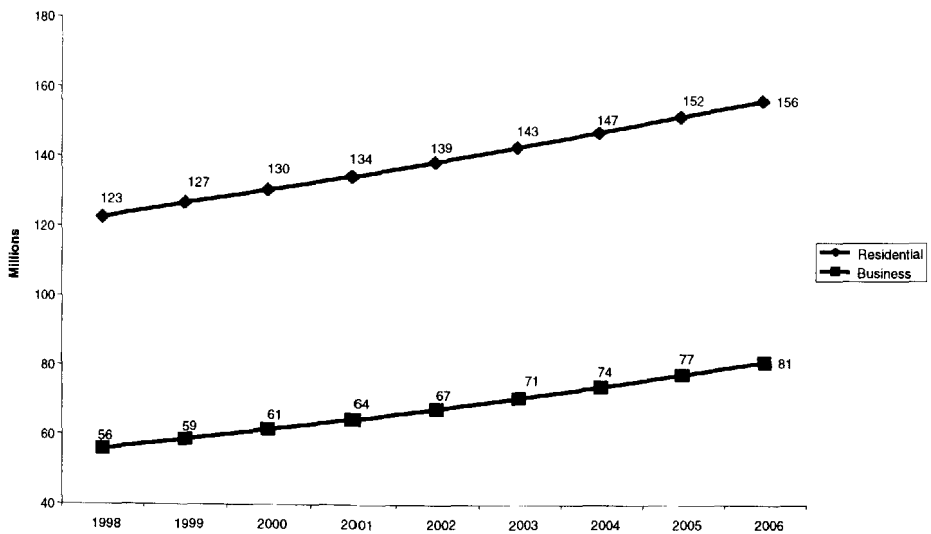
Today's discussion

- Appendix
  - Model Structure
  - Access Line Forecasts
  - MOU Forecasts
  - Wireless 3rd Party Forecasts
  - Long Distance
  - Consumer Analysis

As a starting point, we forecast access lines and wireless subscribers using historical growth trends and third party forecasts

- The wireline forecast embodies only wireless erosion that has occurred to date; it also does not take into account the transfer of second lines to broadband DSL or cable modem service. We take these effects into account in the next steps

Landline Forecast Using Historical Growth Rates

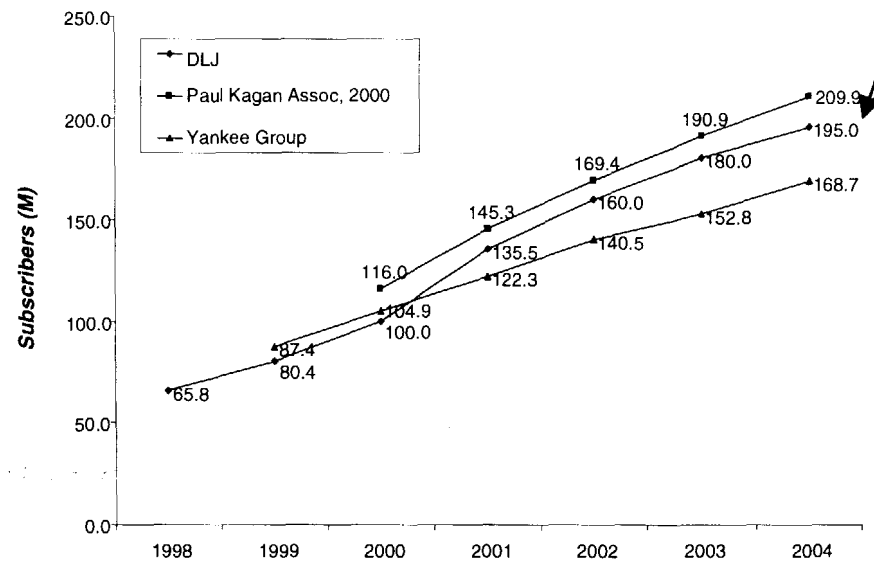


The baseline residential historical growth forecast is based on historical growth in households, lines per HH, and HH telephone penetration from 1990 to 2000

Sources: Census Bureau, FCC, IDC, CSMG Analysis

Wireless Third Party Forecasts

We are currently using the DLJ forecast in the model



According to the FCC Annual Wireless Report (June '01), there were 110M wireless subscribers at YE 2000

Sources: DLJ 2000, MSDW 2000, The Strategis Group 2000, CTIA, Census Bureau, FCC, CSMG Analysis

Next, we identified two major factors that are likely contributing to the decline in overall residential market access line growth which we forecast with the aid of 3rd party reports

*Access Line Replacement**

	[redacted]	[redacted]
Description	• Decline in access line growth due to increased substitution of wireless for wireline (both primary and non-primary lines) • Residential only – business not included due to lack of adequate 3rd party forecasts	• Decline in access line growth due to increased broadband penetration (cable modem & DSL) vs. dial-up Internet access • Residential and business
Sources	• IDC Replacing Landline with Wireless: How Far Can it Go? 2000	• Yankee Group VoDSL: All Talk, No Action ... Yet, 2000 • JPMorgan/McKinsey Broadband 2001 • PCIA Global Wireless Portfolio 2000 • MSDW The Broadband Report 2000

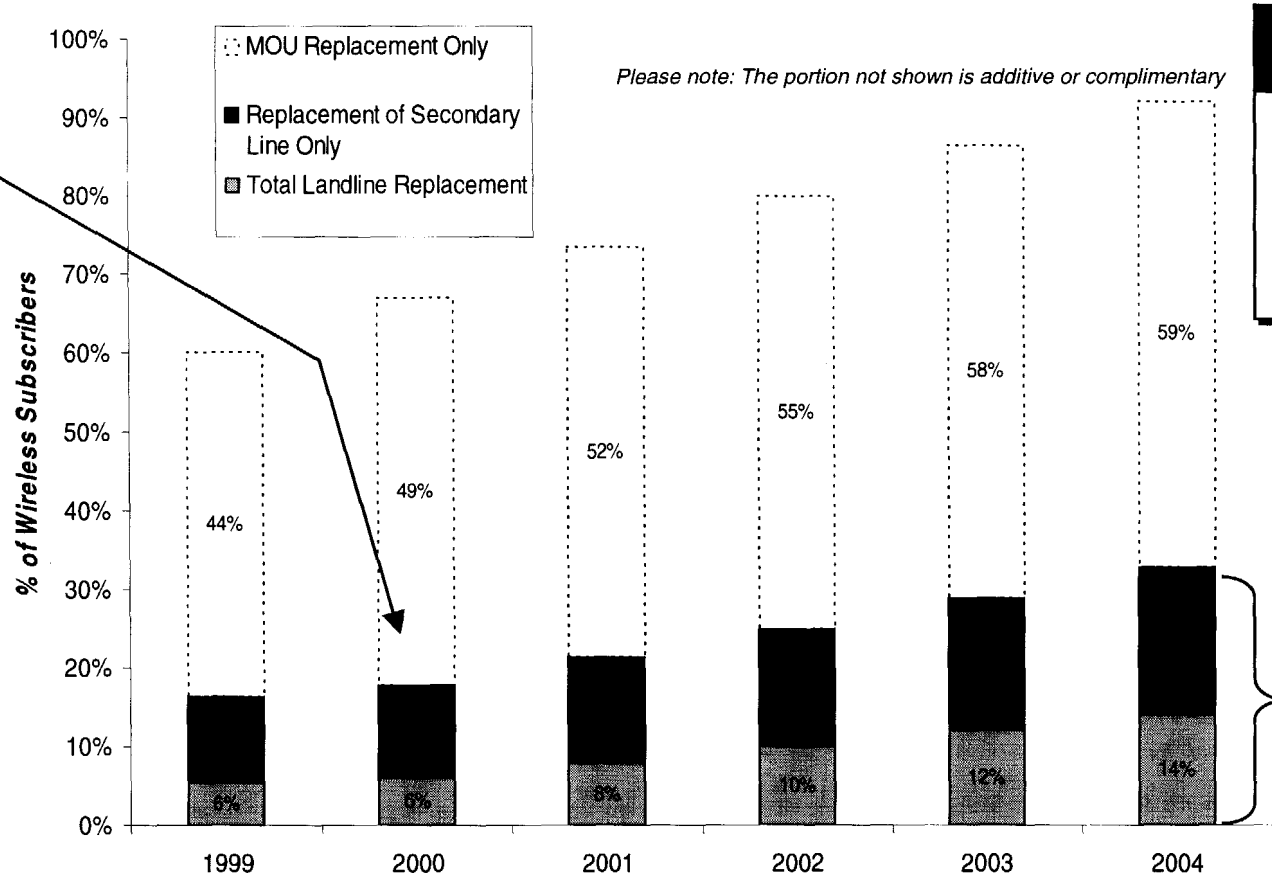
*NOTE: For the purposes of the USF model, we are not including the effect of competitive technology substitution from cable telephony and VoDSL. These technologies drive a shift from traditional land lines to non-traditional carriers but will not affect the total revenue from voice services. The USF national model derives aggregate end user industry revenues and thus should not exclude lines served by competitive technologies.

Wireless substitution data from an IDC survey of 900 households indicates that wireless substitution for land lines is already substantial, and may grow considerably over the next several years

- MOU displacement does not affect access line counts but is taken into account in the following section detailing MOU forecasts

Wireless Substitution of Land Lines

- 4.3% replace an existing home line with a wireless phone
- 18.5% purchase a wireless phone instead of a home line
- 6.3% totally replaced their landlines with a wireless phone

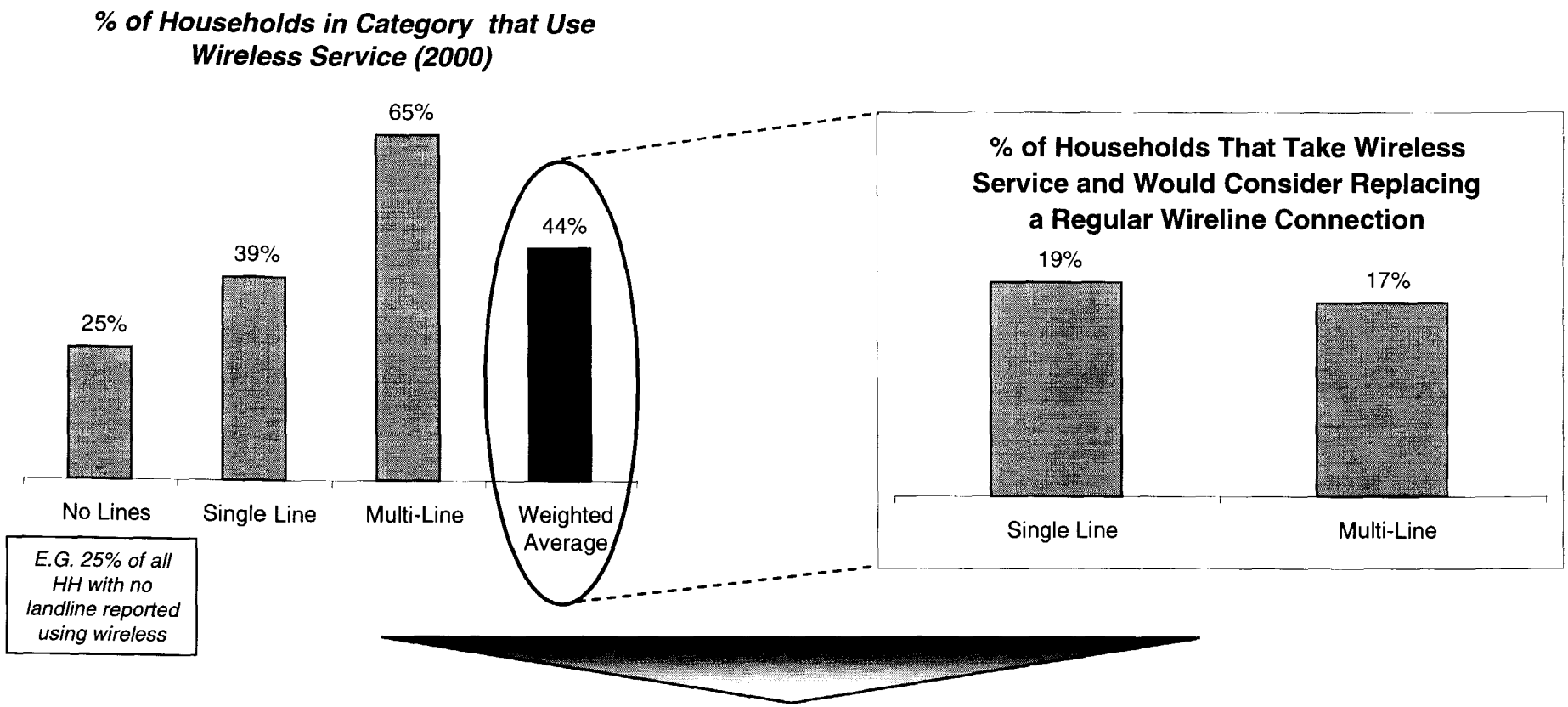


- 3% of wireless subscribers already use wireless as their only phone
- Consumer interest in substituting 2nd and 3rd lines is increasing

Direct landline substitution is relevant for measuring potential access line loss

Note: This forecast is for years 1999-2004. We have applied the CAGR for each type of landline replacement to these forecasts to yield the 2005-2006 forecast.
Source: IDC 2000 Telephony Service Data

In addition, data from the Yankee TAF 2000 survey suggests that roughly 18% of all wireless households would consider replacing at least one of their land line connections

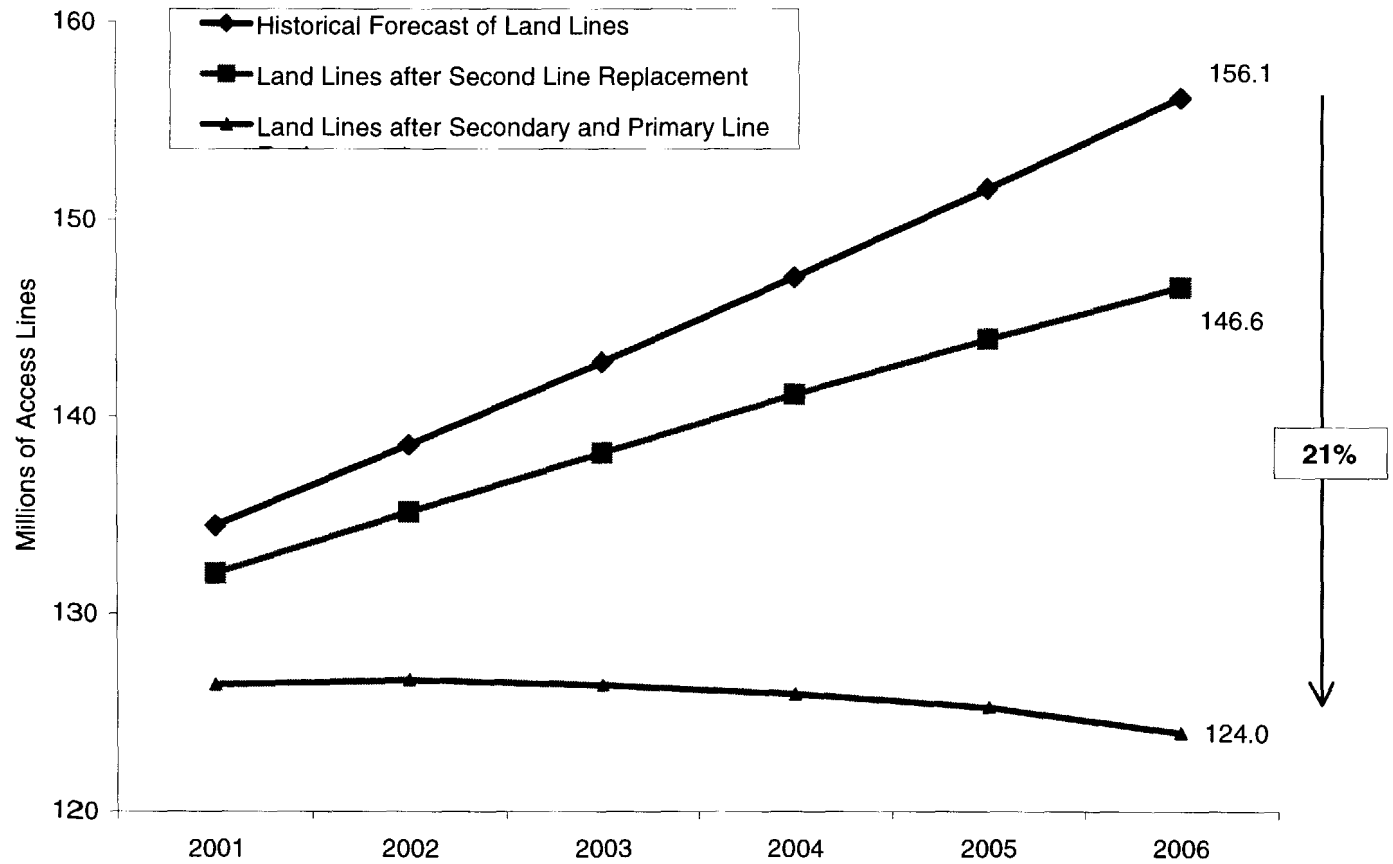


Approximately 8% of households (i.e., 44% penetration x 18% consider replacing) have at least one access line (primary or secondary) that is vulnerable to the wireless substitution effect

Source: Yankee TAF 2000, CSMG Analysis

After explicitly accounting for wireless substitution for both primary and non-primary lines, the base case landline forecast is 21% lower for residential lines in 2006

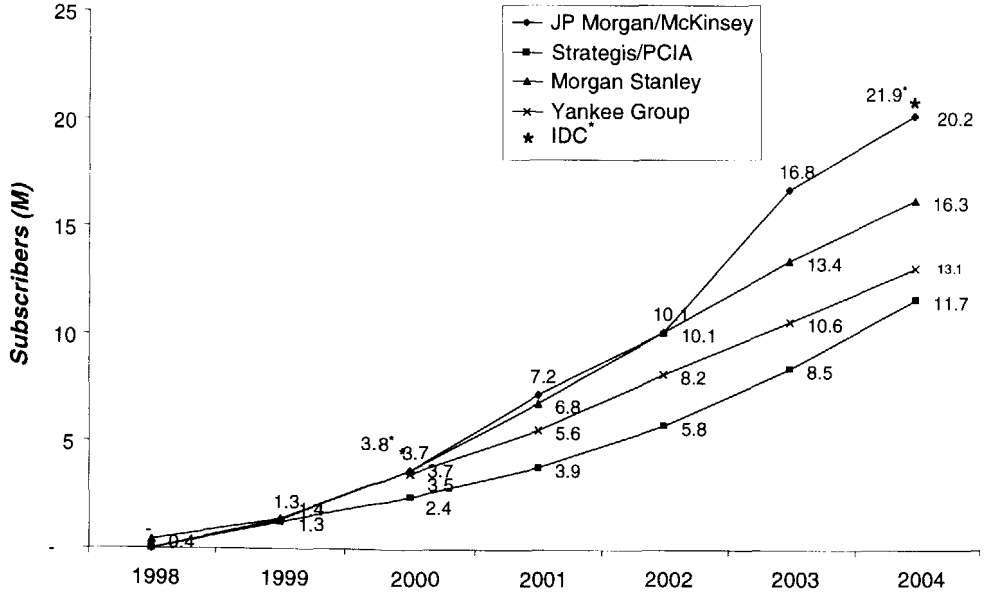
Wireless Replacement of Residential Land Lines



Source:IDC,CSMG Analysis

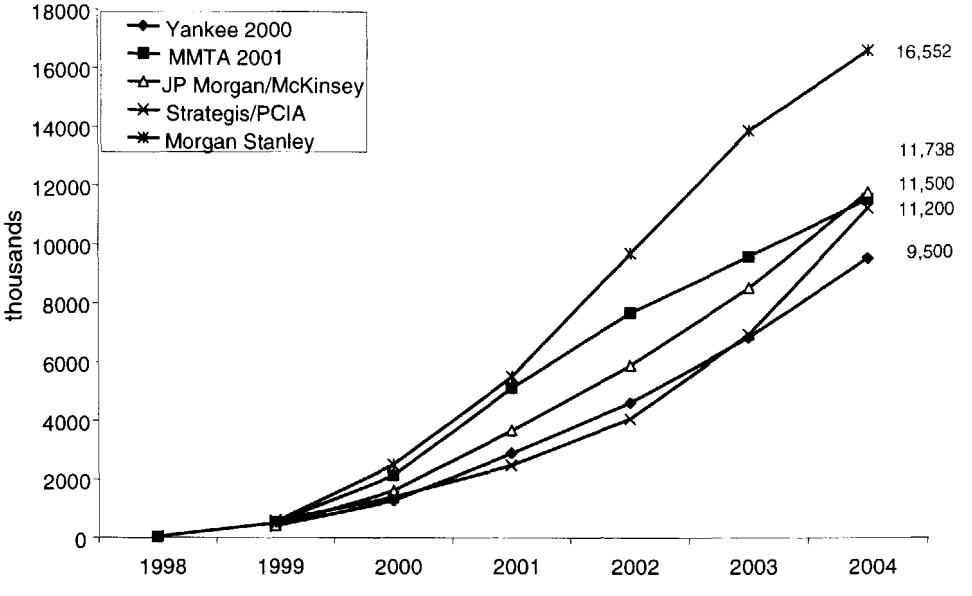
For broadband substitution, we have several nationwide cable modem and DSL projections which are in reasonable agreement in terms of subscribers. However, we must understand the likelihood of these broadband subscribers to cancel their 2nd access line

US Cable Modem Subscriber Forecast



We are currently using the average of the four forecasts in our model

US DSL Subscriber Forecasts



We are currently using the Yankee DSL forecast (broken into residential vs. business) in our model

Sources: Yankee Group, IDC, Strategis Group, JPMorgan/McKinsey, MSDW

* IDC's new Worldwide Cable Modem Equipment and Services Market Analysis Forecast, released June 2001

Unfortunately the TNS data does not offer a good way to analyze broadband substitution, so we based our assumptions on broadband substitution rates on results from Yankee TAF and IDC

[redacted]

[redacted]

Sources

Yankee TAF

- ~ 33% of multi-line users will drop for Broadband
- 33% = 65% * 35% + (1/2 * 31%)

65% Multiline HH use line for internet	35% very likely to drop	31% somewhat likely to drop

IDC

- 90% of new Broadband users have multiple lines at time of Broadband purchase

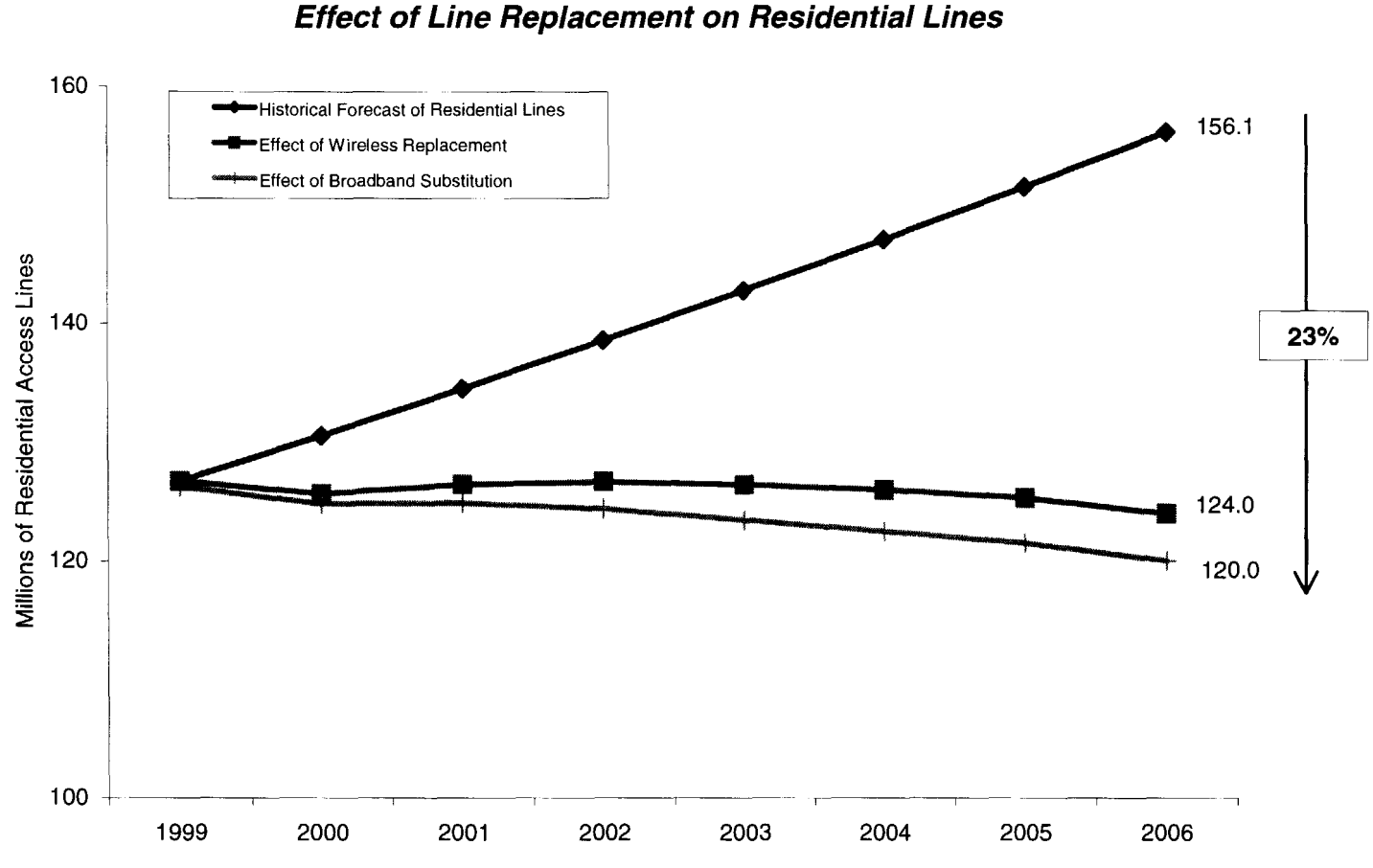
- 35% of multi-line users drop a second line
- Bell South has seen roughly one-third of DSL subs cancel second lines

Our Assumptions

- 90% of new Broadband users have multiple lines at time of Broadband purchase

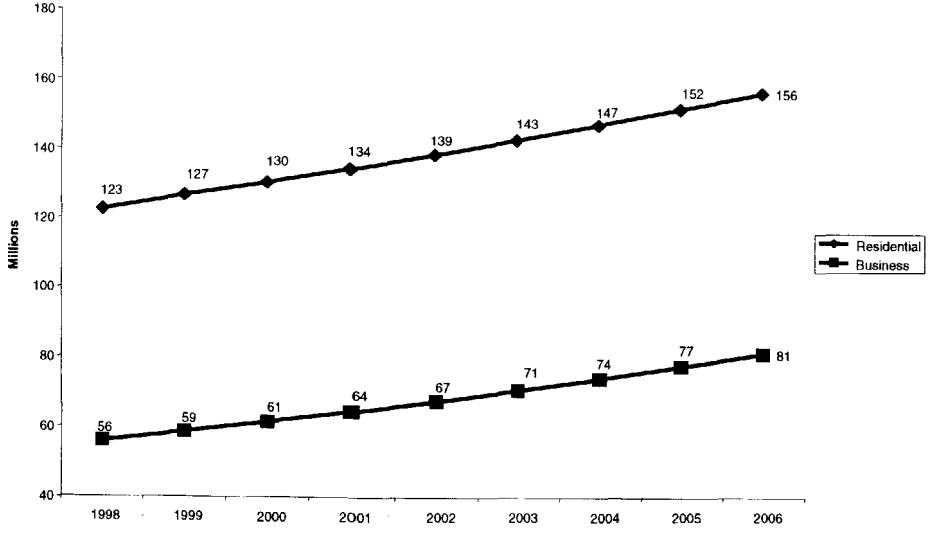
- 35% of multi-line broadband users drop a second line

After accounting for the two effects of broadband substitution (cable modem and DSL) and wireless replacement, the preliminary base case landline forecast is 23% lower for residential lines in 2006

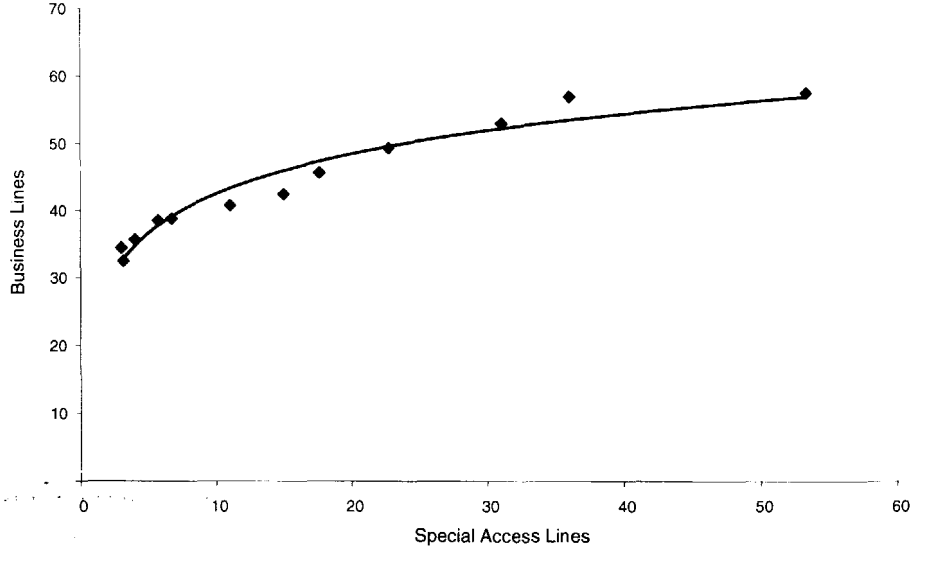


Just as with the residential forecast, we project business lines based on historical growth as a starting point. We believe that the historical migration of business lines to special access for both voice and broadband is taken into account by using the historical forecast as seen here in the suppression in business line growth with special access line growth

Landline Forecast Using Historical Growth Rates



Business Lines vs. Special Access Lines (1988-1999 FCC SOCC)



The baseline business historical growth forecast is based on historical growth in business lines from 1990 to 1999

We therefore only need to account for effects on line growth from technologies not already included in the historical forecast. We view DSL as the main factor for business access lines

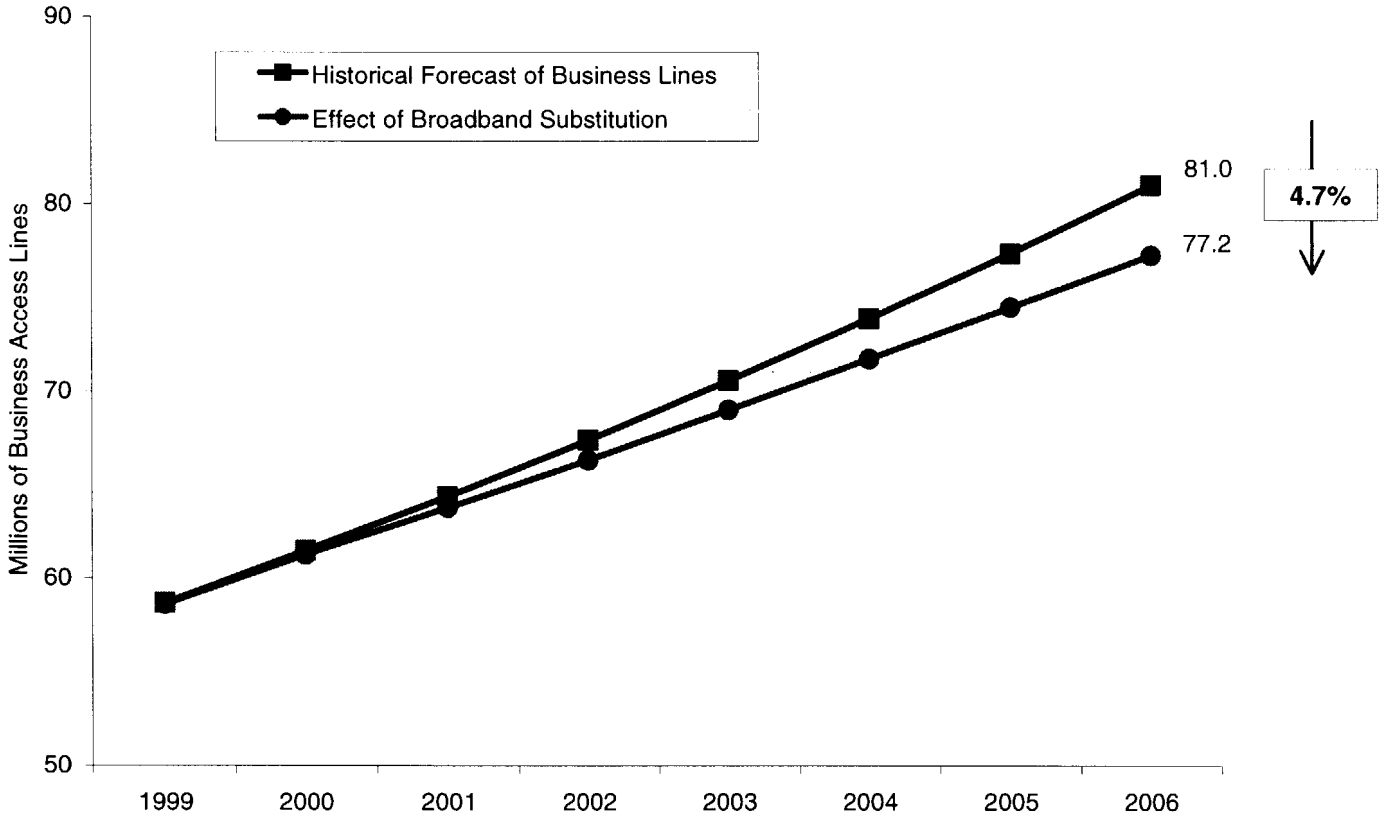
*Access Line Replacement**

	[redacted]	[redacted]
Description	• Decline in access line growth due to increased substitution of wireless for wireline (both primary and non-primary lines) • Residential only – business not included due to lack of adequate 3rd party forecasts	• Decline in access line growth due to increased broadband penetration (cable modem & DSL) vs. dial-up Internet access • Residential and business
Sources	• IDC Replacing Landline with Wireless: How Far Can it Go? 2000	• Yankee Group VoDSL: All Talk, No Action ... Yet, 2000 • JPMorgan/McKinsey Broadband 2001 • PCIA Global Wireless Portfolio 2000 • MSDW The Broadband Report 2000

*NOTE: For the purposes of the USF model, we are not including the effect of competitive technology substitution from cable telephony and VoDSL. These technologies drive a shift from traditional land lines to non-traditional carriers but will not affect the total revenue from voice services. The USF national model derives aggregate end user industry revenues and thus should not exclude lines served by competitive technologies.

Using a Yankee Group forecast of business DSL subscribers, the business access line counts are approximately 5% lower in 2006

Effect of Line Replacement on Business Lines



Source: Yankee Group 2000

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We start with a forecast of LD MOUs based on historical growth and apply the effects of wireless migration and VoIP migration to develop a revised LD MOU forecast for both residential and business MOUs

LD MOU Displacement

[redacted] [redacted]

Description	• Shift of wireline MOU to wireless as packages including LD become more common and rates decline • Residential only – business not included due to lack of adequate 3rd party forecasts	• Shift of circuit-originated MOU to VoIP as VoIP technology becomes widespread and consumers take advantage of lower rates • Residential and business
Sources	• Yankee 2000 • Yankee TAF Survey 2000 • IDC Replacing Landline with Wireless: How Far Can it Go? 2000	• Yankee Group VoDSL: All Talk, No Action … Yet, 2000

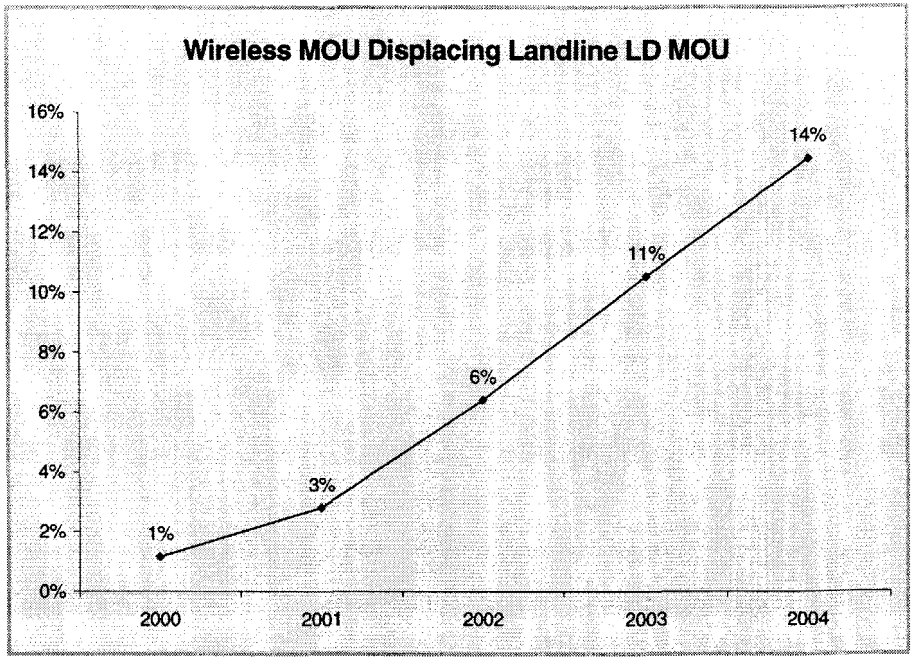
Our preliminary approach to the wireless displacement of residential LD MOUs is based upon the current and forecasted breakdown of total US minutes into wireless and wireline minutes

Annual Forecasted Incremental Migrated Wireless MOU / Annual Forecasted Landline MOU (2001-2004) Source: IDC = [redacted]

*Note: This assumes that fraction of LD minutes migrated is the same as the fraction of total minutes migrated

Annual Forecasted Wireless MOU (2001-2004) Source: IDC - Baseline Wireless MOU (e.g. no incremental wireless replacement over the 5% of total MOU in 2000)

5% of Total MOUs are Wireless in 2000 Source: IDC X 2001-2004 Forecasted Total MOU



Source: Replacing Landline with Wireless: How Far Can it Go? IDC 2000

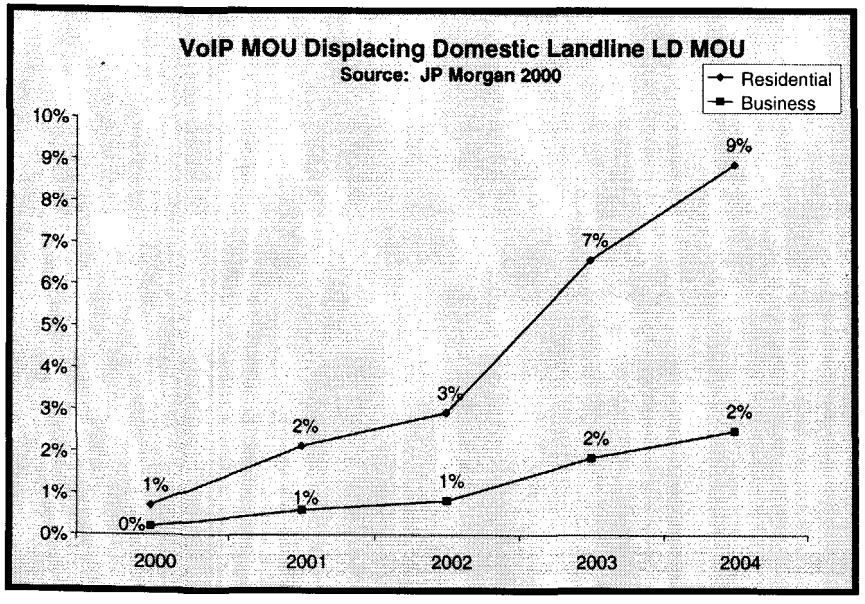
In addition, LD MOUs migrated to VoIP decrease traditional LD MOUs. One approach to quantify the effect is based on a JP Morgan forecast of domestic distribution of LD minutes by technology (I.e. circuit-switched, special access, VoIP, wireless)

Domestic Only VoIP MOU Displacement – based on JP Morgan 2000

[redacted] / [redacted] → [redacted] X [redacted]

[redacted]

[redacted]



Sources: Backbone! How Change in Technology and the Rise of IP...JPMorgan 2000

An alternative approach using an IDC forecast of total VoIP domestic and International LD MOUs results in similar percentages of LD MOU displaced although slightly higher because this forecast contains International MOUs as well

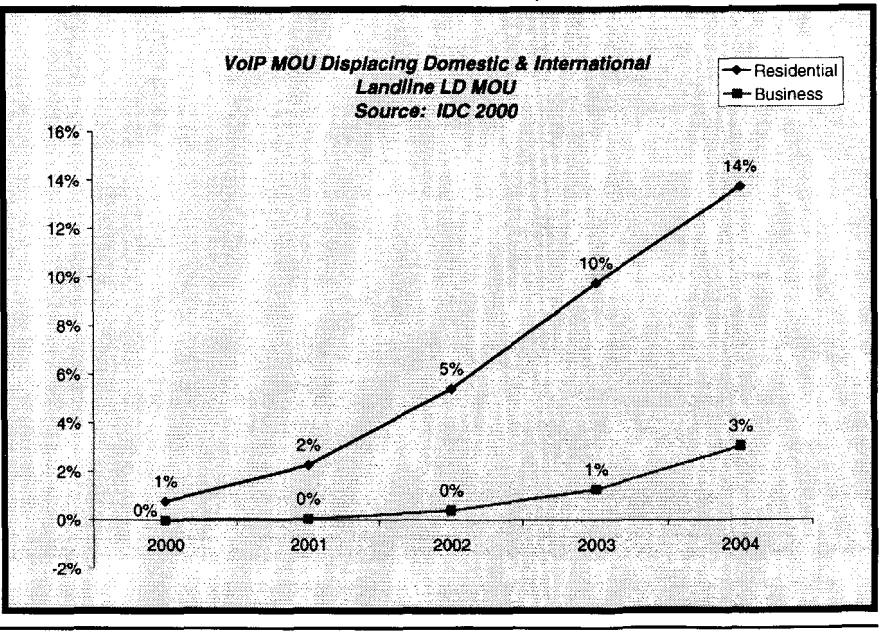
Domestic & International VoIP MOU Displacement – based on IDC 2000

[redacted] / [redacted] = [redacted]

[redacted] - [redacted]

We factor out the packet-originated traffic to arrive at the circuit-switched minutes displaced

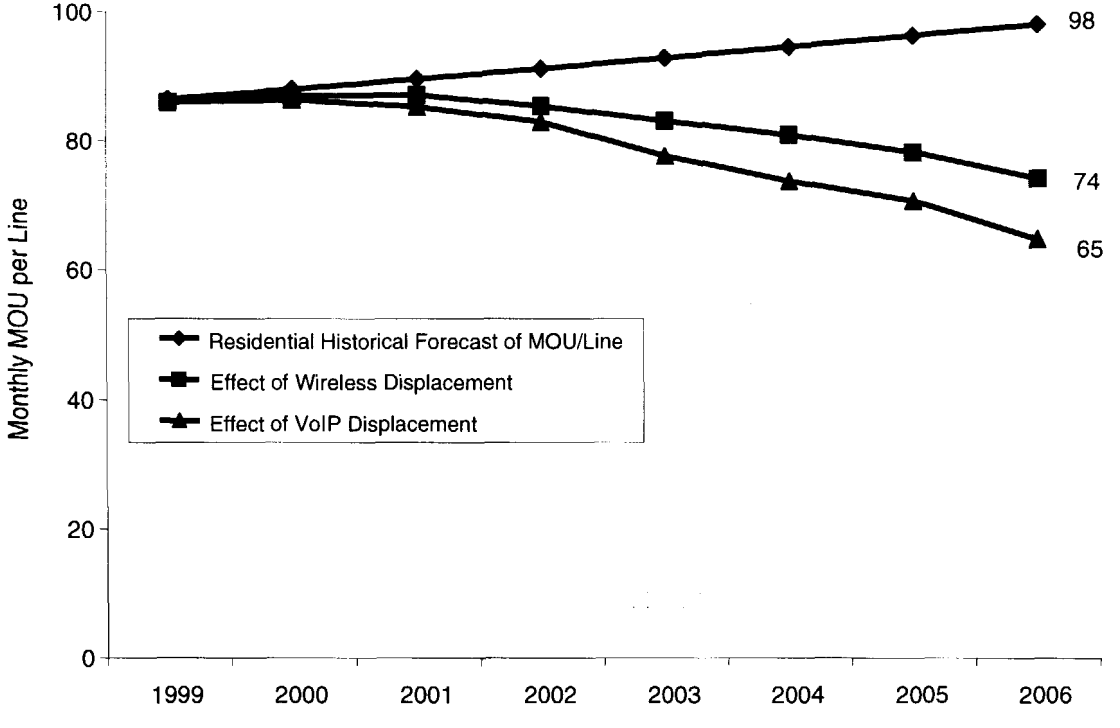
[redacted] X [redacted]



Sources: VoDSL: All Talk, No Action...Yet, Yankee Group 2000
IP Telephony Services: Market Forecast & Analysis, 1999-2005, IDC 2000

Our residential LD MOU forecast demonstrates the dramatic impact of wireless and VoIP displacement by 2006 on residential MOU

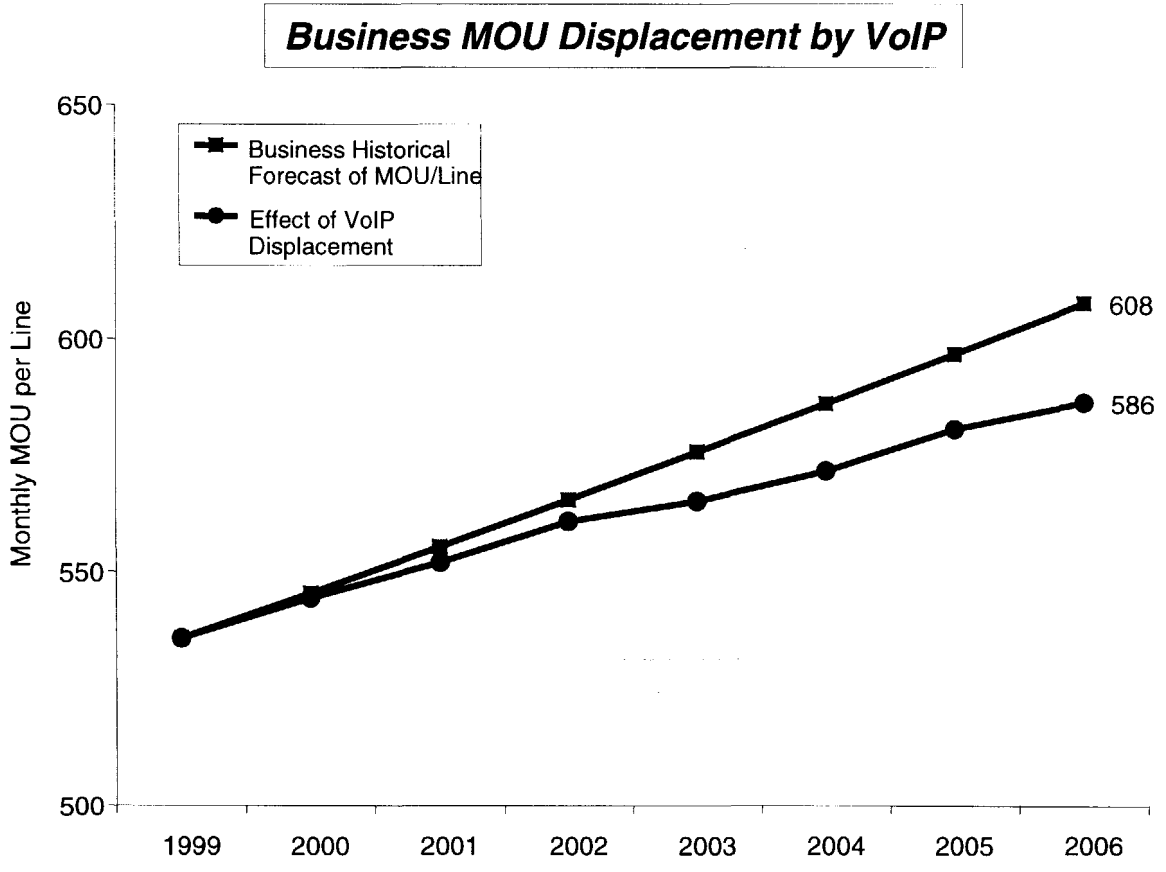
Residential MOU Displacement by Wireless and VoIP



Note: The resulting 65 MOUs is derived using the more conservative IP telephony forecast. The MOU displacement effect would be larger if the more aggressive forecast is used

Source: IDC 2000, Paradigm Resources

VoIP technologies will also significantly reduce business MOU by the end of the forecast period



Note: The resulting 586 MOUs is derived using the more conservative IP telephony forecast. The MOU displacement effect would be larger if the more aggressive forecast is used

Source: IDC 2000, Paradigm Resources

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U.S. Paging & Messaging Forecasts
The Strategis Group, 2000

US Paging	1999	2000	2001	2002	2003	2004	2005
One-way subs (M)	45.1	44.1	42.6	40.9	39.2	37.8	36.0
NPCS subs (M)	0.7	1.2	2.2	4.6	7.8	11.6	13.7
Total subs (M)	45.8	45.3	44.8	45.5	47.0	49.4	49.7
Total Penetration	16.8%	16.5%	16.2%	16.3%	16.7%	17.4%	17.3%
Total Revenues ($M)	5,252	5,094	5,155	5,466	5,819	6,443	6,518

Subs = subscribers

M = millions

From 2000 PCIA Global Wireless Portfolio: A Collection of Forecasts on the Global & United States' Wireless/Convergence Industry

U.S. Wireless Subscriber Forecasts
Donaldson, Lufkin & Jenrette, 2000

Total US Wireless Subscribers	**1999e**	**2000e**	**2001e**	**2002e**	**2003e**	**2004e**	**2005e**	**2006e**	**2007e**	**2008e**
End of Year (M)	**86.0**	**107.5**	**135.5**	**160.0**	**180.0**	**195.0**	**207.5**	**217.5**	**225.0**	**230.0**
• % Change Year-to-Year	24.3%	24.9%	26.0%	18.1%	12.5%	8.3%	6.4%	4.8%	3.4%	2.2%
• Penetration	31.8%	39.4%	49.3%	57.8%	64.6%	69.5%	73.4%	76.4%	78.5%	79.7%
Net Additions	16.8	21.5	28.0	24.5	20.0	15.0	12.5	10.0	7.5	5.0
• % Change Year-to-Year	21.2%	27.4%	30.5%	-12.5%	-18.4%	-25.0%	-16.7%	-20.0%	-25.0%	-33.3%
Total US PCS Subscribers	**1999e**	**2000e**	**2001e**	**2002e**	**2003e**	**2004e**	**2005e**	**2006e**	**2007e**	**2008e**
End of Year (M)	**18.9**	**31.4**	**50.1**	**67.2**	**81.7**	**93.0**	**102.3**	**109.8**	**115.5**	**119.2**
• % Change Year-to-Year	97.2%	65.7%	59.4%	34.3%	21.6%	13.8%	10.1%	7.3%	5.1%	3.2%
• Penetration of Total Pops	7.0%	11.5%	18.2%	24.3%	29.3%	33.1%	36.2%	38.6%	40.3%	41.3%
• Share of Wireless Market	22.0%	29.2%	36.9%	42.0%	45.4%	47.7%	49.3%	50.5%	51.3%	51.8%
Net Additions (M)	9.3	12.5	18.7	17.2	14.5	11.3	9.4	7.5	5.6	3.8
• Share of Wireless Additions	55.5%	58.0%	66.7%	70.0%	72.5%	75.0%	75.0%	75.0%	75.0%	75.0%

From 2000 PCIA Global Wireless Portfolio: A Collection of Forecasts on the Global & United States' Wireless/Convergence Industry

U.S. SMR/ESMR Subscriber Forecasts
The Strategis Group, 2000

U.S. SMR/ESMR	1999	2000	2001	2002	2003	2004	2005
Subs (M)	6.5	8.1	10.4	12.3	13.7	15.2	16.0
Penetration	2.4%	2.9%	3.8%	4.4%	4.9%	5.3%	5.6%
Total Revenues ($M)	$3,900.0	$4,762.8	$6,115.2	$7,084.8	$7,398.0	$8,208.0	$8,640.0

Subs = subscribers

M = millions

From 2000 PCIA Global Wireless Portfolio: A Collection of Forecasts on the Global & United States' Wireless/Convergence Industry

The wireless ARPU is calculated as a sum of the four revenue components below

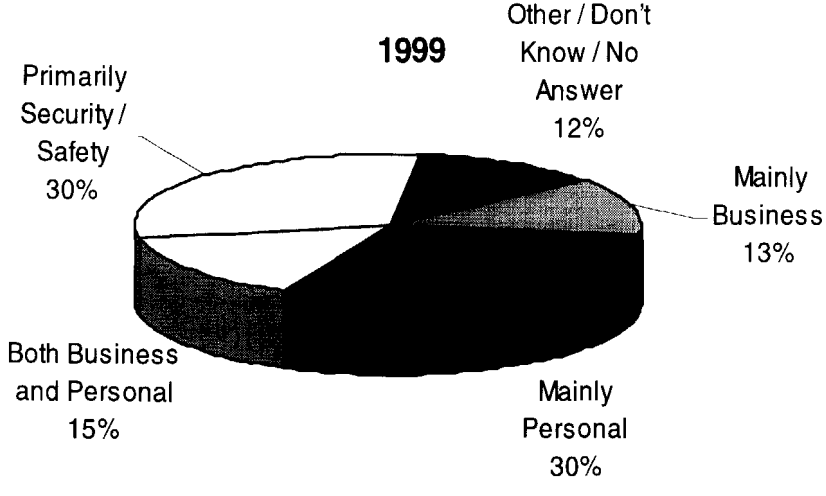
Exhibit 20. Projected Industry Revenues: New Revenue Streams Help Stabilize ARPUs (in millions except per unit amounts)

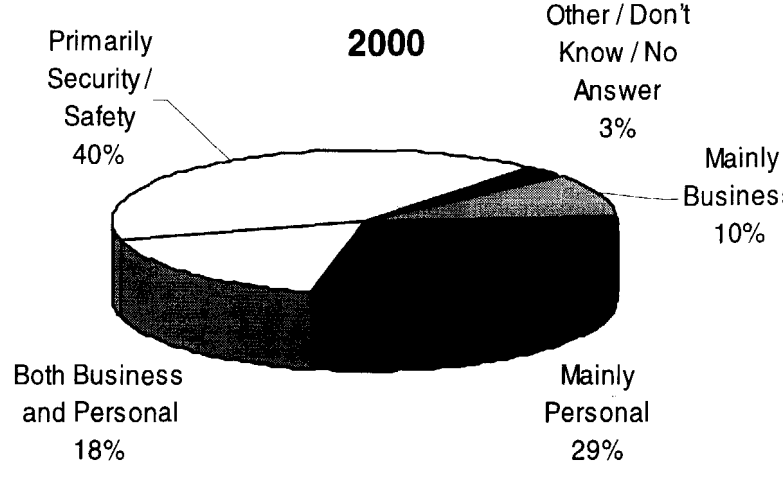
	1997	1998	1999E	2000E	2001 E	2002E	2003E	2004E	2005E	2006E	2007E	2008E
Average Home Revenues per Month	**$46.07**	**$42.96**	**$41.07**	**$39.99**	**$39.17**	**$38.54**	**$37.97**	**$37.53**	**$37.13**	**$36.78**	**$36.48**	**$36.18**
Effective Change in Home Revs/Mth	-9.00%	-6.80%	-4.40%	-2.60%	-2.10%	(1.6)%	-1.50%	-1.20%	(1.1)%	-0.90%	(0.8)%	-0.80%
Change in Bill to Current Base	(4.0)%	(3.0)%	-1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Average Bill from Net Additions	$26.41	$29.19	$29.19	$29.19	$28.61	$27.47	$25.82	$24.27	$22.33	$20.54	$18.90	$17.76
Change in Bill from Net Additions	(10.7)%	10.5%	0.0%	0.0%	-2.0%	-4.0%	-6.0%	(6.0)%	-8.0%	-8.0%	(8.0)%	-6.0%
Compound Avg Decline Since 1995	-8.4%	-7.9%	(9.2)%	-10.0%	(10.6)%	(11.1)%	-11.6%	(11.9)%	-12.2%	(12.5)%	-12.7%	(13.0)%
Implied Aggregate Home Revenues	$27,466	$32,098	$38,296	$45,511	$52,426	$58,461	$63,520	$67,755	$71,070	$73,821	$76,040	$77,921
Home Revenues in 1995 U.S. Dollars												
Assumed Inflation Rate	2.3%	1.6%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Average Local Bill	$43.73	$40.13	$37.43	$35.56	$33.97	$32.61	$31.35	$30.23	$29.91	$29.62	$29.39	$29.14
Average Revenue per New Add	$25.07	$27.27	$26.61	$25.96	$24.82	$23.24	$21.32	$19.55	$17.98	$16.55	$15.22	$14.31
Aggregate Inbound Roaming Revs.	**$2,974**	**$3,491**	**$3,707**	**$3,855**	**$3,971**	**$4,051**	**$4,132**	**$4,214**	**$4,298**	**$4,384**	**$4,472**	**$4,562**
Year-over-Year Change	6.9%	17.6%	6.0%	4.0%	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Change Relative to Industry Growth	27.2%	70.0%	24.4%	20.0%	19.2%	17.6%	21.5%	30.0%	36.9%	46.1%	59.4%	60.5%
Addition to Avg Revenue per User	$4.99	$4.68	$3.98	$3.39	$2.97	$2.67	$2.47	$2.33	$2.25	$2.18	$2.15	$2.12
Revenues From Calling Party Pays	**$0**	**$0**	**$0**	**$569**	**$2,008**	**$3,717**	**$5,353**	**$6,905**	**$7,752**	**$8,581**	**$9,379**	**$9,692**
Incremental Revenue per Subscriber	$0.00	$0.00	$0.00	$0.50	$1.50	$2.45	$3.20	$3.83	$4.05	$4.28	$4.50	$4.50
Aggregate Data Revenues	**$20**	**$100**	**$300**	**$700**	**$1,500**	**$2,300**	**$2,800**	**$3,300**	**$3,900**	**$4,600**	**$5,300**	**$6,000**
Year-over-Year Change	900%	400%	200%	133%	114%	53%	22%	18%	18%	18%	15%	13%
Addition to Avg Revenue per User	$0.03	$0.13	$0.32	$0.62	$1.12	$1.52	$1.67	$1.83	$2.04	$2.29	$2.54	$2.79
Assumed Average Data Bill/Month	$25.00	$25.00	$25.00	$25.00	$25.00	$25.00	$25.00	$25.00	$25.00	$25.00	$25.00	$25.00
Implied Number of Subscribers	0.1	0.3	1.0	2.3	5.0	7.7	9.3	11.0	13.0	15.3	17.7	20.0
Implied Take Rate for Data Services	0.1%	0.5%	1.2%	2.3%	4.2%	5.8%	6.4%	7.1%	7.9%	9.0%	10.0%	11.0%

Source: Bear Stearns 1999

Wireless usage for business purposes: A survey by The Yankee Group in 2000

- Question: What is the most important reason you first bought, leased, or acquired a wireless phone?





In addition, on average, **72%** of calls are personal, **28%** are business; percentages are the same as 1999 results.

Base:Wireless Phone Users

Source: Yankee 2000 Mobile User Survey, The Yankee Group

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Long distance minutes of use per line assumptions are derived from FCC data

Intra-LATA Intrastate	33
Inter-LATA Intrastate	19
Intra-LATA Interstate	1
Inter-LATA Interstate	55
International	2
Other	5
TOTAL	**115**

Lines per HH

Intrastate	40
Interstate	48

Intrastate Toll	451,000,000,000
Interstate Toll	585,000,000,000

DEMs are converted to MOUs using an adjustment factor. Residential toll minutes (derived from the toll minutes per HH and lines per HH) are then subtracted from the total toll minutes to obtain business toll minutes.

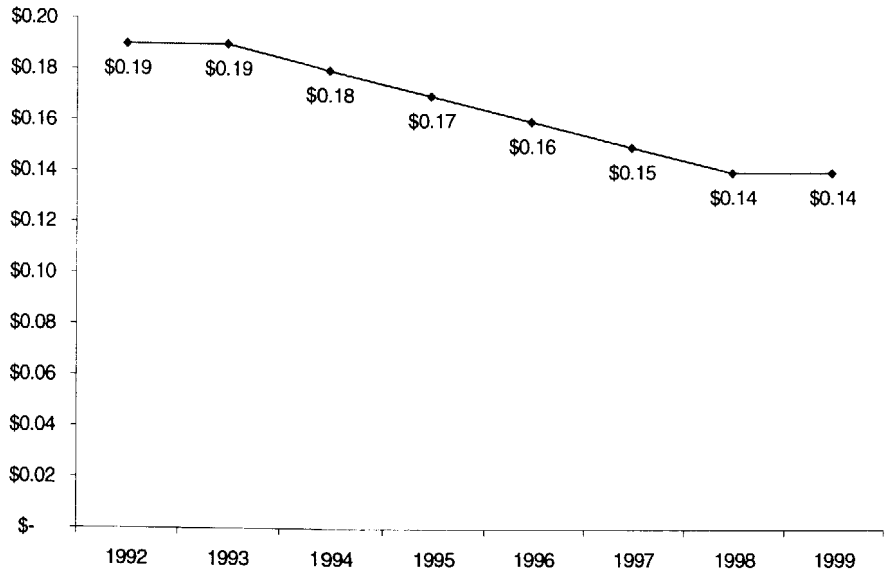
Intrastate	244
Interstate	292

The residential and business MOUs per line are forecasted using the historical growth rate. The effects of wireless and VoIP displacement are then taken into account as described earlier in the Appendix

Source: FCC Trends in Telephony 2000

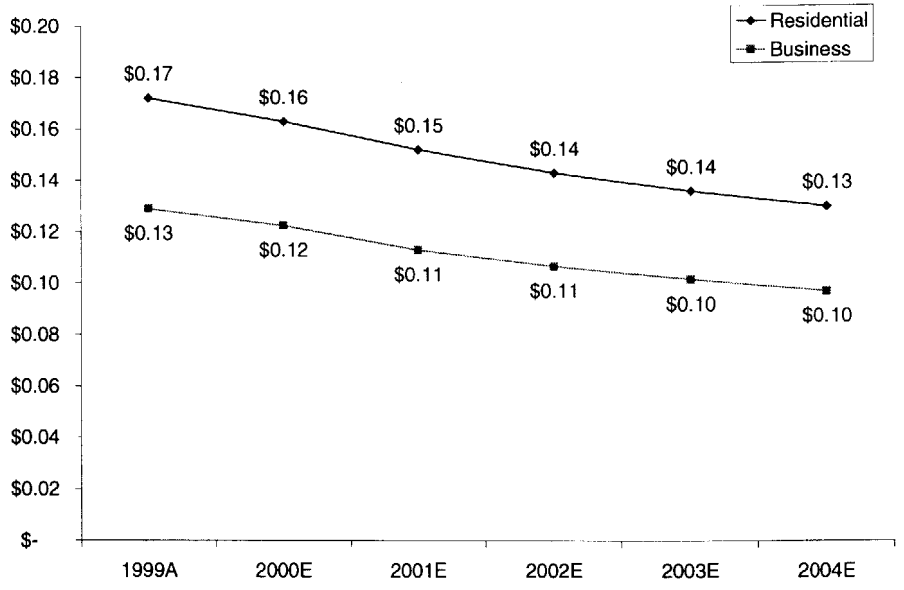
Long distance average price per minute assumptions are derived from FCC data as well

Average Domestic & International LD Price per Minute



- This graph blends:
  - Business and residential rates
  - International and domestic rates

Forecasted LD Price Per Minute



- This graph blends:
  - International and domestic rates
  - Single line and multi line business rates

Source: FCC Trends in Telephony 2000, CALLS Analysis 2000, CSMG Analysis

Today's discussion

- Appendix
  - Model Structure
  - Access Line Forecasts
  - MOU Forecasts
  - Wireless 3rd Party Forecasts
  - Long Distance
  - Consumer Analysis

Methodology for calculation of current recovery mechanism and per line recovery mechanism for each of the consumer profiles

[redacted] = LD USF fee for each household type (from slide 12) + (National average local USF fee of $0.41 per line (per TNS Telecom) x Local lines per HH for each consumer type (from slide 12))

[redacted] = [redacted] x [redacted]

2000 Universal Service Fund – FCC data / Lines where lines are defined as landlines + LD customers + wireless subscribers *National Model

Local lines per HH for each household type (slide 12) + (Local lines per HH for each household type (slide 12) x (1-% of lines with no reported LD carrier by household segment) (Slide 12))

TNS Database segmentation of residential bills by LD spend and income levels

High	High	8%	64.26	43.52	1.29	77,236
	Medium	8%	61.40	36.81	1.10	33,542
	Low	4%	60.02	38.24	1.04	15,114
Medium	High	10%	16.05	37.77	1.20	74,964
	Medium	17%	15.44	32.23	1.06	32,655
	Low	13%	14.55	28.69	1.02	15,119
Low	High	3%	3.25	36.28	1.18	73,589
	Medium	6%	3.21	31.67	1.05	32,422
	Low	6%	3.10	26.26	1.01	14,312
None	High	6%	-	39.78	1.19	74,796
	Medium	10%	-	33.98	1.06	32,239
	Low	10%	-	29.30	1.02	13,947

Income segments:

High	$50,001 + per HH
Medium	$18,001 - $50,000 per HH
Low	$0 - $18,000 per HH

Source: TNS Bill Harvest (7/99 – 9/00)