Proposal for Wireless Access at the State Capitol

May 2007

STATE OF CALIFORNIA
DEPARTMENT OF GENERAL SERVICES

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Contents

Introduction

The Governor's Executive Order (EO) S-23-06, "Twenty-First Century Government: Expanding Broadband Access and Usage in California (Revised),"[1] directs the Department of General Services (DGS) to pursue the deployment of wireless Internet access in the State Capitol Building. As an initial step, this proposal identifies two options to provide wireless services to the public areas of the basement of the Capitol. The first option to deploy wireless access in the Capitol is a system installed and managed by the State, and the second option is a system installed and managed by an outside vendor. Based on lower cost, the DGS recommends the second option, using a vendor. Both options rely on the State to procure and own the necessary equipment. A State agency has not been identified to provide oversight of the vendor, project management and ongoing contract management of this project. It is recommended that the Department of Technology Services (DTS) be directed to manage this project, working with the Governor's Office, as they already manage the State's wireless contracts and work closely with the Governor's Office on IT related projects.

Wireless Access Site Selection: State Capitol Basement

In this proposal, the DGS recommends the deployment of wireless services to the basement of the Capitol because that area has a large number of public visitors who may wish to use wireless services, versus visitors to the ground floor who mostly pass through the hallways to-and-from offices or on tours.

In the pursuit of more wireless services for the Capitol, the DGS recommends the State consider expanding access to the Capitol Park after the review of its experience with services in the Capitol basement. The DGS currently provides facility maintenance and support to the Capitol and the Capitol Park and is familiar with public use patterns of the area.

Several hundred thousand visitors visit the State Capitol each year to tour the Capitol building and museum, to meet with the Governor or Legislators, or enjoy the park. With so many annual visitors with a variety of purposes, an opportunity exists to enhance many visitors' experiences while at the Capitol with wireless access to the Internet and email.

Visitors to the Capitol could benefit from convenient wireless access to the Internet and the vast array of information that it offers. For example:

[1] Appendix A, for directive to DGS to prepare proposal see Paragraph 9 d.

- Educational – Teachers and children on school trips to the Capitol could use information accessed through the wireless system to augment the educational process with immediate teaching opportunities instead of waiting for next day or next week follow-up.
- Tourism – National and international visitors will have wireless services to receive email communications, make travel arrangements, conduct personal and professional business, and receive new information.
- Health and Safety – Emergency notifications could be sent and received on wireless-enabled devices.

Description of Wireless Internet Access

Wireless technology provides a simplified way to access the Internet with a mobile device for high-speed gathering or sending of information.

With a wireless-enabled laptop, for example, the user turns on the laptop and it automatically searches for nearby wireless service access points, then the user chooses one of those services, which launches the user onto the Internet. Most people have heard of “hot spots” such as the wireless services provided in coffee shops, at airports, and in many buildings around California. A “hot spot” is a limited geographic area where the wireless signal is strong enough to provide access to the Internet.

Some wireless services are provided by businesses to customers for free, some are for a specific membership, and some are provided at different rates based on varying information upload and download speeds. Some wireless services are provided on a pay-per-use fee structure while others are provided on monthly payment plans.

A basic wireless services system is comprised of the following hardware:

Table 1 – Basic Wireless Components and Definitions[2]

Item	Definition
Access Points (APs)	Device that connects wireless communication devices together to form a wireless network
Switch	Connects devices to form a Local Area Network (LAN)
Wireless LAN Controller	Device that communicates with Access Points
Router	Acts as a junction between two or more networks
Cabling	Wires or optical fibers bound together to permit digital data transmission
Telecom Circuit	Any line on which information is transmitted

[2] See Appendix B for a diagram of a typical wireless system.

Item	Definition
Wi-Fi	A wireless radio frequency-based signal providing access to the internet. Wi-Fi signal strength extends up to 300 feet, depending on types of obstructions (trees, buildings)
802.11x	One of the key elements of wireless services is the 802.11b/g IEEE open standard that allows wireless Hotspots to carry voice, video, and data.

Proposal Scope

This proposal addresses wireless Internet access for some public areas in the Capitol. Various programs within the Capitol currently provide secured private wireless access, including the Governor's technology staff and press areas and the Departments of Finance and Parks & Recreation for their staff located in the Capitol, but these programs are not available to the public.

In this proposal, public areas identified for wireless access are in the basement area,[3] including:

- cafeteria seating area
- area under the rotunda
- hallway between the cafeteria and the tour center
- tour center area

Options

There are two basic options to provide wireless access to the public areas of the Capitol: State-managed or vendor-managed. The DGS recommends a vendor-managed system.

The proposed wireless service to the Internet is public, the same way that wireless service is provided to users in most Internet "hot spots" throughout the State. With the most recent technology user support is rarely necessary, and this concept applies equally to both options.

Option 1 – State Managed

A State managed system means the State would purchase the necessary products and supporting services, install the wireless system, and provide ongoing maintenance and support using State employees.

[3] See Appendix C for the floor plan depicting the main areas.

The State agency selected to provide the wireless service to the Capitol would maintain ownership of all support responsibility. The State would conduct a competitive bid to acquire the system components.

Multiple APs will be installed in the basement with overlapping coverage to ensure sufficient signal strength. These APs would be mounted on or near the ceiling. Other supporting components would be installed in the basement out of sight.

Asset management is not included in the cost spreadsheets but is important to include for future technology updates. The useful life of this type of equipment is estimated at five years, therefore it is recommended to plan for a replacement cost of approximately $90,000 in five years, or approximately $18,000 per year.[4]

Staff time for ongoing support is estimated at 20 hours per month at the Senior Information Systems Analyst classification. This classification level is necessary for depth of expertise in multiple disciplines. Onsite access for the State agency providing and supporting the wireless service is required.

Both options have the same costs for equipment purchase, telecommunications circuit installation and monthly fee, and hardware maintenance. The difference in the costs is the amount of State staff time required and the amount of vendor support provided.[5]

Table 2 below provides a cost summary of Option 1.

Table 2 – Option 1 Cost Summary

Expense Category	**One-Time**	**First Year**	**Annual**
Equipment/Installation	$107,400	$107,400	-
Maintenance/Support	-	$30,000	$35,100
Totals	**-**	**$137,400**	**$35,100**

A discussion of funding this proposal is in the Funding Options section below.

Summary – Option 1

Option 1 provides a viable solution to providing wireless access at the Capitol. If this Option is selected, the appropriate State agency must to be identified to provide the management and support of the proposed system.

Option 2 – Vendor Managed

A vendor managed solution means the State would purchase the necessary products and support services, and an outside vendor would implement the wireless service and provide the ongoing maintenance and support.

[4] Not adjusted for inflation.
[5] See Appendix D – Option 1 Cost Worksheet for a more detailed cost estimate.

The State would conduct a competitive bid to select a vendor that will provide ongoing service per contractual terms and conditions, including technical support available for specific components (e.g., if a router or circuit fails). Vendor support would be provided during the normal operational hours for the public areas of the Capitol.

The necessary components of the wireless system would be similar to those in Option 1. The two primary categories of cost are the one-time equipment and installation costs and the ongoing monthly service fee.

As stated above, asset management is not included in the cost spreadsheet but is important to include for future technology updates to prevent obsolescence. The useful life of this type of equipment is estimated at five years, therefore it is recommended to plan for a replacement cost of approximately $90,000 in five years, or approximately $18,000 per year.

Staff time for ongoing support in Option 2 is estimated at four hours per month for project and ongoing contract management. Onsite access for the vendor supporting the wireless service is required.

Both options have the same costs for equipment purchase, telecommunications circuit installation and monthly fee, and hardware maintenance. The difference in the costs is the amount of State staff time required and the amount of vendor support provided. In Option 2, the vendor has the primary responsibility for ongoing support of the wireless service.[6]

Table 3 below provides a summary of the costs.

Table 3 – Option 2 Cost Summary[7]

Expense Category	**One-Time**	**First Year**	**Annual**
Equipment/Installation	$107,400	$107,400	-
Maintenance/Support	-	$30,000	$35,100
Totals	**-**	**$137,400**	**$35,100**

A discussion of funding this proposal is in the Funding Options section below.

Summary – Option 2

Option 2 also provides a viable solution to providing wireless access at the Capitol, but at a lower cost.

[6] See Appendix E – Option 2 Cost Worksheet for a more detailed cost estimate.
[7] See Appendix F for a vendor's wireless proposal, including proposed access point locations.

Cost Summary

Table 4 below provides a cost comparison of both options.

Table 4 – Options Cost Comparison

Option 1 – State Managed

Expense Category	One-Time	First Year	Annual
Equipment/Installation	$107,400	$107,400	-
Maintenance/Support	-	$30,000	$35,100
Totals	**-**	**$137,400**	**$35,100**

Option 2 – Vendor Managed

Expense Category	One-Time	First Year	Annual
Equipment/Installation	$98,400	$98,400	-
Maintenance/Support	-	$27,100	$32,300
Totals	**-**	**$125,500**	**$32,300**

Recommended Solution – Option 2

The DGS recommends Option 2 to utilize a vendor-managed system to provide wireless service in the public areas of the Capitol by utilizing a competitively-selected vendor. The proposed wireless service includes all of the necessary components for implementation and ongoing support, and provides a comparative cost benefit.

A State agency must be designated to take responsibility for supporting the proposal wireless service, and managing the funding mechanism. Following is a discussion of funding options, as well as brief descriptions of how other government entities are approaching funding of their wireless Internet access projects.

Funding Options and Examples

There are three basic options for funding the implementation and support of wireless access in the State Capitol Building: State Funded, Private Sponsorship, or User-Funded.

State Funded

The DGS currently utilizes the Statewide Surcharge pro-rata mechanism to distribute the Capitol's facility expenses across many State agencies minimizing the impact to any single agency. The expenditure can be made in one fiscal year and is then pro-rated in subsequent fiscal years.

Private Sponsorship

A variety of sponsorship approaches are in use today in multiple communities, including cities, regional areas, and states. Funding may be provided by a private company, shared by multiple companies, or shared with one or more government organizations. Following are examples of funding models in use or planned:

B.1 Mountain View, CA

The City of Mountain View has partnered with Google to provide free wireless access to its community. Google launched the service in August 2006 and is continuing to expand the number of APs on light poles. Some areas do not have light poles and the potential is to have buildings or homes be the 'light pole' in those areas. **Google is fully funding** this effort, including reimbursing the City for electrical usage. The City is providing right of way clearance of using City-owned light poles. For light poles not owned by the City, Google is negotiating with the utility company for right to use.

B.2 Folsom, CA

The City of Folsom is partnering with Intel to establish a WiMAX wireless access network. Most wireless networks are also known as Wi-Fi (wireless fidelity) with signal coverage extending up to 300 feet. WiMAX signal coverage extends up to 30 miles. The intent is to demonstrate WiMAX feasibility. **Joint funding:** Intel will provide all of the equipment and the City will provide operation and maintenance. Some of the expected benefits are to enhance the City's competitiveness and to provide a test bed for new technologies.

B.3 San Francisco, CA

The City of San Francisco recently conducted a competitive bid and awarded the contract to the Earthlink/Google partnership. The Earthlink/Google **partnership** with the City is designed to provide ubiquitous wireless access, with **free wireless access up to 300 Kbps**, affordable residential rates of ~$20/month for 1mbps transmission, and highly competitive rates for City use. This approach minimizes the financial risk to the City.

B.4 Riverside, CA

The City of Riverside is **partnering** with AT&T to provide Citywide Wi-Fi wireless services to cover the city's 80-plus square miles, called SmartRiverside. A **free service of 200-500 Kbps** will be provided that is advertising-supported, as well as a range of ad-free and paid subscriptions, and day passes, with speeds up to 1Mbps. A parallel Wi-Fi service will be provided for municipal and public-safety communications needs. Construction is to begin in early 2007. AT&T is to provide the wireless service and the City will provide right-of-way to light poles, street lights, etc.

B.5 State of Rhode Island

The State of Rhode Island (RI) has a public/private partnership in place to make RI the first state to have a wireless broadband network, border to border. The

wireless network is called RI-WINS which has successfully completed an eight-month pilot. Funding is planned based on a non-profit model with RI providing a loan guarantee, and a goal of self-sustained funding after three years. Potential cost distribution is not currently available.

B.6 State of Georgia
The State of Georgia is supporting several wireless efforts for local ($4 million) and rural ($5 million) communities. **Funding is applied for and granted** for partial funding to communities meeting specified conditions. These networks are intended to be privately-operated with local and state government agencies to be anchor tenants and to provide right-of-way access to street lights, traffic signals, and other infrastructure. The wireless access services are to be available to all users for a reasonable fee.

Charge Users

This option would utilize an online payment mechanism to establish an account with each user to either pre-pay for usage or to charge their usage to their personal or business accounts prior to allowing access. This approach could delay access until a payment mechanism is established, which could be a significant issue in the event of a medical emergency. Furthermore, this approach does not appear to meet the intent of the Governor's Executive Order to promote widespread access to broadband and advanced communication services or to encourage the offering of wireless services in State facilities that are used by the public.

Future Expansion

A future expansion opportunity exists to provide wireless access in the Capitol Park establishing hot spots in multiple areas. The park areas that could provide wireless access hot spots include:

- East steps and immediate grassy areas (from North side walk to South side walk) and almost to the Fish Pond area
- Veterans Memorial and the Rose Garden areas
- Open areas with numerous benches
- Portions of the West steps area
- Fountain area in between the Jesse Unruh and State Library buildings

All of the potential areas mentioned are dependent on receiving the proper authorizations from various jurisdictions, including security, historical considerations, and the Legislature. Future expansion is also tied to an agreed upon funding approach.

A vendor-prepared proposal to implement wireless hot spots in the Capitol Park is included in Appendix G. The proposal includes a layout of the Capitol Park showing placement of existing and proposed mounting poles.

Appendix A – Executive Order

EXECUTIVE ORDER S-23-06
BY THE GOVERNOR OF THE STATE OF CALIFORNIA

Twenty-First Century Government: Expanding Broadband Access and Usage in California (Revised)

WHEREAS deploying broadband networks and advanced communication services throughout California will enable continued improvements in healthcare, public safety, education, and the economy; and

WHEREAS a technology-neutral approach to removing barriers to broadband deployment will encourage lower prices and creation of more consumer choices; and

WHEREAS advanced communication services have become central to the financial health of our State, as these services have increased individual worker productivity and connected California businesses to international markets; and

WHEREAS California is ahead of all other states in dollar value of high-tech exports (approximately $50 billion last year alone);[1] and

WHEREAS California boasts more than twice as many high-tech jobs than any other state, and its average high-tech employee wage ($90,600 in 2004) leads the nation;[2] and

WHEREAS California's Web content, e-commerce, networking, telecommunications, entertainment, broadcasting, and computer software and hardware businesses have placed the State at the forefront of the Internet revolution, but to continue to be a world-class leader, California must adopt next-generation policies and practices that spur on further broadband innovation; and

WHEREAS State action is needed to continue investment in, stimulate adoption of, and remove further barriers to the development of world-class broadband networks; and

WHEREAS it is an executive priority to promote widespread access to, adoption of, and new applications for broadband networks and advanced communication services; and

WHEREAS section 709 of the California Public Utilities Code establishes that it is the State's policy to encourage expanded access to state-of-the-art technologies for rural, inner-city, low-income, and disabled Californians; and

WHEREAS the California Public Utilities Commission (CPUC) issued a report on Broadband Deployment in California that, among other items, (1) specifies how the State can be a leader in promoting the availability and use of broadband services, (2) calls for the creation of

a California Broadband Task Force, (3) endorses increased use of advanced communication services for government operations and public access, and (4) recommends limiting rights-of-way (ROW) fees assessed upon broadband providers; and

WHEREAS the Governor's Cabinet – led by the Business, Transportation and Housing Agency (BTH) – convened seventeen meetings on regional economic vitality, and civic leaders in all of these meetings called for increased broadband deployment; and

WHEREAS in accordance with Executive Order S-5-05, the California Partnership for the San Joaquin Valley has made accelerating the deployment of broadband networks and advanced communication services part of its Work Plan; and

WHEREAS ninety-two percent of California's land contains only fifteen percent of the State's population, and some of the communities in these rural areas lack the multiple telecommunication connections necessary for linking to outside resources during states of emergency, such as catastrophic fires, floods, and earthquakes; and

WHEREAS in accordance with Executive Order S-12-06, broadband networks are needed to create a sustainable eHealth network that connects rural health clinics to other State medical centers; and

WHEREAS the increased State use of broadband networks and advanced communication services will enhance government operations through telemedicine for healthcare, distance learning for education, and better coordination in the areas of public safety.

NOW, THEREFORE, I, ARNOLD SCHWARZENEGGER, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this Order and direct as follows:

1. The State shall create a California Broadband Task Force. This Task Force will bring together public and private stakeholders to remove barriers to broadband access, identify opportunities for increased broadband adoption, and enable the creation and deployment of new advanced communication technologies.

    a. Within thirty days of the date of this Executive Order, the Office of the Governor will name an odd number of members, no less than eleven and no more than twenty-one, to the California Broadband Task Force. These members shall include, but are not limited to, representatives from government entities having a role in infrastructure deployment, information technology, and economic development; representatives from California's private sector technology, telecommunication, and investment industries; and representatives of non-profit organizations. Two of the members shall serve as co-chairs of the California Broadband Task Force. One of these two co-chairs shall be the Secretary of BTH; the other will be selected by the Office of the Governor.

b. Within ninety days of the date of this Executive Order, the California Broadband Task Force shall provide a preliminary report to the Office of the Governor that identifies administrative actions that can result in immediate promotion of broadband access and usage within the State.

c. Within one year of the date of this Executive Order, the California Broadband Task Force shall provide a comprehensive report to the Office of the Governor and Legislature. This report shall make specific recommendations for how California can take advantage of opportunities for and eliminate any related barriers to broadband access and adoption.

d. The California Broadband Task Force shall pay particular attention to how broadband can be used to substantially benefit educational institutions, healthcare institutions, community-based organizations, and governmental institutions. It shall coordinate statewide and regional efforts with public and private stakeholders to obtain and maximize grant and loan funding available for broadband deployment and development projects in the State. Discussions with private sector stakeholders will identify further opportunities for increasing investment in state-of-the-art technologies.

2. BTH shall be the Lead Agency for coordinating implementation of policies and practices launched by Sections 1-7 and 9(a) of this Executive Order. Among other responsibilities, BTH shall manage broadband data collection, in consultation with the CPUC, and develop a baseline and metrics for measuring broadband usage and benefits within the State. BTH shall work with other relevant agencies to provide an annual report to the Office of the Governor and Legislature on types and locations of broadband technologies deployed in the State, as well as public agency practices supporting broadband access, adoption, and applications. The first report shall be due within one year of the date of this Executive Order.

3. To encourage public/private partnerships among broadband stakeholders, BTH shall establish a database that identifies current and prospective projects for deploying broadband. A pilot database shall be available for use by broadband providers, State entities, and municipalities within 120 days of the date of this Executive Order.

4. All agencies, departments, boards, commissions, and offices of the executive branch under my supervisory authority (State Agencies) shall place broadband conduit in their infrastructure projects if there is sufficient demand for the conduit. Conduit placed within infrastructure projects shall be designed to be used by multiple government entities and broadband providers.

5. To promote and encourage broadband access, any charge to wired broadband providers for State ROW usage shall be based on the actual costs incurred by the State. The California Department of Transportation (Caltrans) shall propose a

new rate structure pursuant to this policy within sixty days of the date of this Executive Order.

6. BTH shall lead a statewide effort to streamline ROW permitting. State Agencies granting ROW access shall adopt policies to standardize and expedite the processing of broadband providers' applications, and within 120 days of the date of this Executive Order, State Agencies shall adopt a uniform application for broadband providers seeking ROW use. State Agencies shall provide BTH annual progress reports on their permitting practices, including how long it takes to process applications. The first progress report shall be submitted to BTH within one year of the date of this Executive Order.
7. BTH shall direct development and use of an interagency best practices guide for resolution of ROW disputes between State Agencies and broadband providers. The dispute resolution process shall be designed in a manner that promotes broadband access, adoption, and applications. State Agencies shall create the best practices guide within 180 days of the date of this Executive Order, and State Agencies shall be in compliance with this guide within 180 days of its creation.
8. To accelerate deployment of wireless broadband, the Department of General Services (DGS) shall enter into a contract with one or more companies that will place, construct, and maintain wireless broadband equipment on top of select State Agency buildings. State Agencies agreeing to the contract terms will avoid time-consuming separate negotiations and will enable faster build out of wireless broadband networks. DGS shall make every effort to complete this contract process within 180 days of the date of this Executive Order.
9. State Agencies shall lead by example and take the following actions to make State government more efficient and effective:
    a. In order to plan for future broadband deployment projects, State Agencies shall provide information to BTH that allows the Agency to map existing State infrastructure. These assets include, but are not limited to, the following: ROW owned by the State, ROW subject to State regulation, broadband infrastructure owned by the State, broadband infrastructure leased by the State, State buildings (owned or leased), and investment projects relating to broadband.
    b. DGS and the Department of Technology Services (DTS) shall facilitate State use of streaming video technologies to broadcast public meetings over the Internet, enable remote access to staff training materials, and give widespread emergency notifications. Within 180 days of the date of this Executive Order, DGS shall enter into a contract with one or multiple companies for offering Webcasting services to State Agencies. DTS shall provide technical consulting and training to State Agencies that elect to use Webcasting services.
    c. To enable the use of cost-effective videoconferencing, DGS shall identify State Agencies with significant field office operations and provide them information on how video conferencing may increase Agency efficiency.
    d. DGS shall encourage the offering of wireless Internet access in State facilities that are most used by the public. DGS shall identify State buildings that may

be appropriate for wireless Internet access and provide them information on the benefits of offering this service. In particular, DGS shall pursue deployment of wireless Internet access in the State Capitol Building, which hosts several hundred thousand visitors each year. DGS shall make a proposal to the Legislature and Office of the Governor for wireless access in the Capitol within 180 days of the date of this Executive Order.

e. DGS and DTS shall enable the deployment of Voice over Internet Protocol (VoIP) technologies that meet the business needs of State Agencies and improve quality of service provided to California residents. Within 180 days of the date of this Executive Order, DGS shall enter into a contract with one or multiple companies for offering VoIP services to State Agencies. DTS shall provide technical consulting and training to State Agencies that elect to use this contract.

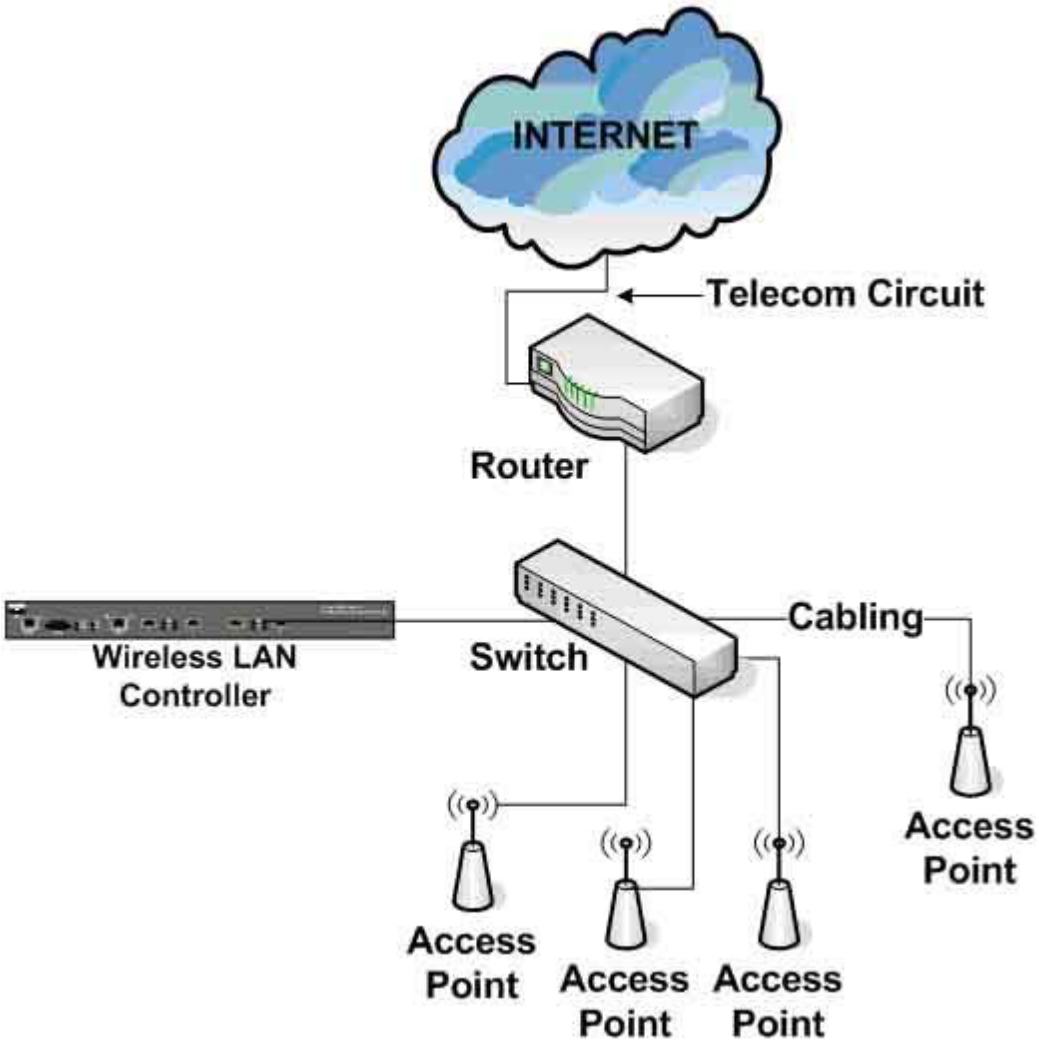
IT IS FURTHER ORDERED that State Agencies shall cooperate in the implementation of this Order. Other entities of State government not under my direct executive authority, including the CPUC, the University of California, the California State University, California Community Colleges, constitutional officers, and legislative and judicial branches are requested to assist in its implementation.

This Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its departments, agencies, or other entities, its officers or employees, or any other person.

IT IS FURTHER ORDERED that soon as hereafter possible, this Order shall be filed with the Office of the Secretary of State and that widespread publicity and notice shall be given to this Order.

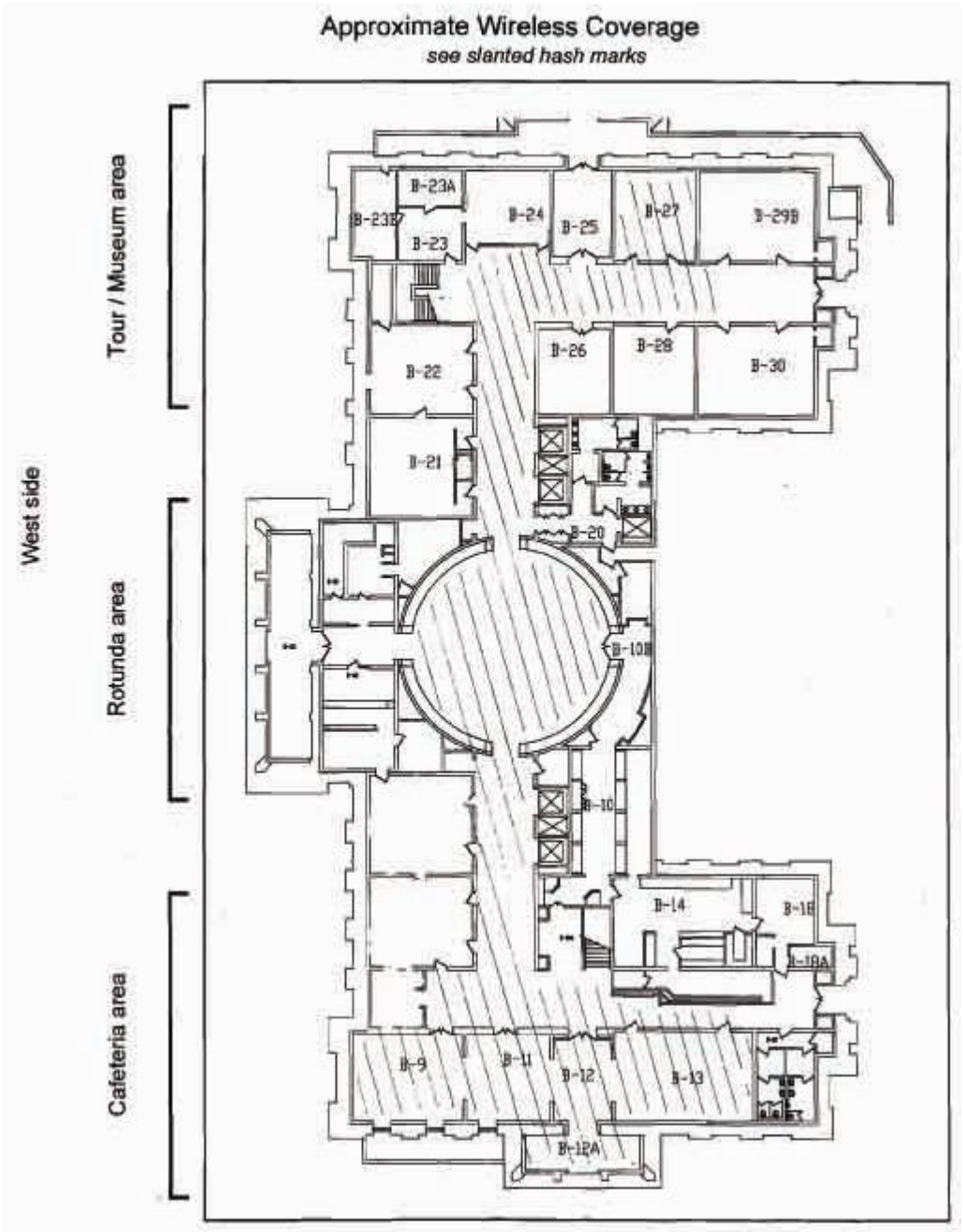
IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 28th day of November 2006.

Appendix B – Typical Wireless Access Diagram



Appendix C – Capitol Basement Space Layout

CAPITOL BASEMENT SPACE LAYOUT



Appendix D – Alternative 1 Cost Worksheet

State Managed – Estimated Costs to Implement Wireless at the Capitol

Equipment and Implementation Included in Cost	**Qty.** (one-time)	**Unit $** (one-time)	**Extended $** (one-time)	**Qty.** (ongoing support/ maint.)	**Unit $/mo.** (ongoing support/ maint.)	**Extended Monthly $** (ongoing support/ maint.)	**TOTAL 1st Year**	**Total 2nd Year**
Access Points, Antennae	8	-	-	-	-	-	-	-
Wireless Lan Controller	2	-	-	-	-	-	-	-
Network Managed Software	2	-	-	-	-	-	-	-
Core Switch	1	-	-	-	-	-	-	-
Router	1	-	-	-	-	-	-	-
Wiring Materials	1	-	-	-	-	-	-	-
Design and Installation	-	-	-	-	-	-	-	-
All proposed hardware, software, wiring, installation, warranties, etc.	1	-	$88,962	-	-	-	-	-
T-1 Circuit Installation	1	$400	$400	-	-	-	-	
Subtotal			**$89,362**					

Service/Support	**Qty.** (one-time)	**Unit $** (one-time)	**Extended $** (one-time)	**Qty.** (ongoing support/ maint.)	**Unit $/mo.** (ongoing support/ maint.)	**Extended Monthly $** (ongoing support/ maint.)	**TOTAL 1st Year**	**Total 2nd Year**
Wireless Hardware Maintenance	-	-	-	1	$429	$429	-	$5,148
Connectivity (T-1 Circuit)	-	-	-	1	$700	$700	$8,400	$8,400
Estimated labor hours for trained Senior Information Systems Analyst	200	$90	$18,000	20	$90	$1,800	$21,600	$21,600
Subtotal			**$18,000**			**$2,929**	**$30,000**	
Total, One-Time			**$107,362**				$107,362	
Total, Support								**$35,148**
TOTALS							**$137,362**	**$35,148**
Rounded							**$137,400**	**$35,100**

Notes:

- Taxes to be added.
- Estimated life-span of equipment is five years. Highly recommended that approximately $18,000 annually be set aside as a replacement strategy to fresh the whole system in the 5th year.

Appendix E – Alternative 2 Cost Worksheet

Vendor Managed – Estimated Costs to Implement Wireless at the Capitol

Equipment and Implementation Included in Cost	**Qty.** (one-time)	**Unit $** (one-time)	**Extended $** (one-time)	**Qty.** (ongoing support/ maint.)	**Unit $/mo.** (ongoing support/ maint.)	**Extended Monthly $** (ongoing support/ maint.)	**TOTAL 1st Year**	**Total 2nd Year**
Access Points, Antennae	8	-	-	-	-	-	-	-
Wireless Lan Controller	2	-	-	-	-	-	-	-
Network Managed Software	2	-	-	-	-	-	-	-
Core Switch	1	-	-	-	-	-	-	-
Router	1	-	-	-	-	-	-	-
Wiring Materials	1	-	-	-	-	-	-	-
Design and Installation	-	-	-	-	-	-	-	-
All proposed hardware, software, wiring, installation, warranties, etc.	1	-	$88,962	-	-	-	-	-
T-1 Circuit Installation	1	$400	$400	-	-	-	-	
Subtotal			**$89,362**					

Service/Support	**Qty.** (one-time)	**Unit $** (one-time)	**Extended $** (one-time)	**Qty.** (ongoing support/ maint.)	**Unit $/mo.** (ongoing support/ maint.)	**Extended Monthly $** (ongoing support/ maint.)	**TOTAL 1st Year**	**Total 2nd Year**
Wireless Hardware Maintenance	-	-	-	1	$429	$429	-	$5,148
Connectivity (T-1 Circuit)	-	-	-	1	$700	$700	$8,400	$8,400
Monthly Vendor Service Fee for Ongoing Wireless Service Support	-	-	-	1	$1,200	$1,200	$14,400	$14,400
Estimated Labor Hours for Project and Contract Management	100	$90	$9,000	4	$90	$360	$4,320	$4,320
Subtotal			**$9,000**				**$27,120**	**$32,268**
Total, One-Time			**$98,362**				$98,362	
Total, Support								**$32,368**
TOTALS							**$125,482**	**$32,368**
Rounded							**$125,500**	**$32,300**

Notes:

- Taxes to be added.
- Estimated life-span of equipment is five years. Highly recommended that approximately $18,000 annually be set aside as a replacement strategy to fresh the whole system in the 5th year.

Appendix F – Vendor Proposal for Capitol Wireless

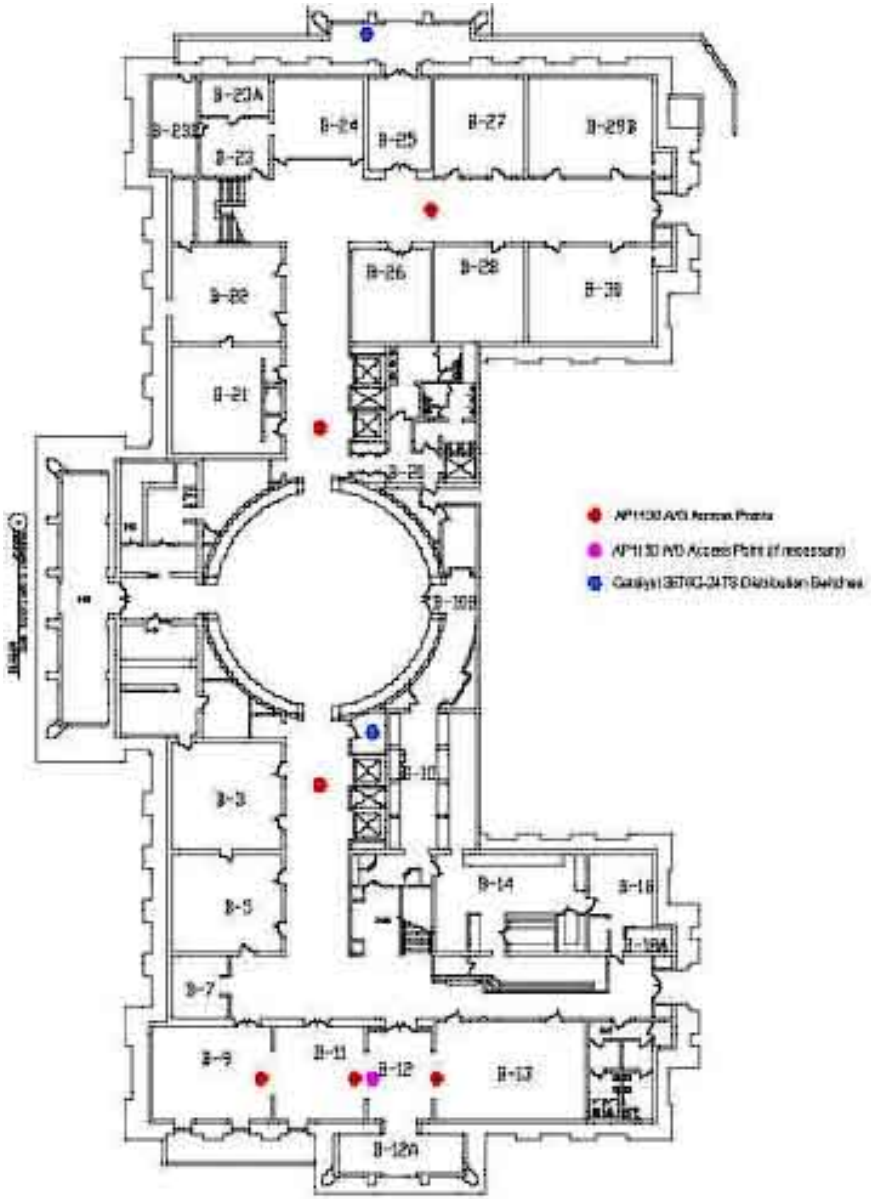
CAPITOL BUILDING – BASEMENT

*Budgetary Management Price

Description	Price	MRC (monthly)*	NRC (1x)*	Total MRC	Total NRC
Capitol Building Access Point	-	$30	$150	$240	$1,200
Capitol Building Distribution Switches	-	$250	$550	$500	$1,100
Capitol Building Core Switch	-	$235	$550	$235	$550
Capitol Building Router	-	$235	$550	$235	$550
Capitol Building Network Management	-	$235	$550	$235	$550
Subtotal	**$55,713.66**	-	-	-	-
Capitol Building Installation Svcs	**$10,350.00**	-	-	-	-
Wiring	**$22,898.501**	-	-	-	-
Total Costs Capitol Building Project (one-time)	**$88,962.16**	$750	$1,800	**$1,210**	3$400

Note: Price does not include sales tax.

Notes:
MRC (monthly): Monthly recurring costs/device
NRC (1x): One-time cost/device – Installation costs
Total MRC: Monthly recurring costs = MRC x no. of devices
Total NRC: One-time costs = NRC x no. of devices – Installation costs


B-23A
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Appendix G – Future Expansion

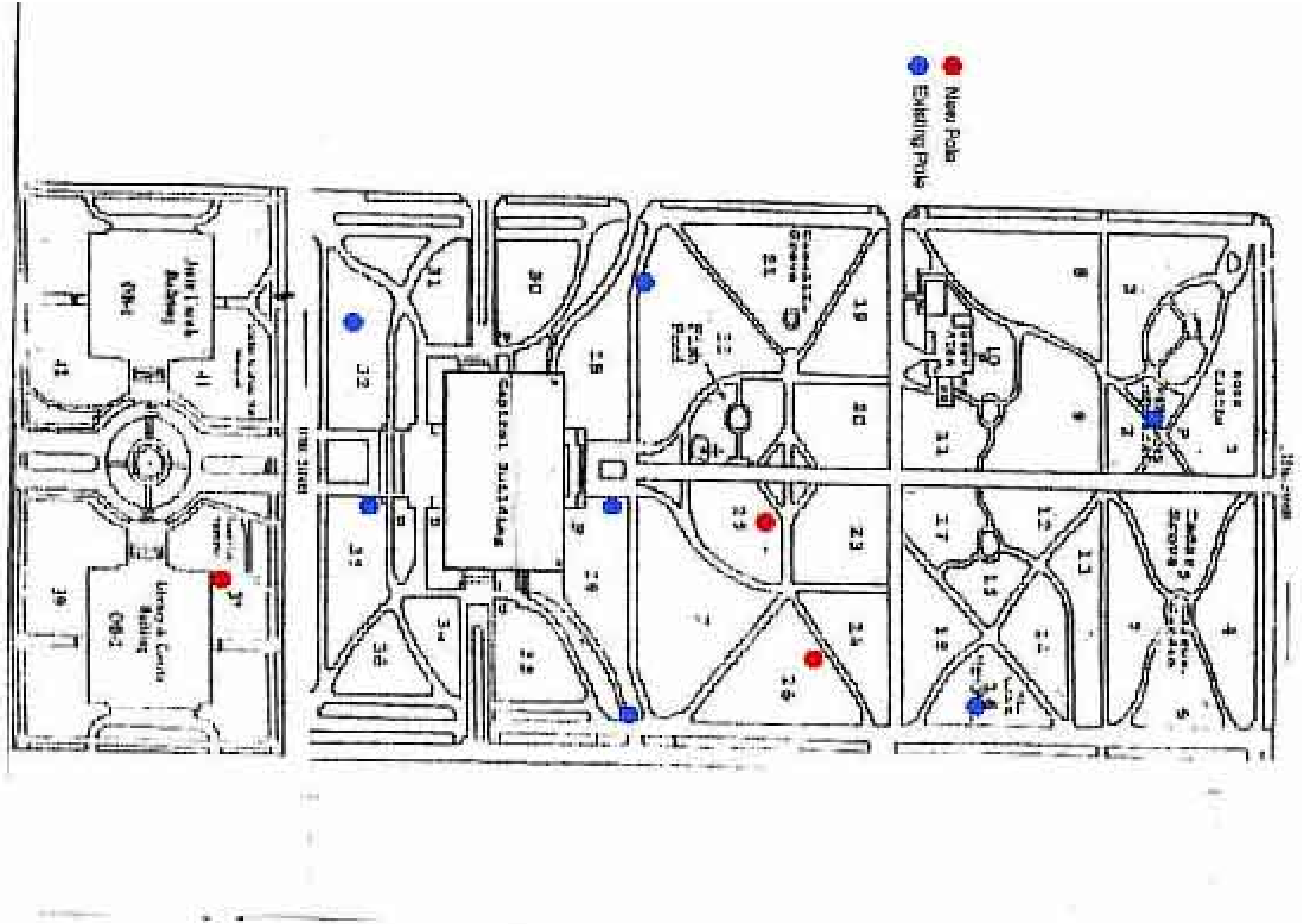
Vendor Proposal for Capitol Park
*Budgetary Management Price

Description	Price	MRC (monthly)*	NRC (1x)*	Total MRC	Total NRC
Capitol Park Access Point	-	$30	$150	$330	$1,650
Capitol Park Media Converters	-	-	-	-	-
Capitol Park Access Point Enclosure	-	-	-	-	-
Capitol park Distribution Switch	-	$235	$550	$235	$550
Subtotal	**$20,806.00**	-	-	-	-
Capitol Building Installation Svcs	**$5,175.00**	-	-	-	-
Cabling & OSP Construction (Project Rate), Outside Plant Construction Materials & Labor	**$206,086.46**	-	-	-	-
Total Costs Capitol Park Project (one-time)	**$232,067.46**	-	-	**-**	-

TOTAL MONTHLY: $565.00

Note: Price does not include sales tax.

Notes:
MRC (monthly): Monthly recurring costs/device
NRC (1x): One-time cost/device – Installation costs
Total MRC: Monthly recurring costs = MRC x no. of devices
Total NRC: One-time costs = NRC x no. of devices – Installation costs


Existing Pole
New Pole