Established in 1993, Joint Venture: Silicon Valley Network provides analysis and action on issues affecting our region's economy and quality of life. The organization brings together established and emerging leaders—from business, government, academia, labor, and the broader community—to spotlight issues, launch projects, and work toward innovative solutions.

Acknowledgements
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We gratefully acknowledge valuable technical assistance provided by Parsons Corporation.

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A Guide for Community Action
How We Can Improve Cell Phone Coverage in Silicon Valley
A primer for community leaders, residents and service providers

August 1, 2008
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7 CELL PHONE COVERAGE IN SILICON VALLEY IS NOT COMPETITIVE

8 WHAT ARE THE REASONS FOR POOR CELL PHONE COVERAGE?

12 WHAT WE CAN DO TO IMPROVE CELL PHONE COVERAGE
Cell phone service is no longer a matter of mere convenience for Silicon Valley companies, nor just a luxury for consumers. In today’s world most people can’t imagine getting through the day without it. A rapidly growing population has disconnected its landlines altogether. The cell phone–based E911 service is saving lives by automatically directing emergency workers to the scene of an accident, heart attack, or crime.

Established businesses, entrepreneurial start-ups, and residential consumers are choosing locations by the quality of cell phone service.

And yet many people in Silicon Valley find they cannot rely on the service. Calls are dropped, sound quality is poor, and sometimes there is simply no connection.

It’s hard to believe, but cell phone service in Silicon Valley is not up to world standards. This short primer explains why this is so, and offers solutions—solutions that will come about when Silicon Valley residents, our elected officials, and our local service providers are working as partners.

Joint Venture is committed to building these partnerships, and we eagerly invite your support.

**CELL PHONES ARE A PART OF OUR DAILY LIVES**

Cell phones have enormous personal benefits for mobility, convenience, and safety. There is no better indicator of the benefits of cell phones than their increasing popularity. The Cellular Telecommunications Industry Association (CTIA) found that 76% of the U.S. population—255 million people—had cell phone subscriptions at the end of 2007.1

**Cell phones are becoming our primary communication medium**

In 2007, subscribers used a whopping 2.1 trillion minutes on their cell phones, translating to an average of approximately 700 minutes per user per month. Minutes used grew 17% from 2006 to 2007.

---

1. Source: CTIA – The Wireless Association. Except as noted, all data citations and charts in this report are from the CTIA. The CTIA has granted permission to use their data in this report.
What we can do to improve cell phone coverage

Silicon Valley’s coverage issues can be fixed.

In fact, we are already making significant progress: residents are coming to a better understanding about the facts, local governments are improving their processes, and the carriers are working hard to address local concerns.

Joint Venture is committed to working with all parties until our region’s service levels are where they need to be. We are doing this by:

1. Serving as an honest broker between the carriers, the public, and our public sector decision makers.
2. Collecting survey information, mapping the dead zones throughout the Silicon Valley region, bringing these to the attention of the relevant officials, and keeping the public informed of progress.
3. Educating elected officials and other public decision-makers about the facts and myths regarding cell phone towers.
4. Providing comment at public hearings, filing letters, and encouraging local residents to do the same.
5. Articulating the compelling regional interest in having a fully functioning network, and the implications for our competitive standing if we don’t.

Ultimately, however, our progress will depend on everybody doing their part.

Specifically, we call on CITY AND COUNTY LEADERS to:

• Make certain your jurisdiction has a clear and sensible set of guidelines for permitting cell sites.
• Have permit applications reviewed by staff and planning commissions as a matter of routine, and save council and board review for those rare instances when the siting invokes deeper policy questions.
• Fast-track applications that meet all of the guidelines.
• Maintain a map of cell phone coverage gaps in your community and work with carriers to fill them in.

Year-End 2007 Estimated Wireless Subscribers Up More than 22 Million from December 2006

Source: CTIA – The Wireless Association

The cell-only population is growing

CTIA – The Wireless Association estimates that 46,000 Americans become wireless subscribers every day. In early 2003, 3.2% of households were “cell-only,” meaning they did not have a fixed phone line. By December of 2007 this number had grown to 16 percent. Half of these cell-only users are below the age of 30, as compared with 21% of the U.S. population. A study by the National Center for Health Statistics found that 26% of parents of minors use only a cell phone and do not have a landline.

Size of the Cell-only Population

Source: Consumer Expenditure Information Systems

3. Source: CTIA – The Wireless Association. Except as noted, all data charts and charts in this report are from the CTIA. The CTIA has granted permission to use their data in this report.
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More than 291,000 calls are made to 911 from cell phones every day in the United States. 74% of subscribers say they have used their cell phone in an emergency and gained valuable help.4

Cell phones have taken on a multiplicity of functions
Cell phones have become deeply integrated into the lives of their users, providing not only voice calls but also a host of other data services such as Short Message Service (SMS), Multimedia Messaging Service (MMS), traffic mapping, e-mail, photo sharing, and even video sharing. In 2005, while total wireless revenues increased by 11%, revenues from data services (services other than voice calls) increased 86.4% over 2004.

The most popular among the data services is SMS, a feature that is growing rapidly in popularity in the United States. In 2007, cell phone users sent 363 billion text messages, more than double the 158 billion sent in 2006. 52% of cell phone users sent text messages on a regular basis in 2006—up considerably from 44% in 2005.5 Other popular data services identified by the Pew Internet & American Life Project, Associated Press, and AOL cell phone survey include sending photographs, playing games, surfing the Web, and e-mail.

5. Source: Jupiter Research Corporation

Source: CTIA - The Wireless Association
Even when an application meets all of the requirements in the guidelines and is supported by city staff and the planning commission, an application can be held up by the elected officials at the request of residents. There are two major reasons why some applications get reviewed at the council or board of supervisors level:

1. Residents express concern about the health effects of radio frequency radiation from cell site equipment. They are especially concerned that signal transmission carries long-term health effects, particularly for children. Residents and elected officials should understand, however, that these concerns have long been laid to rest. Radio equipment is regulated to ensure public safety and equipment is tested and certified. Countless scientific studies have been conducted worldwide; there is widespread agreement in the scientific community that so long as equipment conforms to the standards there is no health risk. In fact, the Federal Communications Commission (FCC) has ruled that local governments may not deny a permit on the basis of health concerns so long as the equipment meets federal standards.

   The FCC’s ruling notwithstanding, a number of Silicon Valley municipalities have hired consultants to review equipment specifications and testify before councils. This causes delays and is almost always unwarranted because the carriers’ equipment meets or exceeds the FCC’s safety standards.

2. Residents believe the cell site will be unattractive, spoil their view, or reduce property values. This may have been true in an earlier time, but today the carriers design sites that are much smaller in size and disguised to fit in with the surroundings. Cell sites can be hidden in chimneys and church steeples, mounted on park lighting, or even disguised as trees.

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When my cell phone doesn’t work, I don’t work.

—Ellen Reche, VP, SVB Financial

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<table>
<thead>
<tr>
<th>Percent of Cell Users Engaging in Various Data Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>----------------------------</td>
</tr>
<tr>
<td>Send/receive SMS</td>
</tr>
<tr>
<td>Take still pictures</td>
</tr>
<tr>
<td>Play games</td>
</tr>
<tr>
<td>Access Internet</td>
</tr>
<tr>
<td>Send/receive e-mail</td>
</tr>
<tr>
<td>Play music</td>
</tr>
<tr>
<td>Record video clips</td>
</tr>
<tr>
<td>Get maps</td>
</tr>
</tbody>
</table>

---

We have come to depend on our cell phones. We expect them to work. We need them to work.

---

Cell Phone Coverage in Silicon Valley is Not Competitive

Everyone has their favorite dead zone—Page Mill Road in Palo Alto, Sand Hill Road in Menlo Park, spots on Highways 280 and 880, Stanford Hospital, a neighborhood, a school campus. When visitors come to the Valley from Europe and Asia they are surprised by the difficulties of finding a signal, the frequency with which calls are dropped, and the lower quality of the sound.

How did this happen? Why, in the world’s center of innovation, is it so hard to connect?


---

I use T-Mobile and I don’t get a signal at my friend’s house in Fremont, where I go every week. When I’m there I’m just not available, no matter why you need to reach me.

—Amit Kumar, resident of San Jose

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10 How We Can Improve Cell Phone Coverage in Silicon Valley—A Guide for Community Action
What are the reasons for poor cell phone coverage?

Poor cell phone coverage is not unique to the San Francisco Bay Area. Many communities in the United States are suffering and the primary reasons are often the same.

1. The original network was not designed to provide ubiquitous coverage.
   When the cell phone network was first deployed, the priority was on covering business districts and travel corridors. Tall, industrial-size towers were built along highways and antennas were installed on the roofs of office buildings in the downtown areas.
   As prices fell and more consumers purchased cell phones, the carriers began building cell sites along major arterials and tried to cover residential communities. But the signal could not reach everywhere; carriers needed to build inside the neighborhoods to fill in the gaps.

2. The growth in the number of users and the volume of usage is overloading the network.
   The cell phone network was designed to handle voice communications. Originally an analog system, the carriers began converting their networks to digital signals in the late 1990s in order to increase capacity. Now, with the explosion of new data services, the network is struggling again. E-mail, Web search, mapping, photo exchange, and TV viewing are overloading the system. The carriers are just beginning to deploy WiMax, a new technology that is better designed for data-intensive communications.

3. Frustrated users do not realize they can help solve the problem.
   When service is bad, cell phone users tend to blame the carriers. In many cases, however, they should also be contacting their local elected officials to voice their needs and encourage solutions. Letters and phone calls make a difference.
   Users can also report coverage gaps on public Web sites like www.deadcellzones.com, and www.cellreception.com.

4. Carriers are applying for permits to expand coverage, but the process can be slow and cumbersome.
   The major carriers in the San Francisco Bay Area are Sprint/Nextel, AT&T/Cingular, T-Mobile, and Verizon Wireless. These carriers have been trying to increase their coverage by building more cell sites. They recognize that good coverage is necessary to attract and retain customers. Some, like T-Mobile and Sprint, now provide detailed coverage maps on their Web sites to help customers choose the carrier that provides coverage where the customer needs it.
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Many cities have developed guidelines to review and approve applications for new installations, and for co-location on existing facilities. Still, the typical application takes between 18 months and two years to get approved. Some cities require the carrier to conduct an extensive analysis of alternatives before an application can be submitted.
Even when an application meets all of the requirements in the guidelines and is supported by city staff and the planning commission, an application can be held up by the elected officials at the request of residents. There are two major reasons why some applications get reviewed at the council or board of supervisors level:

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The cell-only population is growing

CTIA – The Wireless Association estimates that 46,000 Americans become wireless subscribers every day. By early 2003, 3.2% of households were “cell-only,” meaning they did not have a fixed phone line. By December of 2007 this number had grown to 16 percent. Half of these cell-only users are below the age of 30, as compared with 21% of the U.S. population. A study by the National Center for Health Statistics found that 26% of parents of minors use only a cell phone and do not have a landline.

### Estimated Subscribers

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimated Subscribers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>24,134,421</td>
</tr>
<tr>
<td>2001</td>
<td>33,758,661</td>
</tr>
<tr>
<td>2002</td>
<td>44,042,992</td>
</tr>
<tr>
<td>2003</td>
<td>55,312,293</td>
</tr>
<tr>
<td>2004</td>
<td>69,209,321</td>
</tr>
<tr>
<td>2005</td>
<td>86,047,003</td>
</tr>
<tr>
<td>2006</td>
<td>109,478,031</td>
</tr>
<tr>
<td>2007</td>
<td>128,374,512</td>
</tr>
<tr>
<td>2008</td>
<td>140,766,842</td>
</tr>
<tr>
<td>2009</td>
<td>158,721,981</td>
</tr>
<tr>
<td>2010</td>
<td>182,140,362</td>
</tr>
<tr>
<td>2011</td>
<td>207,896,198</td>
</tr>
<tr>
<td>2012</td>
<td>233,040,781</td>
</tr>
<tr>
<td>2013</td>
<td>255,395,599</td>
</tr>
</tbody>
</table>

Source: CTIA – The Wireless Association

### Size of the Cell-only Population

<table>
<thead>
<tr>
<th>Year</th>
<th>Size of the Cell-only Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>5,283,055</td>
</tr>
<tr>
<td>2001</td>
<td>3,508,944</td>
</tr>
<tr>
<td>2002</td>
<td>2,069,441</td>
</tr>
<tr>
<td>2003</td>
<td>1,230,855</td>
</tr>
<tr>
<td>2004</td>
<td>681,825</td>
</tr>
<tr>
<td>2005</td>
<td>640,213</td>
</tr>
</tbody>
</table>

Source: Consumer Expenditure Information Systems

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Visitors from Asia always seem surprised that cell phone service in Silicon Valley is worse than it is back home.

—Dean Warshawsky, CEO, Teltek Systems and Mayor, Town of Los Altos Hills

We call on CARRIERS to:

• Provide consumers with an easy way to report coverage problems.
• Provide jurisdictions with accurate coverage maps to identify where there are gaps in service.
• Work with city and county staff members to design cell sites that are appropriate for the community, while achieving technical objectives.
• Submit only those applications that conform to the permitting guidelines of the community.
• Contact local subscribers to let them know that an application has been filed. Encourage them to call or write letters to council members and staff expressing their views on cell phone coverage.

We call on RESIDENTS AND LOCAL BUSINESSES to:

• Notify the carrier about your coverage problems by e-mail or letter.
• Write a letter or send an e-mail to your city council or board of supervisors to let them know that you want coverage improved. Provide the address or intersection where you are experiencing problems and the name of the carrier.

Additional information

• The Pew Research Center - http://people-press.org/
• CTIA – The Wireless Association - www.ctia.org
• The Federal Communications Commission (FCC) - www.fcc.gov
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PUBLIC SECTOR:

City of Campbell
City of East Palo Alto
City of Foster City
City of Fremont
City of Gilroy
City of Los Altos
City of Menlo Park
City of Milpitas
City of Monte Sereno
City of Morgan Hill
City of Mountain View
City of Newark
City of Pacifica

City of Palo Alto
City of Redwood City
City of San Carlos
City of San Jose
City of San Mateo
City of Santa Clara
City of Santa Cruz
City of Sunnyvale
City of Union City
County of San Mateo
County of Santa Clara
Town of Los Altos Hills
Town of Los Gatos

The investors listed here are sponsors of Joint Venture: Silicon Valley Network and its many various projects and initiatives. They are not responsible for the material contained in this report, which reflects the views of Joint Venture and not necessarily those of its individual sponsors.
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