



CONNECTIVITY: **Sonoma County's 21st Century Challenge**

An Overview of Key Issues and Recommendations

A report developed, researched and written by the Sonoma County
Economic Development Board

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EXECUTIVE SUMMARY

Sonoma County is in the midst of tremendous change in the area of telecommunications. Technology and consumer demands are changing rapidly, while local providers, governments, and other involved parties are attempting to keep pace.

In January 2000, the Sonoma County Board of Supervisors asked the Economic Development Board to prepare a report on connectivity. In conducting the report on connectivity, case studies from around the country were reviewed. It was learned that some communities are ahead of Sonoma County in addressing connectivity needs and issues, while many others have not begun to consider the role that connectivity plays in the vitality of the local economy.

Connectivity is also a key issue for Sonoma County's burgeoning telecommunications industry. Companies like Advanced TelCom Group, Advanced Fibre Communications, Agilent, Alcatel, Pacific Bell and others have a keen interest in the issue as they continue to invest locally.

Connectivity as a concept refers to the infrastructure that harnesses the potential of information technology and telecommunications to improve the quality of life and economic competitiveness of a community.

What characterizes Sonoma County's approach to connectivity needs and issues to date have been individualized efforts among Cities or organizations. Each City, agency, or local provider has attempted to deal with the problems inherent in connectivity by itself – within their own community or organization, irrespective of what is taking place in neighboring communities or complementary organizations.

This study learned that there has been a considerable amount of localized initiatives and efforts undertaken, but there has not been a commensurate amount of communication among communities and key stakeholders. In this study, strengths, weaknesses, opportunities and threats related to connectivity are discussed, and several recommendations are made to enhance connectivity efforts.

With the telecommunications field changing rapidly and connectivity issues continuing to be at the forefront of community and economic vitality, *the most important recommendation is the formation of a countywide Connectivity Council.* (Please see [Appendix I](#)). This Council would be comprised of all the countywide stakeholders in this area – business, government, education, high tech, and community leaders. These stakeholders might be conduits to local CyberCity Roundtables.

The countywide Connectivity Council would meet on a scheduled basis and share information, ideas, and identify opportunities for collaborative activities to strengthen connectivity in Sonoma

County. This timely sharing of information and exploration of opportunities for collaborative effort, could have a major impact on creating a “connected Sonoma County” in the 21st century.

Based on the research, interviews, and surveys conducted for this study, the following actions are recommended:

Recommendation #1 -- Form Connectivity Council

Accordingly, the study recommends as a first step the establishment of a Connectivity Council comprised of stakeholders with a vested interest in providing quality high-speed access to the greatest number of people possible. These would include:

1. City representative/City manager’s offices
2. Sonoma County Board of Supervisors/CAO
3. MIS/DP/ISD Directors (public/private)
4. Sonoma County Office of Education/Local school districts
5. Cyber-City Roundtable representatives
6. Chambers of Commerce/business trade groups (North Bay Technology Roundtable, Farm Bureau, Manufacturing Group, Wineries Association, SofTech, etc.)
7. Community-Based Organizations
8. SSU/SRJC

Please see [Appendix I](#).

Recommendation #2 – Investigate JPA

A subcommittee of the proposed Connectivity Council, comprised of the City and County representatives, should meet to explore the feasibility of a Joint Powers Agreement for cable negotiations and other related efforts that might arise. If the Connectivity Council were not to be formed, a group representing local governments should nevertheless be formed to explore the JPA.

Recommendation #3 – Investigate Expanding Access

The proposed Connectivity Council should be charged to further investigate efforts to determine policies and other recommendations that would have the net effect of creating widespread, fast, secure, and effective Internet access throughout the County.

Recommendation #4 – Community Assessment/CyberCity Roundtables

Each community in Sonoma County should be encouraged to explore the possibility of forming its own CyberCity Roundtable, to do their own assessment of community needs, and to bring that information to the broader-based Connectivity Council. Community connectivity assessments might follow the model of Ashland, Oregon.

INTRODUCTION

Any study and analysis of connectivity, as well as the more comprehensive area of telecommunications, must be preceded by an important caveat: Any such study is dealing with a moving target.

In the world of high technology, there is a theory called Moore's Law, which holds that the power and scope of computer chip technology doubles every 18 months. It has been stated that in the telecommunications industry, change happens three times that fast.

With connectivity issues, it can be said that solutions arrived at today to solve a problem could well be obsolete a year from now because the rapid advance of technology has either changed the nature of the problem, or solved the problem by itself.

In addition, a report of this type has built-in limitations. Since there are few constants today in the telecommunications field, there is also no certainty that what we know today will be true tomorrow. Since the field is rapidly changing, with differing and competing technologies attempting to establish themselves as industry standards, it is difficult to recommend taking any specific directions.

The telecommunications field is changing so quickly and expanding into so many areas of our economic and community life that a comprehensive study could easily become encyclopedic in size. Having issued these caveats, it then should be noted that Sonoma County is embarking upon a remarkable period of change in telecommunications, and has been transformed into a leading region of telecommunications applications.

In 1997 a telecommunications task force first noted the changes that were occurring in the County in their report to the Board of Supervisors. Currently, every sector of the County is being affected by the emerging telecommunications field and the connectivity issues related to it, and each sector is working to address ways to use this technology for the greatest benefit to its members. Great advances have been made in different sectors of this County.

For instance, the City of Santa Rosa and the Santa Rosa Chamber of Commerce have been addressing various aspects of the telecommunications phenomenon. This community has made great strides to identify connectivity challenges and point the way to solutions.

In Petaluma, Bill Hammerman, a community leader, started a loose-knit group called PetalumaNet several years ago, which evolved into CyberCity Roundtable. At CyberCity Roundtable, community leaders meet on a regular basis to identify connectivity needs and opportunities within the Petaluma community. The CyberCity model is now being looked at by other Cities in the County for replication.

Much is being done around connectivity in different communities, but as this study highlights, it was also learned that despite the high level of interest in connectivity and the various efforts being made to study opportunities, there remains a very low level of communication between communities.

Within this context, the report assesses the current state of connectivity in the County, identifies opportunities to focus collaborative efforts, and makes recommendations to harness new telecommunications technologies as effectively as possible to enhance the economic and community vitality of the County.

BACKGROUND

In January 2000, the Sonoma County Board of Supervisors requested a study be conducted to determine the forthcoming technological needs and opportunities for Sonoma County in the general area of connectivity. Connectivity embraces a broad range of subjects, involving technological, societal, government and business issues. The various subject areas embraced by the issue of connectivity include, but are not limited to:

1. Availability of high speed connectivity, important to both government and business
2. Access to the Internet for the economically disadvantaged, known as the Digital Divide
3. Local government's role is providing open access
4. Communities' role fostering connectivity

The four areas listed above are the focal points of this report. In the context of this report, the subject area of telecommunications encompasses Internet, connectivity, broadband access and related technological areas.

WHAT IS CONNECTIVITY?

Connectivity as a concept refers to the infrastructure that harnesses the potential of information technology and telecommunications to improve the quality of life and economic competitiveness of a community. In the 21st century, computers and the networks that link them together will be as important to the conduct of daily life as the 20th century's infrastructure of roads, waterway and electricity. (List of terms attached as [*Appendix III.*](#))

The question before decision makers in Sonoma County is: how can we best guide this process, given the multiplicity of jurisdictions, needs, and issues, combined with the differing types of available access and the rapidly changing nature of technology?

METHODOLOGY

To understand the complexity of connectivity issues, the study first conducted a review of connectivity programs in other communities, specifically Sacramento Region, City of Davis, City of Anaheim, City of Palo Alto, County of San Diego, and the City of Glasgow, Kentucky.

Leaders of Sonoma County businesses, local governments, and institutions were then surveyed to determine current access availability and needs. Following tabulation of surveys, representatives of local government, access providers, and current and potential access customers were interviewed to gain an in-depth understanding of access questions in this County.

GENERAL STATE OF THE COUNTY'S CONNECTIVITY

The general state of connectivity in Sonoma County is as varied as the needs and requirements of those who use it. Most options for accessibility are available in Sonoma County, however, in a majority of cases, technology and infrastructure limitations are preventing residents from taking full advantage of them.

Although all Sonoma County residents have access to the internet through traditional dial-up telephone service, future technology advances in access and speed are largely dependent on location and cost.

New cable access and high-speed technology such as Digital Subscriber Lines (DSL) and cable modems are accessible in limited areas of the County. Although it is expanding, these technologically advanced access options are limited by provider infrastructure. Furthermore, solutions like wireless and satellite access are hampered by barriers such as cost of equipment and general service accessibility.

In general, the state of connectivity in Sonoma County is scattered. Some areas are receiving a whole menu of options from DSL or cable, to other areas that are only able to access the internet through traditional dial-up.

BENCHMARKING OTHER AREAS

Sonoma County is not unique in the problems it is facing. In other areas of the nation, communities are addressing the issues of connectivity and are developing solutions to ensure that its local governments, residents, educational institutions and businesses will have the a full range of accessibility options in the future.

In all the communities that were studied, one important element was evident. Each of the communities had an organized effort to shape future connectivity policy. More in-depth analysis of these communities is needed. One of the recommendations of this report is to have the proposed Connectivity Council explore more deeply the solutions and success of these communities. Indeed, as the table below indicates, a significant amount of useful resources exists for such a detailed analysis. (For further information about these benchmarked areas, see [Appendix IV](#).)

	Sonoma County	Sacramento Region	City of Davis	City of Palo Alto	County of San Diego	City of Anaheim	City of Glasgow	City of Ashland
Digital divide initiative		X	X	X	X			
Community networking initiative		X	X	X	X	X	X	X
Public funding for connectivity initiative		X	X	X	X	X	X	X
Private funding for connectivity initiative		X	X	X	X	X		X
E-government initiative	X	X		X	X			
Broadband infrastructure initiative			X	X	X		X	
E-commerce readiness assessment								X
Community Technology Centers	X	X	X	X	X	X		X
Technology public policy roundtable	X	X		X	X		X	
Higher education initiative	X		X		X			
K-12 education initiative		X	X	X	X			

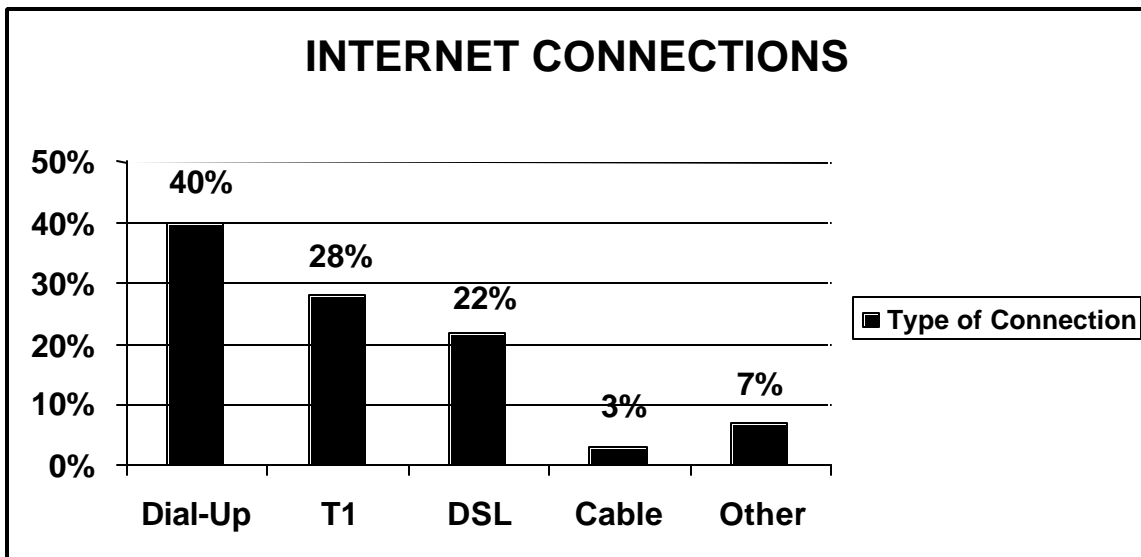
SUMMARY OF WRITTEN SURVEY RESULTS

Surveys were mailed to Sonoma County's 250 largest employers, plus another 25 leading non-profit and educational institutions. Of surveys mailed, 127 were returned, which is a response rate of 46%. This high rate is more than double what might normally be expected from this type of targeted mailing. The high response rate in itself indicates a high level of interest in this subject. (Entire survey is available as [Appendix II](#).)

The responses also gave the study an excellent overview of how telecommunications is viewed by the County's major businesses and institutions, and how important Internet access is to these organizations. The study also reveals the level of satisfaction respondents have with their telecommunications services and options.

Of the respondents, 125 (98%) currently have Internet access, and two do not. Four respondents said they do not use the Internet, offering four different reasons: expense, service, product or service delivery issues, or equipment availability. Not one respondent listed access as the reason for not using the Internet.

The results revealed a high level of Internet usage by larger companies and institutions. The study showed 111 respondents (95% of those responding) had web sites, and a preponderant majority said the Internet would play a role in the future in each of the following areas: (1) communications, (2) information/news, (3) e-commerce, (4) research, and (5) customer service. An equally large majority said that the Internet is important to the business or organization and its members.



(Based on 134 responses – including multiple responses)

Are the respondents currently satisfied with the quality of Internet service? Yes. Asked to rate this issue on a scale of 1-10, with 10 being the highest level, 51% of respondents gave a rank of 6-10, while 25% respondents offered a rank of 1-5. The remainder offered no ranking. Of those responding, more than four out of five indicated high levels of satisfaction with the quality of their Internet service.

What are the problems, or areas of dissatisfaction, indicated by respondents? Internet speed is the largest reason for dissatisfaction, followed by accessibility and security. Increasingly widespread distribution of high speed Internet bandwidth through DSL, cable, or wireless technologies will meet this growing demand for faster Internet speed.

For full survey, please see [Appendix II](#).

VISION

The Santa Rosa Chamber convened a group of business and community leaders in 1996 to develop “A Vision of Sonoma County in the Information Age.” The vision that this group presented is still relevant today, and is excerpted below.

“In developing a vision of Sonoma County in the Information Age, we found ourselves reflecting on the quality of life, prosperity, and success that will come with being ideally positioned for the social and economic transition into the Information Age that is already upon us. Imagine:

- Our children are equipped with the technical skills required to participate in the Information Age economy.
- Our work forces respected throughout the world for their skills, knowledge, and ability to thrive in a global marketplace that demands the smartest in products and services.
- Our cities becoming richer, more informed communities where people, ideas, and activities link and mix to create an outstanding quality of life and help Sonoma County remain the greatest place on earth to live.
- Our citizens enjoying access to the best education the world has to offer.
- Our governments, businesses, organizations, schools, and citizens enjoying a dramatic increase in efficiency and effectiveness in all that they do.
- Our business communities fully integrated and networked.
- Our governments skilled in providing information and service on-line and at employing interactive technologies in pursuit of optimal civic decisions.

When our vision is realized, Sonoma County will have the infrastructure to support a new way of doing business. Wide bandwidth connections will come to every home, business, and service site within our cities. A satellite connecting us to the remote regions of the world will be in place.

An information center will have been created using information technology to position Sonoma County at the network hub and host data bank to support government, health, and other services. Best of all, we will now have all the talents and technologies required to persuade new businesses to start, to expand, and to relocate in our County."

ACCESS AVAILABILITY IN SONOMA COUNTY

Customers – whether individuals or organizations – have a variety of access options available today, depending upon their location in Sonoma County. There are three major technologies available for access -- cable, telephone, and wireless.

Cable: Internet access is provided predominantly by AT&T, a provider of cable access for television programming. In years past, the County has had different cable TV providers for different cities. However, with AT&T's purchase of Viacom and Cable One, the County is essentially being served by one supplier. Internet access provided by Cable is high speed digital, primarily limited to those areas where TV cable access is available.

Telephone: Several companies including Pacific Bell and Advanced TelCom Group, provide access at several levels. The first level, referred to as dial-up access, a feature of a regular telephone line, and provides almost universal access to anyone with a telephone. Next is a high-speed circuit over standard copper wire including technologies such as ISDN, DSL (Digital Subscriber Line) and T1 connections. For high tech, large institution needs, higher speed technologies sometimes referred to as DS-1 and DS-3 are available. Access to this advanced technology is restricted by the phone company's central office locations.

Wireless: This emerging technology has two distribution mediums. The first is terrestrial (ground) wireless data transmission. The backbone and infrastructure are positioned on towers and the signal is deployed in a manner similar to cellular transmissions. Because the technology is based on line of site, towers are typically five to ten miles apart.

The County of Sonoma currently has a terrestrial system and currently is more open to private public partnerships than before.

The second distribution medium is satellite. The medium allows direct access to the end user. However this medium is limited by landscape, cost and building penetration.

OPEN ACCESS/UNIVERSAL ACCESS

One issue with direct impact on the future of connectivity, locally as well as elsewhere, is the issue of open or universal access. Simply put, this means the ability of a service provider to use other provider's system to reach customers.

The general issue of open access can be argued from each side as follows:

1. The owners of the phone lines, or the cables, argue that they have borne the substantial expense of installing infrastructure, and should be entitled to its exclusive use.
2. The owners of new technology, often competing with owners of infrastructure, argue that it is in the public's best interest to have access to the latest technology, and that each provider should not have to tear up streets to lay its own fiber optic cable, for example.

Currently, 11 communities nationwide require open access on connectivity infrastructure. In a recent court case, however, the Federal 9th Circuit Court of Appeals ruled that AT&T, the nation's largest cable operator, should maintain exclusive rights over its network infrastructure. Consequently, rival Internet service providers will not gain access to pre-existing cable lines through judicial mandate. Thus, in reversing a Portland district judge's earlier ruling, the appellate court dealt a resounding blow to open access supporters—a decision that will strongly influence the nationwide debate.

DIGITAL DIVIDE

The issue of the Digital Divide has been much in the news lately. It has to do with the more affluent demographic sectors gaining an advantage over others precisely because these sectors have a computer and have access to the world wide web.

Studies dealing with the Digital Divide and underprivileged communities are not necessarily applicable in Sonoma County. This County does not have the number of impacted poverty centers that are found in other regions of the Bay Area. Nevertheless, there are two demographic sectors that have been identified as in need – senior citizens, and youth from disadvantaged, low-income backgrounds.

As one interviewee offered, the Digital Divide problem in Sonoma County is not so much connectivity as it is training, and having programs exist within the school systems that can provide such amenities as after-school training and access for all students. Others have reported that many kids, low income residents, and some families do not have computer hardware in their respective homes.

The schools have a major role in investigating the needs and opportunities inherent in training all young people on computers to give them the chance to compete in a rapidly changing world.

The problem with seniors has a different slant. Programs are needed that will help the elderly, and classes alone may not be the answer, but instead, a type of one-on-one mentoring which will give the elderly familiarity with the computer, and an understanding of the capabilities of the world wide web, for example.

There are agencies and non-profit institutions working on this problem. The role of government may not be so much to attempt to solve this problem directly, but to give public emphasis to the problem, and to encourage schools, non-profits, and other agencies and organizations to work collaboratively to find solutions. As one interviewee stated, "it is not a hardware divide, it is a learning divide."

SWOT ANALYSIS

To gain a clearer understanding of connectivity issues, the study has dealt with these issues in a standard Strengths, Weaknesses, Opportunities and Threats (SWOT) format. These assessments are a direct result of interviews with participating stakeholders, as well as the information gleaned from the written surveys. A distillation of information from these sources provided the direction for the following format. The reporting of this information is not an endorsement of opinions or facts.

Strengths

1. Sonoma County has become a world leader in the telecommunications industry. Much of the technology that will affect the future of connectivity is being created here in the County. Accordingly, there is a substantial range of highly qualified people embracing the experience, knowledge, and foresight to help formulate effective policies.
2. Decision-makers at all levels, public and private, are aware of the evolving nature of this technology, and are working to formulate solutions for their individual constituencies.
3. Because Sonoma County is a major telecommunications center, the demand of established and developing high tech business is serving as a stimulus for access providers to assign ever-higher priorities for providing connectivity infrastructure to this area.
4. Competition in the marketplace is also pushing access providers to install infrastructure, or lose market share.
5. Community groups, such as PetalumaNet/CyberCity Roundtable, have unilaterally taken on the challenge to educate their communities as to the present and future of telecommunications.

6. Business groups, such as the Santa Rosa Chamber of Commerce, have also become active as an educational/political force to bring telecommunications issues before the community and to seek solutions.
7. Several business park owners are understanding the critical nature of connectivity and inter-connectivity and are upgrading their facilities to provide the best access technology available.
8. According to a recent published newspaper report, Sonoma County is becoming a major center for dot.com addresses and e-commerce, and more such businesses are expected to be established in the near future.

Weaknesses

1. Government, businesses and institutions are making many connectivity decisions in relative isolation. There tends to be a general lack of awareness of what other communities, institutions, or business parks, are doing to resolve their connectivity problems.
2. In some instances, policies of government and/or fee structures for the installation of infrastructure can impede or even deter such installation.
3. High-speed access to Internet may be available in some business parks, or even some community areas, and not in others. This disparity can directly affect the decision of a business to locate or not locate, expand or not expand, in Sonoma County.
4. In some areas, educational institutions have been perceived as being slow to address the importance of providing Internet access to students, as a key ingredient in education.
5. Some connectivity decisions are said to be “vendor-driven,” with the business and/or institution being sold a technology package that may not be the best for a given need or situation. For the most part, there are limited resources the buyer can use to determine the feasibility of any given decision.
6. Unlike other counties, there have been no efforts in Sonoma County to create a county-wide Joint Powers Authority to collectively negotiate with cable companies and other providers for access.

Opportunities

1. To a surprising extent, there is a willingness, if not a pressing need, from private and public decision-makers to meet regularly with peers and experts in the connectivity and telecommunications field to compare policies, technologies, problems and solutions.

2. Other communities (Marin County is the nearest) have embarked upon JPA-based joint negotiations with cable companies. With Sonoma County now served by a single cable provider, the opportunity for joint negotiations is now available.
3. There appears to be fertile ground in Sonoma County for the development of public-private partnerships to address issues of connectivity and access. The CyberCity Roundtables have led the way in bringing leaders from diverse backgrounds to the common table at the community level. This model could be studied to effect the same results on a County-wide level.
4. Across the nation, government bodies are now beginning to consider connectivity elements in their General Plans and other long-range planning. This will provide additional guidance and benchmarking as local governments look to the future.

Threats

1. The greatest threat is inactivity. If Sonoma County cannot assure adequate infrastructure to guarantee Internet access for its residents and businesses, it could lose valuable local assets to counties and other communities that can provide access.
2. Business and industry that are currently located in Sonoma County may chose to relocate to areas with a better connectivity infrastructure. In addition, industry sectors like home-based businesses may suffer because of limited access to connectivity infrastructure.
3. In the future, without adequate connectivity infrastructure, educational institutions and organizations will not be able to provide competitive levels of instruction, services and support. This may cause a “brain drain” from Sonoma County as the best teachers and students leave to find a more supportive atmosphere.
4. Disadvantaged members of the Sonoma County community could be denied opportunities to advance because an inadequate infrastructure continues to create a local “digital divide”.

RECOMMENDATIONS

Before outlining the recommendations, it is important to note that market economies will guide the provision of telecommunications services throughout the County.

Throughout the process of the study, it became apparent that the first and most pressing need is better communication and information-sharing between communities and key organizational stakeholders. A great number of knowledgeable and experienced leaders in this County are owners of part of the connectivity puzzle, but few, if any, have a comprehensive understanding of the various shadings and nuances of all the parts.

When each interviewed or surveyed stakeholder was asked if they would benefit from participating in a “clearinghouse” for rapid dissemination of information, exchange of ideas, and exploration of opportunities for joint action, the answer was almost uniformly positive.

Recommendation #1 -- Form a Connectivity Council

Accordingly, the study recommends as a first step the establishment of a Connectivity Council comprised of stakeholders with a vested interest in providing quality high tech access to the greatest number of people possible. These would include:

1. City representative/City manager’s offices
2. Sonoma County Board of Supervisors/CAO
3. MIS/DP/ISD Directors (public/private)
4. Sonoma County Office of Education/Local school districts
5. CyberCity Roundtable representatives
6. Chambers of Commerce/business trade groups (North Bay Technology Roundtable, Farm Bureau, Manufacturing Group, Wineries Association, SofTech, etc.)
7. Community-Based Organizations
8. SSU/SRJC

Please see [Appendix I](#).

Resources need to be allocated to provide County staff support for the Connectivity Council. The Board of Supervisor should appoint Connectivity Council members to two-year appointments. The Connectivity Council should be appointed in time for the first monthly meeting to convene in September 2000. The council will provide a progress report to the Board of Supervisors at the end of FY 2000-01.

The Connectivity Council might consider breaking into subcommittees to focus on these broad countywide issues:

- ❖ Open Access (JPA Agreements for cable negotiations)
- ❖ Digital Divide
- ❖ Government and Community Online Services
- ❖ Best Practices
- ❖ Future Trends in Connectivity
- ❖ Integrating connectivity into local general plan development

Recommendation #2 – Investigate JPA

A subcommittee of the proposed Connectivity Council, comprised of the City and County representatives, should meet to explore the feasibility of a Joint Powers Agreement for cable negotiations and other efforts that might arise. If the Connectivity Council were not to be formed, a group representing local governments should nevertheless be formed to explore the JPA.

Recommendation #3 – Investigate Expanding Access

The proposed Connectivity Council should be charged to further investigate efforts to determine policies and other recommendations that would have the result of creating widespread, fast, and effective Internet access throughout the County.

Recommendation #4 – Community Assessment/ CyberCity Roundtables

Each community in Sonoma County should be encouraged to explore the possibility of forming its own CyberCity Roundtable, to do its own assessment of community needs, and to bring that information to the broader-based Connectivity Council. Community connectivity assessments might follow the model of Ashland, Oregon. The City of Ashland conducted an assessment using the Computer System Policy Project (CSPP) guide, which focuses on Infrastructure Capabilities, Range of Services, Affordability, Quality of Service, Competition, Citizens Online, Businesses Online, Healthcare Online, Nonprofits Online, and Planning for Community Growth

Appendices

Appendix I – Connectivity Council

SONOMA COUNTY (Issues Under Present Conditions)

A variety of groups are known to be involved with connectivity in Sonoma County, but may not be collaborating.

INDUSTRY

- Individual Companies
- NorthBay Technology Roundtable*
- SofTech
- Manufacture's Group
- North Bay Council

EDUCATION

- SCETSE (K-12, JC)
- S2C
- Hi-Tech High School
- Tech Academy
- Proposed SSU Grad Engin Prgm

COMMUNITY/GOVERNMENT

- Chambers
- CyberCities
- Media Centers
- Cities

***North Bay Technology Roundtable is staffed by the EDB and includes Supervisors Reilly and Kelley as authorized liaisons by the Board of Supervisors.**

Appendix II – Survey Results

2000 SONOMA COUNTY INTERNET/CONNECTIVITY SURVEY

FINAL TOTALS (127 Respondents)

1). Does your organization and its members currently have access to the internet?

98% Yes 2% No *(If no, proceed to 1c)*

1a) If yes, what kind of connection?

<u>40%</u> Dial – Up	<u>22%</u> DSL
<u>3%</u> Cable	<u>1%</u> Satellite
<u>28%</u> T1	<u>2%</u> Wireless
<u>4%</u> Other (Please Specify)	

“Other” includes: 128K frame relay (3 respondents); ISDN (2 respondents); Intranet from company mainframe (2 respondents); DS3; WAN.

1b). If yes, what functions does it serve? (Choose all that apply)

<u>24%</u> Communications (e-mail)	<u>18%</u> Research
<u>20%</u> Information/News	<u>11%</u> Customer Svc/Emp
<u>10%</u> E-Commerce	<u>15%</u> Marketing
<u>2%</u> Other (Please Specify)	

“Other” includes: Investment; intranet; reservations; billing; FedEx; student records and registration; government notices/updates; on-line education.

1c). If no, what is the reason for not using the internet? (Choose all that apply)

<u>25%</u> Expense	<u>0</u> Access
<u>25%</u> Service	<u>25%</u> Equipment Avail
<u>25%</u> Product/svc delivery	<u>0</u> Other (Please Specify)

2) On a scale from 1 to 10 with 10 being critical, how important is the Internet to your organization and its members?

Unimportant	
1	1% respondent
2	4% respondents
3	7% respondents
4	3% respondents
5	9% respondents
6	12% respondents
7	13% respondents
8	9% respondents
9	12% respondents
10	30% respondents
Critical	

3) On a scale from 1 to 10 with 10 being the highest, please rate the quality of your internet service.)

Lowest	
1	0% respondents
2	2% respondents
3	0% respondents
4	7% respondents
5	7% respondents
6	10% respondents
7	21% respondents
8	21% respondents
9	19% respondents
10	13% respondents
Highest	

4) What area of your internet service is in the most need of improvement? (Choose all that apply)

<u>44%</u>	Speed
<u>22%</u>	Security
<u>26%</u>	Accessibility
<u>8%</u>	Other (Please Specify)

“Other” includes technical support (2 respondents); cost (2 respondents); reliability (2 respondents); web design (2 respondents); VPN; need linked service areas.

5) Does your organization have a website?

90% Yes 10% No

6) What, if any, role could the internet play in the future of your organization? (Choose all that apply)

<u>18%</u> Communications (e-mail)	<u>15%</u> Research
<u>17%</u> Information/News	<u>17%</u> Customer Svc/Emp
<u>14%</u> E-Commerce	<u>17%</u> Marketing
<u>2%</u> Other (Please Specify)	

“Other” includes F&P file transfer (2 respondents); telecommuting; purchasing; retail sales; intranet; fund raising; education; cyber CSR; recruiting; on-line banking; grant application process.

7) What role do you see for local government in facilitating internet connectivity?

<u>21%</u> Franchise Regulation	<u>18%</u> Access to computers
<u>24%</u> Training/Education	<u>21%</u> Internet Access
<u>16%</u> Other (Please Specify)	

“Other” includes no government involvement (11 respondents); government should stand back/stay out (3 respondents); adapt/apply existing regulations (2 respondents); have minimal regulations; need sales tax for Internet-sold goods; security; communication (i.e., bids); coordination; ensure adequate competition; need more databases; need high-speed access; need infrastructure

8) Does the issue of “Digital Divide” affect your organization’s members and business to business communication? (The “Digital Divide” is the gap that is growing between households that have computers and access to the internet and those that do not.)

31% Yes 69% No

9) What obstacles do your organization’s members have in receiving Internet connectivity? (Choose all that apply)

<u>30%</u> Speed	<u>23%</u> Access
<u>20%</u> Cost	<u>18%</u> Access to computers
<u>9%</u> Other	

“Other” includes lack of skill/knowledge (5 respondents); unreliability (2); old infrastructure (2 respondents); sites hard to locate; poor quality of vendors

10) In three years, where do you think your organization will be in relation to the internet?

<u>42%</u> E-Commerce	<u>18%</u> Access to computers
<u>37%</u> Intranet Programs	<u>3%</u> Other (Please Specify)

“Other” includes F&P; internet customer service; DSL-networked; expanded websites; the sky’s the limit

11) Would you be interested in partnering with various local Sonoma County groups on the following issues? (Choose all that apply)

<u>31%</u> Infrastructure Development
<u>23%</u> Programs to Address Digital Divide
<u>27%</u> Long Range Plans/Objectives
<u>14%</u> Access to computers
<u>5%</u> Other (Please Specify)

“Other” includes marketing of Sonoma County brands/products; need more information; no (3 respondents)

Appendix III – Definition of Terms (Source: Nacio Systems USA)

Connectivity	Refers to the infrastructure that harnesses the potential of information technology and telecommunications to improve the quality of life and economic competitiveness of a community.
Open Access	Requires cable companies who provide broadband access to give “open access” to all Internet Service Providers.
Broadband	Refers to the speed of data transmission over the Internet.
DSL	Digital Subscriber Line is a modem technology that converts existing copper telephone lines into two-way high-speed data conduits.
Cable	The same cable network that currently provides telecommunications service to consumers can be modified to provide broadband access.
ISDN	ISDN is a high-speed, fully digital telephone service. Just as compact discs have made recorded music digital, ISDN upgrades today's analog telephone network to a digital system.
Frame Relay	A packet-switching protocol for connecting devices on a Wide Area Network (WAN). Frame Relay networks in the U.S. support data transfer rates at T-1 (1.544 Mbps) and T-3 (45 Mbps) speeds. Think of Frame Relay as a way of utilizing existing T-1 and T-3 lines owned by a service provider.
T-1	A dedicated phone connection supporting data rates of 1.544Mbps per second. A T-1 line actually consists of 24 individual channels, each of which supports 64Kbits per second. T-1 lines are a popular leased line option for businesses connecting to the Internet and for Internet Service Providers (ISPs) connecting to the Internet backbone. The Internet backbone itself consists of faster T-3 connections. T-1 lines are sometimes referred to as <i>DS1</i> lines.
Digital Divide	Refers to the growing knowledge and access gap between the technologically literate and illiterate in our communities
Fiber Optics	A technology that uses glass (or plastic) threads (fibers) to transmit data. A fiber optic cable consists of a bundle of glass threads, each of which is capable of transmitting messages modulated onto light waves.

Appendix IV – Case Studies

Many communities are finding novel ways to use telecommunications and information technology to conduct business, encourage broad community access to the networked economy, and deliver social services.

Sacramento Region

Net at Two Rivers

c/o John Kearns Youth Center

3520 5th Ave, Suite 100

Sacramento, CA 95817

Phone:(916) 452-2284, Fax:(916) 452-2283

info@n2r.net

<http://www.n2r.net>

At the Net at Two Rivers (N2R) project progress has been made in developing regional education programs to provide basic computer training to under-resourced populations. N2R is also involved in finding ways to link geographically dispersed social service program-dependent populations, such as the elderly, the physically handicapped, with their key provider agencies. The project was started with funding from the Sacramento School District, support from the local United Way, and with the cooperation of a number of community networks.

The N2R project addresses literacy and community issues through the use of the Internet. The goal of N2R is to develop a shared infrastructure for delivery of regional information, training and education. Currently, N2R is flowing in more than 50 public access sites in the 15-county region sharing community information and networking as well as much-needed technology training.

City of Davis

Davis Community Network

23 Russell Blvd.

Davis, CA 95616

Phone: 530-757-5602, Fax: 530-758-0204

<http://dcn.davis.ca.us/>

Davis Community Network has developed a two-pronged approach to promote local business on the Internet and to use its community network to involve more citizens in the local government process. The mission of the Davis Community Network is to strengthen the community by helping people understand and benefit from participation in the electronic information era. DCN is this regional community's portal to the Twenty-First Century. When initiated in 1994, DCN was the first non-university Internet provider in the local calling area.

Today, as a 501(c)(3) non-profit research, demonstration and community service organization, DCN is working to help make Davis and its neighbors smarter, more creative and healthier participants in the new Information Society. DCN began in 1993, with funding from the California Department of Transportation through UC Davis, to pragmatically demonstrate the benefits of tele-commuting. At that time, a small group of community tele-media activists and altruists formed DCN to serve the needs of our increasingly communications-networked local society in ways that would not be properly met by just the commercial marketplace.

City of Palo Alto

Smart Valley

Connie Martinez

Phone: (408) 271-7213

Email: C_Martinez@jointventure.org

<http://www.svi.org>

<http://www.city.palo-alto.ca.us>

The municipal permitting process is generally time and paper intensive. In order to illustrate the advantages of on-line permitting, Smart Valley, Inc., in conjunction with Anderson Consulting and the City of Palo Alto, developed a demonstration prototype web-based permitting system. The demonstration used City of Palo Alto building applications and contains a searchable archive of the building code and other relevant city information to assist in completing the forms. It also incorporates security, workflow, and status checking features.

Following the completion of the prototype, a Smart Permitting Steering Committee was formed composed of city managers, corporate facility managers, architect and design engineers, building inspectors, city planners, and technology specialists. Representatives from 18 cities and two counties participated on a subcommittee to deal with permitting software systems.

In response to the digital divide issue, Smart Valley, Inc. created the Public Access Network (PAN). PAN provides free, high-speed Internet access at public access kiosks throughout Silicon Valley. This project is empowering citizens of this region through equal access to information and technology resources. PAN utilizes state-of-the-art computing platforms with high-speed connections to the Internet.

City of Anaheim

Anaheim City Hall

200 S. Anaheim Blvd.

Anaheim, CA 92805

Phone: (714) 765- 5162

apl_asvc@anaheim.lib.ca.us

<http://www.anaheim.net/>

To the extent that a community owns its own telecommunications resources – such as conduit, government-operated networks, towers – there are opportunities to enter into strategic partnerships with private firms. The basic concept is to use pre-existing government-owned resources to induce development of infrastructure that might not otherwise be provided by the marketplace – and to do so largely through private investment.

An example of such an approach is that taken by Anaheim, California. Anaheim's Public Utilities Department (electricity and water) has installed a 50-mile fiber optic network to replace an older copper-based network. In April, 1995, the Utilities Department issued an RFP seeking a public/private partnership to expand this network and use it to provide telecommunications services to businesses, residents, and government, as well as supporting electric facilities management applications.

From 18 respondents, the City selected a proposal by SpectraNet International. Under a 30 year agreement, SpectraNet will lease 60 fibers from the City and use these to provide services. The City will receive five percent of gross revenues, with a minimum of \$1 million/year guaranteed by 1999, will receive 35 percent of net revenues, and receive lease payments of \$6 million over 30 years. The City will also receive a variety of in-kind services.

City of Glasgow, Kentucky

Glasgow Electric Plant Board

100 Mallory Drive

Glasgow, Ky. 42141

Phone: (270) 651-8341, Fax: (270) 651-7572

epb@glasgow-ky.com

The most ambitious option is to develop community-owned infrastructure – either government owned (i.e. a municipal telecommunications utility), or a telecommunications cooperative.

For rural communities, or communities that are otherwise unattractive to commercial carriers, a government-owned or cooperative utility may be the only option for obtaining needed services. For communities that already have a government or cooperative electric company (or telephone or cable company), it may be only a small step to expand into the full range of telecommunications services.

A prime example of this approach is Glasgow, Kentucky – a small city of 14,000 people, with a well-managed public electric utility, the Glasgow Electric Plant Board (EPB). In the late 1980s, the EPB started exploring data communications technologies for monitoring and control of its electric transmission and distribution facilities, and with an eye toward future needs to provide customers with time-of-day pricing and load management options.

The Electric Plant Board could have stopped at this point – but instead realized that they now had the basis for offering telecommunications service as part of their overall utility offerings. With an installed two-way cable plant already paying for itself in the form of operational savings, and with all the staff of an operating utility (installation, 24-hour repairs, billing, customer service), – and with every home and office in town as existing customers – providing telecommunications service seemed a natural extension of the EPB's existing business.

The EPB has been extremely successful in this undertaking. Today, the network not only supports electric operations, it also delivers cable TV to 2500 subscribers (50% of the market), links 750 PCs, and synchronizes Glasgow's traffic lights. The EPB began to offer telephone service as well, reaching a peak of 120 telephones – however the few broadband telephone products available off-the-shelf ultimately proved to be neither affordable nor reliable. The EPB continues to support 80 telephones, primarily used internally within EPB electric facilities and Glasgow schools.

The EPB has brought true competition to Glasgow's cable television market - making it one of very few communities with two cable operators in direct competition for the same households. The EPB has gained 50% of the market with a full range of offerings – all of the standard cable stations, premium channels, pay-per-view, a digital music service, and an extensive range of locally originated programming (including government hearings, little league games, and programs produced by students at the local high school). As a result of this competition, cable prices in Glasgow have dropped over the past several years.

The most striking benefit is availability of affordable, high-speed data networking. For communities that have a municipal electric utility, Glasgow provides an attractive model to follow. Glasgow's system is built using off-the-shelf products, and stable technology. The network cost a fairly modest \$2.8 million to build (\$1.5 million for the broadband network, and \$1.3 million for cable television facilities) and is paying for itself through operational savings for the electric utility. Staff, including electric operations, totals 35.