, the underlying inputs for material and
21 labor prices, structure sharing, etc., should not be developed as if the
22 network were *built* all at once. In particular, the model should reflect
23 structure sharing parameters based on each company's actual
24 operating experience, and on the forward-looking technology mix that
25 each carrier expects to employ in its network. Additionally, the cost

1 model inputs should: (a) be consistent whether the costs of UNEs or
2 retail services are being estimated; (b) reflect a blend of pricing for
3 switch replacements and switch additions; and (c) reflect utilization
4 rates or fill factors consistent with average levels rather than with the
5 levels that trigger reinforcement of network capacity. Finally, in order
6 to facilitate the deaveraging of UNE rates (and retail re-balancing), it
7 must be possible to extract model results at the wire center level or
8 lower for use in such analytical tools as spreadsheets and database
9 programs.

10

11 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

12 **A.** Yes, it does.

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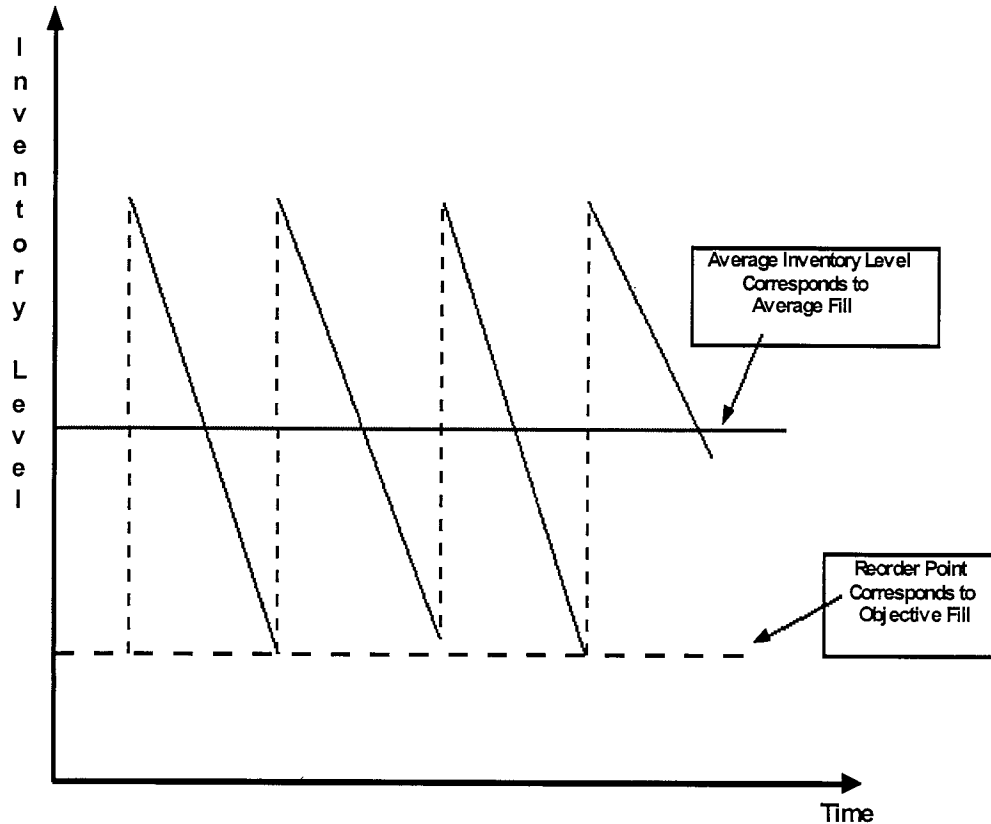
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Why Use Average Fill Factors?



$$\text{Inventory Cost per Unit} = \text{Direct} + \text{Holding Costs}$$

Based on Average Inventory Level, not the Reorder Point