

**Attachment**  
**Penetration of VOIP by Date**  
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	2003	2004	2005	2006	2007	2008
VOIP Provider Entry	4%	8%	11%	14%	17%	19%
Cable & ILEC Entry 2005	4%	8%	16%	24%	32%	40%
Cable & ILEC Entry 2004	4%	12%	20%	28%	36%	43%

**Cumulative % VOIP penetration**

Conversion rates:	2003	2004	2005	2006	2007	2008
Cable/Residential	10	percent				
ILEC/Residential	5	percent				
ILEC/Business	10	percent				

**Assumption** No change in the number of effective residential or business access lines

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**Impact of IP Telephony on Universal Service Programs  
Projected Dollar Impact by Fund in 2008**

Subsidy Program	FY 03-04	2008	VOIP Impact
Total	\$939	\$183 to \$407	
• California High Cost Fund A (small LECs)	\$ 62	\$ 12 to \$27	
• California High Cost Fund B (large LECs)	\$522	\$102 to \$226	
• Universal Lifeline Fund (Lifeline discount)	\$246	\$48 to \$107	
• Deaf & Disabled			
• Telecommunications Fund (DDTP)	\$ 69	\$13 to \$30	
• California Teleconnect Fund (schools, community based organizations, libraries)	\$ 40	\$ 8 to \$17	

**Note:** The lower estimate of the impact occurs if providers are limited to Vonage capturing residential customers and ILECs converting business customers. The larger impact occurs if cable providers and ILECs enter the residential market as well.

## Impact of IP Telephony on Universal Service Programs Looking Ahead Five Years to 2008

- Total impact on programs projected to be \$183 to \$407 million by 2008.
- Providers such as Vonage, 8X8, and Telverse entering the residential market now impact the public purpose programs by about \$9 million in 2008. Continuing conversions of business lines by ILECs impact the programs then by about \$174 million.
- Cable providers and ILECS entering the residential market in 2005, a date described as more likely by cable providers and ILECs, impact the funds by about \$198 million in 2008. Continuing conversions of business lines by ILECs impact the programs then by about \$174 million.
- Cable providers and ILECS entering the residential market in 2004, a date described as more likely by financial analysts, impact the funds by about \$216 million in 2008. Continuing conversions of business lines by ILECs impact the programs then by about \$174 million.
- **Basic Assumptions**
  - No change in the number of effective residential or business access lines
  - Based on industry and financial community sources, penetration rates are 10% for cable, 10% for ILEC business, and 5% for ILEC residential.

Million California Broadband Customers (Includes, DSL, Cable, Other)									
base year	2003	2004	2005	2006	2007	2008	% growth rate		
2002	3.8	4.7	5.9	7.4	9.3	11.6	25		
3.0	4.6	6.8	10.2	15.4	23.0	34.6	50		
yearly customer growth									
3.0	3.8	4.6	5.4	6.2	7.0	7.8	800,000		
3.0	4.0	5.0	6.0	7.0	8.0	9.0	1,000,000		
<b>Scenario 1: No Market Entry by ILECs or Cable Providers</b>									
California VOIP Customers with No Cable or DSL Conversion (Broadband and Industry growth rates)									
base year									
	2003	2004	2005	2006	2007	2008	% growth rate		
	30,000	37,500	46,875	58,594	73,242	91,953	25		
	30,000	45,000	67,500	101,250	151,875	227,813	50		
VOIP % penetration at growth rate	30,000	60,000	120,000	240,000	480,000	960,000	100		
25	0.2%	0.3%	0.3%	0.4%	0.5%	0.6%	0.6%		
50	0.2%	0.3%	0.5%	0.7%	1.0%	1.6%	1.6%		
100	0.2%	0.4%	0.8%	1.6%	3.3%	6.6%	6.6%		
<b>Scenario 2: Residential Market Entry by Cable Providers and ILECs in 2004</b>									
Conversion of California Cable customers to VOIP (millions)									
	2003	2004	2005	2006	2007	2008	% conversion rate to VOIP		
	7.1	0.23	0.5	0.8	1.2	1.6	5		
Cable % VOIP penetration		2%	3%	6%	8%	11%			
Conversion of California Large ILEC Residential Line Customers to VOIP (millions)									
	2003	2004	2005	2006	2007	2008	% conversion rate to VOIP		
	15.2	14.0	13.4	12.8	12.1	11.4	2.5		
ILEC Residential VOIP Lines (millions)									
	0.36	0.7	1.0	1.3	1.6	1.6			
ILEC % VOIP penetration		2%	5%	7%	9%	11%			
<b>Residential VOIP % penetration</b>		<b>4%</b>	<b>8%</b>	<b>13%</b>	<b>17%</b>	<b>22%</b>			
total effective residential lines	14.6	14.6	14.6	14.6	14.6	14.6			
<b>Scenario 3: Residential Market Entry by Cable Providers and ILECs in 2005</b>									
Conversion of California Cable customers to VOIP (millions)									
	2003	2004	2005	2006	2007	2008	% conversion rate to VOIP		
	7.1	7.1	0.27	0.6	0.9	1.3	5		
% VOIP penetration			2%	4%	6%	9%			
Conversion of California Large ILEC Residential Line Customers to VOIP (millions)									
	2003	2004	2005	2006	2007	2008	% conversion rate to VOIP		
	14.6	14.6	14.0	13.3	12.6	11.9	2.5		
ILEC Residential VOIP Lines (millions)									
	0.4	0.7	1.0	1.3	1.3	1.3			
ILEC % VOIP penetration		2%	5%	7%	7%	9%			

Documentation, Comments,

Base year level from FCC report on CA broadband subscribers  
Growth rates developed from CPUC 3rd Report on Broadband (in draft)  
49% DSL, 36% Cable, 12% other, CPUC 3rd report on broadband

Observed growth rates: Source: CPUC 3rd Report on Broadband (in draft)  
SBC describing its own capacity. Bus. Comm. Review, June, 2000, pp. 14-16.  
SBC install rate does not include "G.Lite", or customer-installed systems.

Base year: see Estimation of California VOIP Users, below  
VOIP uptake directly proportional to broadband growth; or, 1 percent of broadband users are VOIP users  
Growth rate verbal estimate from industry source November 6, 2003.

Base year: total cable homes California. CA Cable & Telecom Assn, 2003 Western Show Announces... 4/29/03  
Conversion Rate: 165 Conversion applied to smallest of projected number of broadband customers. Rate compares with long distance capture rate by SBC in California market.

Base year: CPUC data request for 3rd Report on Broadband; ILEC lose 4% access lines in 2003

ILECs convert DSL and DSL-capable lines.  
Conversion rate: total conversion rate to internet telephony is 7.5 percent per year, NJ.com (Star-Ledger) Making the call... November 2, 2003, in a report from Atlantic-ACM, a Boston-based consultant. ILEC conversion rate is arithmetically one-half cable conversion rate.

assumes no change in the number of residential access lines

Base year: total cable homes California, CA Cable & Telecom Assn, 2003 Western Show Announces... 4/29/03  
Conversion Rate: industry source, meeting with TD staff, October 9, 2003. Conversion applied to smallest of projected number of broadband customers. Rate compares with long distance capture rate by SBC in California market.

Base year: CPUC data request for 3rd Report on Broadband; ILEC lose 4% access lines in 2003

ILECs convert DSL and DSL-capable lines.  
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Residential VOIP % penetration	2003	2004	2005	2006	2007	2008
total effective residential lines	14.6	14.6	14.6	14.6	14.6	14.6
switched access lines	8.7	8.3	7.9	7.5	7.1	6.8
assumes no change in the number of residential access lines						5
<b>On-Going Conversion of California Large ILEC Business Line Customers to VOIP (millions)</b>						
2002	2003	2004	2005	2006	2007	2008
9.1	8.7	8.3	7.9	7.5	7.1	6.8
Base year for VOIP business use: 10 percent of business systems have been replaced with a form of VOIP. Washington Post, Is it Phone or Internet..., October 26, 2003. 10 percent of all US phone calls are VOIP. Source: CNET, Internet Phone Providers..., October 8, 2003. Conversion rate: same as cable rate						
<b>Business VOIP % penetration</b>						
of biz + rez mkt	9%	14%	18%	22%	26%	30%
of biz + rez mkt	4%	6%	7%	9%	10%	11.9%
total all effective lines	24.2	24.2	24.2	24.2	24.2	24.2
<b>% VOIP penetration</b>						
VOIP Provider Entry	2003	2004	2005	2006	2007	2008
Cable & ILEC Entry	4%	6%	8%	9%	11%	13%
Cable & ILEC Entry	4%	6%	10%	14%	19%	23%
Cable & ILEC Entry	4%	8%	12%	16%	21%	25%
residential pct estimated using penetration middle value 1.6% for 2008						
<b>Conversion rates:</b>						
Cable/Residential	5 percent					
ILEC/Residential	2.5 percent					
ILEC/Business	5 percent					
Assumption: No change in the number of effective residential or business access lines						
<b>Estimation of California VOIP Users</b>						
300,000 VOIP users in North America. Source: Net2Phone website, May 2003						
19.8 million broadband users in US. Source: Broadband Internet Access in OECD Countries: A Comparative Analysis, October 2003, Pacific. 4.						
3.7 million broadband users in Canada. Source: do						
23.5 total broadband users North America						
0.84 ratio of US to North American broadband users						
252,788 US voip users, use 250,000						
250,000 number of US VOIP users. Source: CNET, California to Regulate VOIP Providers, September 30, 2003						
1.3% percent of broadband users with VOIP; use 1 percent						
30,360 VOIP users in California. Use 30,000 in 2003						

**(END OF ATTACHMENT)**

## Appendix A

### Draft Amendments to CPUC Rules of Practice and Procedure in Order Instituting Rulemaking 04-01-005

#### 2.3. (Rule 2.3) Service

(a) Except as otherwise provided in these rules or applicable statute, service of a document may be effected by delivering a copy of the document, ~~or mailing a copy of the document by~~, first-class mail, or making service by electronic mail as provided in Rule 2.3.1 to each person whose name is on the official service list or applicable special service list, to the assigned administrative law judge, and to any other person required to be served by statute, by Commission rule or order, or by the administrative law judge. Delivery may be made by handing a copy of the document to the person or leaving it in a place where the person may reasonably be expected to obtain actual and timely receipt. Service by mail is complete when the document is deposited in the mail. Service by electronic mail is complete when the electronic mail message is transmitted, subject to Rule 2.3.1(e). The administrative law judge may require more expeditious service or a particular form of service in appropriate circumstances.

~~(b) With the prior consent of the party being served or at the direction of the administrative law judge, service may be made by facsimile transmission, by modem, or by other electronic means. Such service is complete upon successful transmission.~~

In the event that service cannot be completed by any of the methods described in Rule 2.3(a), the administrative law judge may direct or any party may consent to service by other means not listed in Rule 2.3(a) (e.g., facsimile transmission).

~~(c) If a document, including attachments, exceeds 75 pages or with the permission of the administrative law judge, parties may serve a Notice of Availability in lieu of all or part of the document. (The original document and copies filed with the Commission, however, must be complete (see Rule 2.5).) A copy of the complete document must be served on any party who has previously informed the serving party of its desire to receive a complete copy. The Notice of Availability must comply with Rule 2.1(a) and must state the document's exact title and summarize its contents. The Notice must state that a copy of the document will be served at the request of the party receiving the notice and must state the name, telephone number, and facsimile transmission number, if any, of the person to whom such requests should be directed. The party sending the Notice must serve any party making such request within one business day after receipt of the request.~~

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A party may serve and file a Notice of Availability in lieu of all or part of the document to be served. A copy of the complete document must, however, be served on any party who has previously informed the serving party of its desire to receive a complete copy. The original document and copies filed with the Commission must be complete (see Rule 2.5). A separate Notice must be provided for each document to be served, unless the assigned commissioner or administrative law judge authorizes a Notice to include reference to more than one document. The Notice must comply with Rule 2.1(a) and, if relevant, 2.3.1 and must state the document's exact title and summarize its contents. The Notice must state that a copy of the document will be served at the request of the party receiving the notice, and must state the name, telephone number, e-mail address, if any, and facsimile transmission number, if any, of the person to whom such requests should be directed. The party sending the Notice must serve any party making such request within one business day after receipt of the request. If a Notice of Availability is served by electronic mail in accordance with Rule 2.3.1, it must contain in its subject line the docket number of the proceeding and the words "notice of availability," followed by a brief identification of the document to be served.

(d) A Notice of Availability may be served and filed in any of the following circumstances:

- (1) if a document, including attachments, exceeds 50 pages;
- (2) if a document served by sending an e-mail message with the document attached in accordance with Rule 2.3.1(b) has attachments that are not readily reproducible in electronic format, would be too voluminous to attach to the e-mail message, or would be likely to cause e-mail service to fail for any other reason;
- (3) if the document is served by making it available at a particular Uniform Resource Locator site (URL) on the World Wide Web. In this case, in addition to the requirements of subd. (c) of this Rule, the Notice must contain a complete and accurate hyperlink to the site at which the document to be served has been made available in a readily readable and downloadable form, and must state the date on which the document was made available at that site. Such a Notice may contain information about how to access or download the document to be served, or any other information required or allowed by the assigned commissioner or administrative law judge; it may not contain any attachments.
- (4) with the prior permission of the assigned commissioner or administrative law judge.

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(de) A copy of the certificate of service must be attached to each copy of the document (or Notice of Availability) served and to each copy filed with the Commission. If a Notice of Availability is served, a copy of the Notice must also be attached to each copy of the document filed with the Commission. The certificate of service must state: (1) the exact title of the document served, (2) the place, date, and manner of service, and (3) the name of the person making the service. The certificate filed with the original of the document must be signed by the person making the service (see Rule 2.2(e)). The certificate filed with the original of the document must also include a list of the names, ~~and~~ addresses, and, where relevant, the e-mail addresses of the persons and entities served and must indicate whether they received the complete document or a Notice of Availability. (See Rule 88, Form No. 6.)

(ef) The Process Office shall maintain the official service list for each pending proceeding. It is the responsibility of each person or entity on the service list to provide a current mailing address and, if relevant, current e-mail address, to the Process Office for the official service list. A party may change its mailing address or e-mail address for service or its designation of a person for service by sending a ~~written~~ notice to the Process Office and serving a copy of the notice on each party on the official service list.

(fg) The administrative law judge may correct and make minor changes to the official service list and may revise the official service list to delete inactive parties. Before establishing a revised service list, the administrative law judge will give each person on the existing service list notice of the proposed revision and an opportunity to respond to the proposal.

(gh) The administrative law judge may establish a special service list for documents related to a portion of a proceeding. A special service list allows service to be made on only a portion of the official service list. A special service list may be established, for example, for one phase of a multi-phase proceeding or for documents related to issues that are of interest only to certain parties. Before any special service list is established, the administrative law judge will give each person on the official service list notice of the proposal to establish a special service list and an opportunity to show why that person should be included on the special service list or why a special service list should not be established.

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#### 2.3.1. (Rule 2.3.1) Service by Electronic Mail (E-Mail Service)

(a) E-mail service may be used in any proceeding which has been assigned a docket number.

(b) E-mail service may be made by sending the document to be served as an attachment to an e-mail message to any person or entity who has provided an e-mail address for the official service list; or by sending an e-mail Notice of Availability in accordance with Rule 2.3(c) and (d) to any person or entity who has provided an e-mail address for the official service list; or by any other method of e-mail service directed by the assigned commissioner or administrative law judge.

(c) When serving a document as an attachment to an e-mail message, the serving party must include in the subject line of the message the docket number of the proceeding and a brief identification of the document to be served, including the name of the serving party, and must include in the text of the message the electronic format of the document (e.g., PDF, Excel), and the name, telephone number, e-mail address, and facsimile transmission number of the person to whom problems with receipt of the document to be served should be directed. A separate e-mail message must be sent for each document to be served, unless the assigned commissioner or administrative law judge authorizes the attachment of more than one document to an e-mail message.

(d) By providing an e-mail address for the official service list in a proceeding, a person or entity consents to e-mail service in any proceeding in which the person or entity is on an official service list.

(e) By utilizing e-mail service, the serving party agrees, in the event of failure of e-mail service, to promptly serve the document by any means authorized by these rules, provided that e-mail service may be used only if (1) the receiving party consents to the re-use of e-mail service, or (2) the serving party determines that the cause of the failure of e-mail service has been rectified. "Failure of e-mail service" occurs when the serving party receives notification, in any manner, of non-receipt of an e-mail message, the receiving party's inability to open or download an attached document, or any other inability of the receiving party to access the document to be served. The serving party and receiving party may agree to any form of substitute service allowed by these rules.

(f) In addition to any other requirements of this rule, the serving party must provide a paper copy of all documents served by e-mail service to the assigned administrative law judge, unless the administrative law judge orders otherwise.

(g) The Commission may serve any document in a proceeding by e-mail service, except those documents for which another form of service is required by applicable statutes or these rules. .

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(h) Nothing in this rule alters any of the rules governing filing of documents with the Commission.

(i) The assigned commissioner or administrative law judge may issue an order consistent with these rules to govern e-mail service in a particular proceeding.

(END OF APPENDIX A)