

Vision:

The offices of Page Mill Corridor are transformed into easily accessible workplaces. 8,000 daily Page Mill auto commuters will be attracted to improved, electrified Caltrain service coupled with next-generation “feeder” transit. Revenue from increased Caltrain utilization covers feeder system costs. The system accommodates complex travel needs of the corridor’s affluent technology workers. The new system will provide a higher level of service and convenience than auto travel. A wide variety of restaurants, shopping, professional services, workouts, and errands will be rapidly served by the system. Feeder stations will be located at the doorstep of major office buildings. Unused parking spaces will be reclaimed for attractive, affordable metropolitan housing units with first floor retail. Housing will be prioritized for Page Mill employees, professors, and teachers. Housing design will improve upon some of the most vital, livable neighborhoods in San Francisco. Bicycle and pedestrian pathways will further enhance the corridor. From an environmental standpoint, this proposal adds new technology to the world’s best practices for transit centered smart growth, improving the economics of congestion and emissions reduction. Page Mill corridor property values will increase. Page Mill corporations will enjoy a competitive advantage in attracting and retaining workers, saving \$11.5MM per year for every 1% reduction in employee turnover costs.

A “design competition,” which is a formal process where proposals are solicited and shepherded through open, public review will be held to determine the best feeder technology which meets project requirements. The competition process will be based upon a recent Cincinnati elevated rail competition, involve affected constituents from the outset, and be strengthened by constituent input.

The competition has 3 objectives:

- Eliminate 8,000+ “cold start” auto trips to/from Page Mill Corridor every day
- Provide housing for 900+ Corridor employees, teachers, and professors.
- Make Page Mill Corridor a more desirable place to work in order to increase property values and employee retention.

Outline:

1. Bay Area favors smart growth
2. **Objectives:** eliminate auto trips, increase housing
3. The **triad** must take ownership
4. Caltrain + Page Mill = **opportunity**
5. Commuter **psychology**
6. “**Lighter rail**” feeder technology
7. The lighter rail Page Mill public/private **implementation**
8. The **affordable housing** solution
9. **Parking** rationalization
10. **Constituent** benefits
11. Future **expansion**
12. Lighter rail **objections**
13. Thanks to these folks
14. Bibliography
15. Appendix A: **Design Competition**
16. Appendix B: Policy Theorems

Section 1: Bay Area favors smart growth

ABAG (Association of Bay Area Governments), MTC (Metropolitan Transportation Commission), Bay Area Air Quality Management District, Silicon Valley Manufacturing Group (175 companies), U.S. Environmental Protection Agency, BATLUC (Bay Area Transportation & Land Use Coalition), and countless other organizations support **Smart Growth** for the Bay Area with goals to:

- Reduce traffic
- Preserve open space
- Improve air quality
- Accommodate projected population growth of **1.1MM people** [MTC]
- Solve the housing affordability crisis (current shortfall is **134K units**)

The Bay Area is choking on growth. Unchecked, this will stop economic growth. Peak hour congestion will rise **249%** from 1990 to 2020 [MTC]. Hours of **traffic delay** per day:

	1994	1996
Santa Clara County	8,800	20,500
San Mateo County	1,400	7,700

Europe, Canada, and Asia are making great strides in shifting auto trips to transit and controlling sprawl. In contrast, the U.S. is losing ground in congestion reduction technology and, in consequence, is technologically forced to stall Kyoto emissions reductions. The industries associated with these technologies comprise a substantial portion of our GDP. It is imperative for the U.S. to increase **competitiveness**.

The consensus from 6 studies is that we have now consumed ½ of the world’s total oil reserves [N&K]. Year 2030 retail gasoline pricing has been projected at between \$10 and \$20/gallon (in today’s dollars). Whether or not this dreary scenario will come true this soon is a subject for lively debate, but it does indicate an early stages investment opportunity for technology that works well in a petroleum-scarce world.

CURRENT GENERATION OFFICE PARKS AND TRANSIT ARE FAILING

Traditional corporate campuses have too much flat parking space. They isolate workers from the world outside of the campus. They promote auto dependence, which is counterproductive given the existing level of traffic congestion. The Bay Area is blessed with terrific transit arteries including Caltrain, BART, and VTA Light Rail. Unless folks live right by a station, they are mostly stranded from these systems. The network of VTA and SamTrans bus feeder routes is extensive and puts most residences within easy walking distance of a bus stop which takes them to commuter rail. However, bus commutes are not a realistic alternative to auto commuting for most people because the level of convenience and flexibility is far, far too low. In Santa Clara County, as we’ve seen auto commuting experience degrade over the last 6 years, we’ve correspondingly seeing the share of transit commutes drop from 6.8% in 1994 to 4.0% in 2000, and the share of single occupancy vehicle commutes rise from 71.3% to 77.2%. [RIDES, pg 74]

Section 2: Objectives: eliminate auto trips, increase housing

- Eliminate 8,000+ “cold start” auto trips to/from Page Mill Corridor every day
- Provide housing for 900+ Corridor employees, Caltrain commuters, and Palo Alto teachers, public workers, and seniors.
- Make Page Mill Corridor a more desirable place to work in order to increase property values and employee retention.

Section 3: The triad must take ownership

Cities21 is providing this document as a preliminary concept. For the proposal to advance, The triad (consisting of Palo Alto, Stanford, and SVMG) must take ownership and flesh out further details. The triad must convince themselves that a substantial net financial benefit is provided to each party. We believe the numbers are quite dramatic. No local, state, or federal government funding will be provided for the project until this triple buy-in occurs.

The triad is where power, funding, and decision making will emanate from. Many applicable nonprofits, including Cities21, should contribute to the evolution and implementation of the proposal. The main contribution of Cities21 is in setting the expectations very high for price/performance and service quality as the proposal moves forward. Cities21 would like to help the triad as much as possible, but it is up to the triad to define the relationship.

This proposal is comprehensive and multi-disciplinary. It contains about 24 main ideas. It is unrealistic to expect that people will enthusiastically support all 24 ideas. If people agree with the objectives set in Section 2 (the easy

part) then we ask that they become involved in the evolution of the proposal and contribute creative solutions to issues. If you dismiss this proposal because of one or two of the main ideas, then you may be faced with much more draconian solutions to congestion and housing problems 10 years from now. The stakes are high.

The corridor solution must continue to evolve even after it begins operation. Robert Cervero points out that the difference between mediocre and great transit solutions lies in very subtle details. Constituent involvement is crucial both in the design of the system as well as in the ongoing operation of the system.

Section 4: Caltrain + Page Mill + politics = **opportunity**

Caltrain is being transformed into a “Baby Bullet” train. Ridership has steadily increased to 30,000 trips per day. Capacity will expand to a maximum level of 158 trains per day with 10 cars per train and 120 passengers per car, for a total capacity of over 150,000 trips/day. 80% of projected Caltrain capacity is available to be filled. Measure A improves Caltrain service levels via “Quad section” scheduling & “station bypass.” These reduce SF-SJ trip duration from 90 minutes to 45 minutes (try that in a car at 8AM!). At peak times, a train comes every 5 minutes. The system will be electrified which makes the system quieter. This allows the trains to serve late evening returning workaholics while not waking up the neighbors by the tracks. Electrification lowers emissions, increases acceleration, and lowers operating costs. The recent CH2M Hill paper on Caltrain corridor sprawl identified the major impediment to reducing private car dependency: providing connections to Caltrain [CH2M Hill]

Page Mill Corridor

This prestigious 3.0 square mile technology park is bordered by Alma, Barron Park, 280, and College Terrace. There are 23,000 workers, 160 companies, and 165 buildings. Office vacancy is low, rents are high. The corridor hosts a number of powerful socially responsible companies. Stanford owns the land. Leases typically run 30 to 60 years. There are a number of landscaping requirements which add substantially to the aesthetics. Many of the buildings were built during the time when the worst of auto-centered sprawling campus design was in vogue. Some of the old buildings will be torn down and replaced by better designs when leases expire.

The Page Mill Corridor represents one of the largest and wealthiest contiguous office parks in the Bay Area. The corridor’s close proximity to Caltrain makes it the best candidate for an advanced feeder transit system in the Bay Area.

Political Readiness

- Pressure will continue to be exerted on Stanford to preserve open space & the environment. Witness the recent efforts by Committee for Green Foothills and Joe Simitian in the Stanford master planning process. This proposal puts Stanford at the forefront of the movement.
- 101 and 280 commute has deteriorated dramatically in the past 2 years
- Traffic congestion is the number 1 local issue. Affordable housing is the number 2 local issue.
- Palo Alto residents are very active on local issues. Witness the recent impassioned arguments against Embarcadero traffic circles. The corridor itself is devoid of residents, which should bring in citizens concerned with the impact on Palo Alto as a whole, and temper the response from Palo Altans with narrower neighborhood-centric views.
- Recent strong citizen input aimed at preserving first floor retail in the University and California areas indicates popular support for first floor retail in the corridor. Recent intervention by College Terrace and Barron Park neighborhoods to force Landmark Theatres to keep Palo Alto Square movie houses open shows further predisposition for convenient, quality retail.
- The companies in the corridor have lots of money
- California has a projected budget surplus of \$10BB over next 5 years. See Chronicle, 11/16/00. There are a number of additional new government funding sources for smart growth and congestion reduction.

Section 5: Commuter **psychology**

It is crucial to address the specific transit needs of the affluent technologists in the corridor to generate sufficient ridership. Time is money for these technologists, so travel time via Caltrain/feeder must be competitive with auto travel. Technologists are stressed out to the point where waiting for transit, especially with some uncertainty about the schedule, magnifies stress. The cushy, cocoon-like driving experience in a fine German sedan provides many pleasant subtleties such as status, leather seat smell, lumbar adjustment, stereo system quality, hands free cell

phone, and large storage space for important items which are unpredictably needed. It is that much harder to pull a person out of a luxury car and put them onto transit. Soccer mom technologists have the most complex transit needs of any group in the corridor.

Commuter objections to transit may be categorized as follows:

COMMUTE TRIP CONVENIENCE/FLEXIBILITY

- Travel time on transit is greater than via car
- Transit transfers are an inconvenience. Waiting time where the commuter is not progressing towards destination seems psychologically 3X slower than regular time. Service reliability is not such that commuter can transfer without worry of delay – this is a stress inducer.
- Transit doesn't provide sufficient convenience and flexibility
- Work hours / work schedule make transit impossible. Must be able to come and go at will.
- Transit is unreliable

NON COMMUTE TRIP

- Affluent technologists take many non-commute trips originating from work at different times of day. Transit absolutely must match total auto trip time (from office front door, walking to parking lot, driving to destination parking lot, walking to destination) for these trips.
- Many types of trips must be served: get lunch, workout at gym, walk at the Dish, dry cleaner, hardware store, grocery shopping, clothes shopping, gift shopping, banking, professional services (legal, medical, dental, financial advisor), business meetings, transport kids to activities, and child care.
- Need to be able to get home fast in an emergency
- Some cars serve as security blankets. Their trunks contain many important items that are unpredictably needed. It is inconvenient or impossible to carry all of these items around on transit. Note that objections like these typically do not come out of statistical transit surveys, but may actually touch closer to the heart of psychological resistance to transit.

CABIN EXPERIENCE

- Comfort & relaxation. Jobs are fast paced and stress-filled, the solitary ride home listening to music and replaying the day in one's mind is part of "decompressing" from a long day. The separation from the rest of the world provided by the car cabin is a little cocoon of sanity.
- Need privacy for work/social cell phoning. Reception while taking transit is worse than by car. Transit cabin environment is noisier than luxury sound deafened auto. Economic strata differences on transit may be starkly highlighted by the use of cell phones.
- Safety / economic strata issues
- Affluent technologists are often uncomfortable around strangers
- Bus fumes are objectionable

MISCELLANEOUS

- Cultural/habits – commuters haven't been trained to ride transit
- Perceived cost - Transit seems to be very expensive and auto seems to be very cheap

There are still further complications with affluent technologist commuter behavior:

- There is the concept of "time stamp." Competitive workers strive to show proof of being the first worker to start and the last worker to stop every day. This disease is rampant in the Valley. The CEO of a major consumer web site sends e-mail every night at 1AM. The cultural message from the top down is often that it is macho to sacrifice your personal life and drive yourself to the limits of endurance in order to maximize IPO price. Cell phone conversations while driving are notoriously unproductive because the driver is distracted, forgetful, cannot refer to documents and cannot jot down notes. However, the perceived cultural benefit of leaving a voice mail at 7:30AM while driving to work rather than making the call at 8:45 from work are large. The 7:30AM time stamp creates the illusion that the worker is productive during the time from 7:30AM til they get to the office. E-mails and voice mails have about the same impact as far as time stamping is concerned. So valley workers go so far as to change the time on their computer to make it appear that their e-mails were sent at even more extreme times of day. The Caltrain / feeder commute must accommodate this need for time stamping. Face time in the office has higher value than e-mail or voice mail time stamps. Being seen as the first one in or the last to leave is important. Caltrain feeder commute must accommodate the need to arrive early and leave late.

==== solutions for some objections ====

- Caltrain + Feeder must provide a very high frequency and quality of service
- Feeder must conveniently serve the non commute trips (gym, day care, dry cleaners, etc.). Likewise, the first floor retail of the new affordable housing must serve these trip needs.
- Workers desire to come and go to work at any time can be alleviated by workers having home offices with high speed internet connects. A home office allows workers to come and go in synchronization with the improved Caltrain schedule and then continue to be a workaholic at home.
- The rest of the Bay Area obviously needs better feeder service to Caltrain. A good starting point is Robert Cervero's "smart dispatched" parabus/minibus research. This is quite viable for our sacred Palo Alto residential neighborhoods.
- Bay Area's terrific free RIDES service provides personal analysis of transit alternatives for commuters, locating the closest and most convenient transit alternatives. The Corridor implementation will take great advantage of this service to help provide individuals with the best transit information. The corridor implementation may need to provide funding to RIDES. In addition, RIDES or a new organization will provide "customer services" both promoting Caltrain based commutes and taking feedback to enhance the corridor implementation as it evolves. See <http://www.rides.org/>. Ongoing PR, outreach, and web site updating are part of this effort.
- A number of items improve commute pleasure and productivity: personal consumer electronics, electric scooters, shared public bicycles, etc.
- Instant transit info should be made available via PDA, web, & cell phone. Precise instructions for when to get on a feeder to catch the next Caltrain are needed.
- Caltrain + feeder have trouble serving business meeting trips and emergencies. Car sharing and dedicated cars at stations (station cars) provide an answer.
- To combat entrenched anti-transit habits, incentives such as a "free trial month" may need to be provided to get folks to even try transit.
- Cell phone usage on Caltrain is problematic. A) cell phone service providers need to work to provide consistently strong signal strength along the track, B) higher bandwidth cellular modems are currently under development, C) Higher priced seating should be provided in a few cars to provide cell "phone booths" where commuters can close a sound deafening curtain.

Section 6: "Lighter rail" feeder technology

"Lighter" rail: Somewhat like the Disneyland monorail. Whisper quiet automated electric rail with many small cabs. Station to station transit bypasses intermediate stations. Stations are "off-network" so downtime for load/unload does not cause cabs behind to stop. Rail-based trips using CalBulletTrain and lighter rail will be **significantly faster** than peak commute auto. Stations may be situated on the **second floor** of office buildings. Lighter rail's small footprint allows an order of magnitude improvement over traditional heavy and light rail construction cost/schedule, eliminates **right of way** acquisition problems, and minimizes environmental impact. Lighter rail allows **lunchtime trips** for food and errand-running – no other transit system provides this. Taxi2000 won the 1998 Cincinnati / Northern Kentucky Forward Quest Design Competition, so serves as a good starting point. Numerous systems are worthy of consideration including:

- Taxi2000 (<http://www.taxi2000.com/>, <http://www.skyloop.org/>),
- ULTRA (UK): <http://atg.fen.bris.ac.uk/ultra.html>
- VAL system (<http://www.advancedtransit.org/val.htm>) (profitable!)
- CyberTran (<http://www.cybertran.com/>),
- Fresno FAST (<http://userzweb.lightspeed.net/~abarbour/fast.html>).
- Cabintaxi: <http://faculty.washington.edu/~jbs/itrans/cabin.htm>
- Jakes Associates Las Vegas people mover: <http://www.jakesassociates.com/welcome.htm>
- RUF: Rapid, Urban, Flexible electric vehicles on/off monorail, Denmark: <http://faculty.washington.edu/jbs/itrans/ruf1.htm>

Taxi2000:



Optimum Configuration

- 3' x 3'
- No Moving Switch Parts
- All Weather
- Safe
- Smooth Ride
- Good Appearance
- Durable
- Modular
- Light Weight
- Accessible for Maintenance

	cost/rider
BART	\$100
VTA	\$22
Bus	\$5
T2000	\$5

Line capacity is two vehicles per second at 30 MPH, which is 7200 Vehicles per hour. Assuming 30% of vehicles are empty and being re-distributed to other stations, max rush hour capacity with 3 people per cab is 15,120 people per hour. The maximum instantaneous number of cabs on a mile of track is 100. Line speed can go up to 80 MPH for sections of straight track, but we are assuming slower speed. Feeder station capacity per hour scales from 450 vehicles per hour to 1500 vehicles per hour, depending upon the number of berths.

Pillars are 16' high, 22" in diameter, and set 60' apart. A rail cross section is 3' x 3'.

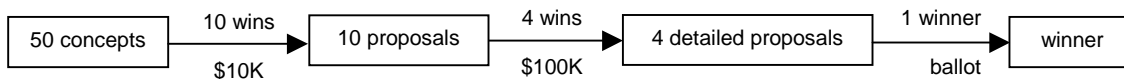
Cabs hold 3 adults fitting on a 50" bench with a combined weight of up to 650 pounds. By folding the bench up, a wheelchair fits sideways.

VAL:

230,000 riders/day, 285 personnel, 36 miles of track, profitable, electric cars, driverless, 5 minute headways, 0 accidents in 20 years, precision braking, braking system generates power, narrow gauge for smaller footprint, security cameras at stations. System has 7 other "wins."

Section 7: The lighter rail Page Mill public/private implementation

A highly publicized **design competition** will be held to select the best technology. Public/private constituent groups will be fairly represented in a streamlined organization for proposal solicitation and judging. The Request for Proposal will specify Taxi 2000 levels of service and cost effectiveness – the bar will be set high to meet the needs of affluent technologists. The judging organization will provide technical assistance for applicants as they are creating proposals. The review process will be open and public. The competition will have a tiered structure. 10 qualifiers will be awarded \$10,000 to take their winning concept proposal to a higher level of detail. From there, 4 finalists will be awarded \$100,000 to complete their proposal. More details on the design competition may be found in Appendix A.



The competition winner must provide a solution that bests the sample Taxi2000 Example Implementation provided below. We expect that a number of entrants as well as Taxi2000 will better this example.

Taxi2000 Example Implementation:

The implementation has a 5 mile loop with 18 stations covering California Avenue Caltrain station to Hillview/Arastadero intersection. A "shortcut" mini loop between neighboring HP campuses will be built to shorten trip duration for many trips. 500 three-person cabs will provide 10,000 riders/hour maximum capacity. 4,000 riders easily transported between 8AM and 9AM (equivalent to 2 lanes of 101 traffic from 8AM to 9AM). Average waiting time for a cab at a station: less than 2 minutes. Average trip duration: 4 minutes.

Initially, a 2 mile loop from CA Avenue to HP will be implemented with 5 stations. Once performance and quality measures have been achieved then the full loop will be built with the full number of stations. The CA Avenue

station will be built to accommodate 30 feeder stations, on the assumption that corridor corporations will add more stations over time.

To facilitate pedestrian movement from station to office, some campus fencing will be removed. Pathways serving pedestrians, bicycles, scooters, and joggers will be placed. Slower 8 foot wide two-way walkways will be separated from faster 8 foot wide two-way "wheelways." A pathway over El Camino to connect Bank of America with Sherman Avenue will be considered (funded by DOT). Corporate security will move inside of buildings and public access will be granted for all other areas.

Project Costs

\$10MM for technology development including setting up cab assembly line

\$3MM for Environmental Impact Report and Major Investment Study preparation

\$50MM for elevated rail, pillars, 500 cabs, high capacity main station, maintenance station, control system

\$8.5MM total for 17 metal feeder stations (16' off the ground, wheelchair access, rain cover)

\$3MM per year operating costs. Includes ongoing marketing and "customer support"

\$1MM for fare collection integration with Caltrain

\$4MM bike/pedestrian path construction, landscaping, fence removal

Taxi 2000 numbers have been raised significantly from the 1998 Cincinnati / Northern Kentucky Study to cover higher Bay Area construction costs.

Projected Revenue

The Corridor proposal produces 8,000 new transit riders per day. 90% of these riders will also take Caltrain. Their Caltrain trips will cover from 1 to 5 Caltrain zones, for an average monthly revenue of \$71 using monthly pass fares. The new incremental revenue to Caltrain (increased Caltrain capacity is already funded by Measure A) is \$6.16MM/year. Additional revenue will come from feeder fares. Caltrain monthly passes should provide 2 free feeder system trips per day.

An interesting financial calculation to consider is the overall total cost of a daily Santa Clara County auto commute. Business travel mileage is expensed at \$0.41 per mile, so let's use this as our cost of amortized auto purchase, fuel, maintenance, and insurance. It can be argued that the mix of cars driven by affluent technology workers has a higher cost per mile, but let's stay with \$0.41. The average daily round trip Santa Clara County commute distance is 28.4 miles [RIDES pg 21]. Mileage * cost = \$11.64. Next let's add \$5 per day for the cost of a flat parking space at work. This cost is currently paid for by employers (see section 9). There are a number of economic externalities created by airborne particulates, greenhouse gas emissions, and polluted water running into the Bay. Let's not charge for this, understanding that these externalities will probably have a well quantified cost within 10 years. There are further externalities such as A) road maintenance caused by wear and tear from your vehicle, and B) work productivity lost in traffic jams rather than zipping thru your workload on Caltrain. Let's not charge for this either. It is too hard to quantify the cost of being forced to eat corporate campus cafeteria food day after day rather than being able to grab a quick bite on California Avenue without hassling over parking, so we will not add any cost here. So the daily overall cost of an auto commute is \$16.64. The point of this exercise is that there is vast reservoir of auto commute costs which can begin to be eliminated.

Funding and ownership

Public sector ownership by an entity such as CalTrans or VTA with private sector building, operating, and maintaining the system is the most promising model. Technology development costs should be paid by the private sector because the competition winner will be able to leverage this development across future projects. A pooled corridor company venture capital fund to pay for this development is the most promising model. Ownership by corridor companies will ensure terrific service. The EIR should be funded from DOT. [See Funding] Of the \$50MM construction costs, it may be safe to assume that 50% is funded by state and federal money. The remainder should be financed by long term debt. Feeder station design will be simple and inexpensive. Stations provide rain shelter and a switchback ramp rising to 16 feet. Companies desiring stations adjacent to their front door will fund the construction of their station. Stanford Management Company, the landlord, should also play a role. Private funding of stations has been used in Vancouver. Employees at companies without front door access will have to walk a maximum of 1/3 mile from a station. Stations may be inexpensively added to the route network over time. Long term debt service + annual operating costs are profitably covered by projected revenue. Depending on how NPV calculations are made, the corridor venture fund could fund the project and break even within 10 years. No other transit project in the U.S. covers operating costs, let alone a portion of capital costs. Competition proposals that take on larger financial risk should be looked on more favorably. Caltrain fare integration is part of a larger

problem and should be funded with government money. Bike/pedestrian path construction should be covered by DOT funds.

A summary of funding advice provided by MTC and Senator Feinstein's office:

1. The Page Mill Proposal needs a local government official such as Palo Alto's Mayor Sandy Eakins (or possibly higher up the political ladder) to champion the funding process. No public funding may be obtained without a champion.
2. All of the key funding decision makers (see some of the numbered items immediately below) should be brought together by the local government champion.
3. The State of CA was experiencing record budget surpluses, but the energy crisis may take most of this money. If money is available, this is the fastest source of money.
4. The San Jose BART extension consumes most transit money until 2036 when the Santa Clara County Measure A sales tax expires. However, BART projects generally run significantly over budget, so BART may drain transit money past 2036.
5. Money for smart growth initiatives, affordable housing, bike/pedestrian improvements may be more readily available than transit funding. For instance, MTC decides on HIP (Housing Incentive Program) funding for smart growth which can provide \$2,000 per compact, affordable bedroom. HIP also has smaller planning grants of \$20K - \$50K and bike/pedestrian money.
6. Palo Alto has little money for the Page Mill project. Palo Alto is planning major infrastructure expenditures in the next few years. Allocating money for Page Mill would take money away from another project.
7. Federal money typically requires 50% or more contribution from local private/public sources.
8. Most federal \$ gets signed into law in the fall of each year.
9. HUD Economic Development Initiative \$ probably apply to the Corridor proposal. Senator Feinstein and House Representative Nancy Pelosi, 8th District (San Francisco) are key decision makers.
10. The Annual Transportation Appropriations bill earmarks road projects and some basic research. Senator Feinstein and House Representative Pelosi are key decision makers.
11. Federal TEA-21 money will have a major re-examination in 2 to 3 years. There is also some chance of a minor "mid-course" correction in funding allocation this year. Senator Boxer and House Representative Ellen Tauscher, 10th District (East Bay) are key decision makers. A request for TEA-21 money is an attempt to take money from San Jose BART, so is unlikely.
12. STIP is the State Transportation Improvements Program. This a large pot of money, but hard to get.
13. House Representative Anna Eshoo, 14th District (Silicon Valley) will be a key player in all funding.
14. Transportation Secretary Mineta could have a big impact on the project. The Mineta Transportation Institute may have some money for research which could apply to Page Mill.
15. Santa Clara County and MTC funding requires selling not only Palo Alto, but also cross selling the other Santa Clara County cities on the fact that advanced feeder technology scales well to other Santa Clara County cities.
16. The Air Quality Management District funds some of the shuttle buses in the corridor. Advanced feeder transit will eliminate the need for these shuttles. Additional Air Quality improvement funding may be available.

Private sector investment cost will be more than offset by increased property values. RF&P Development Corporation offered to underwrite the full cost of building a new Washington DC/Virginia Metrorail station for its Potomac Yard development. Many parts of Japan also use private sector financing for station costs. [Cons]

Section 8: The **affordable housing** solution

3 or more "metropolitan villages" should be added. Each village will cover about 3 acres (200' x 600' for example) and provide 300 housing units in compact, 5 story mixed use form. The largest parking lots in the corridor are the main targets for this development. When older campus buildings are demolished and replaced, mixed use should also be added.

Livability rivals the bustling "Cow Hollow" stretch of San Francisco's Union Street between Van Ness and Scott. Cow Hollow is a trendy, upscale tourist destination that services a dense residential community. Car ownership on Union Street is very low for even San Francisco standards. [Union Street]

The metropolitan village concept includes an attractive public square enclosed by buildings. The design follows "New Urbanist" principles. The square is a lively auto-free community gathering center with seating, outdoor dining, fountains, shade, public art, street vendors, and performers. The squares indulge children. Community "block parties" and other events are held regularly. Walking exits from the square are small to reinforce the sense that the square is a "destination." Architectural style is compelling. Pavement in the square is treated as an art form.

Balconies, terraces, and roof-top gardens enhance the village. Aesthetics rival the best of older European cities, with a more modern interpretation. Squares also provide a high level of safety because of constant “eyes on the street.”

The housing form is compact. 400 square feet for some single units, 800 square feet for some double occupancy units, possibly following the attractive and cost-effective designs of Donald MacDonald. Density per acre is as follows: 100 housing units, 15 retail units providing 45 jobs, 5 professional services units providing 10 jobs. First floor retail may include dining, coffee, hair salon, spa, dry cleaner, pharmacy, deli, florist, book store, ATM, and shoe repair. On Union Street, a 5,000 square foot mini grocery is exceptionally profitable. A delivery service will serve all the establishments in the 3 villages. “Big box” superstores do not fit; however, some of these chains are finding that smaller neighborhood stores make sense. Retail will complement the California Avenue commercial zone, which is easily reachable via feeder transit. Future feeder system expansion will connect to upscale clothing stores and shopping at Stanford Shopping Center. Rather than re-allocating retail revenue from Stanford Shopping Center and California Avenue to metropolitan villages, the Corridor Proposal increases revenue by capturing additional \$ from commuters while simultaneously reducing the pressure for new parking. Second floor professional services include financial planning, medical, dental, architectural, and legal services.

The metropolitan village is very attractive to disabled persons. The public square and first floor retail convenience eliminate barriers that disabled persons face in the rest of the city.

Underground parking will be provided. This parking should be funded by DOT. Parking fees will follow the parking disincentive scheme in Section 9 (\$5 per day). Automated tightly-stacked European parking machines might be utilized for most efficient use of underground space. Car sharing will be facilitated. Residents will be screened to ensure they have auto-free commutes. Housing will be prioritized to meet the greatest community needs: Page Mill employees, professors, and teachers.

Robert Cervero explains that combined transit/development investments in Washington DC and Atlanta benefited the private sector: “Average office rents near stations rose with systemwide ridership; joint development projects added more than three dollars per gross square foot to annual office rents. Office vacancy rates were lower, average building densities higher, and shares of regional growth larger in station areas with joint development projects. ... Combining transit investments with private real estate projects appears to strengthen these effects.”

An important benefit of transit centered development is that it helps foster a sense of community. The loss of community is a hot topic and the subject of a number of recent books and articles [See Bowling]. Community provides individuals with group identification that increases happiness and longevity. Community self-polices behavior through implicit threats of social sanctions. Intimate neighborhoods and transit encourage chance meetings and conversation. The automobile undermines community by isolating people from home to office. [Conservative] Empty nesters and young singles are trending towards urban environments and away from the isolation of suburbia.

Section 9: **Parking** rationalization

The cost and availability of employer funded free parking heavily influences both transit use and ridesharing. Free parking is considered a right of Silicon Valley employees. Free parking strongly encourages driving. Making the true costs of driving visible to the driver leads to more rational choices.

The solution: Transportation allowance

- Employer provides \$5 per day transportation allowance to employees, a variation on the popular Eco Pass system
- Single occupant vehicles pay \$5 per day to park, so there is no net impact on the auto commuter
- Carpools pay nothing
- Allowance may be used for either parking or public transit or carpooling

Auto trip reduction from such programs typically runs from 15% to 50%. A high reduction is expected because of the high quality alternative that is being provided. It may not be obvious, but employers/developers save money by eliminating auto trips. The savings has been estimated at up to \$8 per day per parking space saved. Auto trip

reduction allows more efficient site utilization, avoids site expansion, reduces maintenance costs, reduces leasing costs, and reduces parking construction costs. [Parking]

Section 10: **Constituent** benefits

Page Mill Corridor Companies: Increased Page Mill vitality, corridor housing, and improved commute experience helps attract and retain employees. Project participation increases perception as socially responsible companies. Transportation allowance is a break-even financial proposition. Traditional single occupancy vehicle commuters will also benefit from this system, because fewer cars will be on the road.

A 1% reduction in employee turnover yields cost savings of \$11.5MM per year to corridor companies. By becoming a more desirable location to work with a better commute, employee turnover is reduced. The cost savings from reduced employee turnover is large:

- There are 23,000 workers in the corridor
- Annual employee turnover is between 10% and 20%
- Our assumed cost of a single employee turnover is \$50,000. This is lower than most HR consulting firms claim.
- A 1% reduction in turnover saves 230 turnovers for a total cost savings of $230 * \$50,000 = \11.5MM per year.

Employee replacement costs include:

- Recruiting Fees or Salaried Recruiter
- Staff time spent interviewing new candidates
- Advertising the position
- Compensation Package enhancements
- Relocation
- Downtime when position is vacant
- Overtime/inefficiency of other staff
- New employee training & trainer's time
- New employee inefficiencies

Bay Area employees are placing more and more emphasis on ease of commute and are now proactively seeking companies based on commute experience. We feel a 1% turnover reduction as a result of the corridor proposal is quite conservative.

For further details, please see:

<http://www.hrdynamics-inc.com/employers.html>

http://www.advantagehiring.com/newsletter/n99Q4_1.htm

http://www.weda.org/topics_turnover-costs.html

Some of these sites argue that the cost of replacing a highly skilled technology worker is 2X annual salary.

Stanford: Increased offices rates; ability to build more densely in the corridor further increasing leasing revenue; housing for professors; Phase II brings advanced feeder transit to campus, hospital, SLAC, and the Sand Hill Road Stanford Hills office park; Phase II transports Page Mill workers directly to Stanford Shopping Center. Advanced feeder on and around campus allows reduction in the number of parking spaces for the 2MM sq feet of new construction in the new 10 year General Use Plan, saving significant cost and allowing for higher density. From the February 2001 Stanford Magazine interview with President John Hennessy (pg 63) we find that \$7MM income from Stanford Research Park is being used to subsidize housing for graduate students. The corridor proposal provides a way to increase Research Park revenue and help subsidize graduate students further. Metropolitan village housing can also help with the housing crunch for professors. Hennessy indicates that solving this housing crisis is high priority, "We've already lost faculty recruits who recognized that they would never be able to afford to live here."

Elected Government: Congestion is the number one political issue in Santa Clara County and this is a terrific solution. The Chronicle, Mercury News, PA Daily News, and PA Weekly have beat reporters dedicated to traffic. Affordable housing is also a major issue, and this is a terrific solution. The Stanford 10 year master plan process highlighted strong open space preservation concerns, and this is a terrific solution to reduce sprawl. This next-generation plan positions Palo Alto and Silicon Valley governments as very leading edge. Political leaders who champion visionary solutions often advance up the political ladder and become highly sought after both nationally and internationally. Recent strong concerns over loss of first floor retail on California Avenue and University

Avenue to office space should be addressed; this is a terrific way to increase first floor convenience retail in Palo Alto. Metropolitan village community design is also leading edge, and very popular with pedestrians, bicyclists, and families. Increasing chance social meetings between neighbors to create a more tightly knit community appeals to constituents with strong concerns about moral and family values. Tax revenue will increase for Palo Alto.

Barron Park and College Terrace Residents: Recent strong citizen input aimed at preserving first floor retail in the University and California areas indicates popular support for first floor retail in the corridor. Recent intervention by College Terrace and Barron Park neighborhoods to force Landmark Theatres to keep Palo Alto Square movie houses open shows further pre-disposition for convenient, quality retail. The removal of cars from Page Mill, Foothill, Alma, and El Camino will improve local resident auto trip experience. Access to world class transit within a few blocks will be a major benefit to local residents. Corridor vitality creates an immediately accessible metropolitan cultural experience for local residents.

Environmental: this proposal adds new technology to the world's best practices for transit centered smart growth, improving the economics of congestion and emissions reduction.

Government Agencies: MTC, Bay Area Air Quality Management District, U.S. Environmental Protection Agency, and other government agencies have committed significant budget towards reducing congestion, reducing pollution, and encouraging smart growth. The Corridor Proposal is well aligned with these efforts.

Theorists: The corridor proposal follows the philosophies espoused by Robert Cervero (Transit Metropolis), Newman & Kenworthy (Ending Auto Dependence), Peter Calthorpe (Old Mill compact development and many other noteworthy smart growth projects), Rocky Mountain Institute / Amory Lovins / Paul Hawken (Natural Capitalism).

Section 11: Future expansion

Phase II: Page Mill Corridor

As more parking spaces free up over time, more metropolitan villages may be built. A large parking area at 280 & Page Mill could be considered. Auto commuters could park there and take lighter rail to their jobs, avoiding Page Mill congestion and freeing up corridor parking spaces for further in-fill development.

Phase III Lighter Rail– Stanford

- 4 mile main loop with 10 stations covering University Avenue CalBulletTrain, Town & Country / stadium, residences, hospital, and shopping center.
- An interior loop serving classrooms will also be considered.
- 1 external mini loop serves SLAC and Stanford Hills Park with 2 stations.
- Stanford already charges for parking which reduces parking demand.
- Stanford will subsidize professors and workers housing when they locate near transit and agree to commute via transit rather than by car.
- Students often use their cars on an irregular basis – sometimes only once per month. A car sharing program will be developed to facilitate these infrequent trips while reducing parking space needs.

Phase IV Lighter Rail – Dumbarton to Moffet Field

- Connects Dumbarton CalBulletTrain to VTA Light Rail via the 101 commercial corridor with stops at Sun, EPA City Hall, Home Depot, East Bayshore, West Bayshore, Shoreline buildings, Ames, and Moffet.
- The route from Dumbarton to Moffet covers 12 miles with 16 stations, and an adjacent rail line traverses the opposite direction.

Section 12: Objections

Lighter rail objections:

- fear of height
- aesthetics (Mitigation: recommendations include judicious painting/patterning of guideway and pillars to match the surrounding buildings, making the guideway and pillars as small and as transparent as possible.)
- unproven technology (Comment: there are 80 different automated driverless rail system operating today in the world)

- electricity demand already exceeds supply without adding the equivalent of another corporate campus worth of energy drain (Solution: Corridor company Electric Power Research Institute will provide recommendations. Energy conservation may be an effective route, especially for 30+ year old buildings in the corridor.)
- an electrical outage with many cabs 16 feet above the ground will be a challenge. (Solution: Cabs will be pushed/towed to a station. Some systems have battery backup. In the worst case, individual cabs will have to be rescued by fire trucks with buckets or forklifts with buckets.)
- “wave off” – when a cab arrives at a station and all berths are taken, then the cab must re-circulate and attempt to “land” later (typically a 4 minute delay).

Metropolitan village objections

- homeless people will flock to metropolitan villages. (Solution: there are a number of policy options to address homelessness, with varying amounts of compassion. A) VA hospital provides strong social services that could be expanded. B) The stronger social structure of the metropolitan village is better able to handle homeless people than downtown Palo Alto or California Avenue. Village citizens take ownership of their square and are more likely to quickly intervene to moderate episodes of unacceptable behavior. C) Santa Fe: licensed jewelry, chair massage, espresso, and food vendors patrol the square to protect their customers. D) Santa Barbara: “permanent” homeless people moderate behavior of “transient” homeless. E) German suburbs: Silent begging with signs is condoned. Verbal solicitation is illegal.)
- School access for village children
- Fire truck access to village squares

Section 13: Thanks to these folks:

- Joseph Kott, City of Palo Alto Chief Transportation Officer
- Robert Cervero, U.C. Berkeley City and Regional Planning Professor, Author "The Transit Metropolis" 1998, "Paratransit in America: Redefining Mass Transportation," 1997. Transit consultant for Colma BART; Palo Alto Caltrain station redevelopment; Los Angeles' Metro Transit-Oriented Development; Emeryville Station Car Project
- David Mogavero, Architect, Mogavero Notestine Associates, Sacramento. Sacramento Regional Transit stations; in-fill development, downtown revitalization, comprehensive planning projects for Sacramento, Davis, Folsom, Willits, Woodland. Advisor to Fresno F.A.S.T. personal rapid transit project. Solar construction expert.
- Laura Stuchinsky, Silicon Valley Manufacturing Group, Director Transportation & Land Use. Reagan Flagler, Transportation and Housing Coordinator.
- Chris Kierig, Senator Feinstein's Washington D.C. office. Michelle Senders, Santa Clara County Field Representative.
- Bern Beecham, City of Palo Alto Councilmember
- Judy Nadler, Mayor, Santa Clara; VTA board.
- Mark Roddin, MTC, Santa Clara & San Mateo Liaison / funding programming expert. Kate Breen, MTC, Funding and External Affairs Section
- Stuart Cohen, Executive Director, Bay Area Transportation & Land Use Coalition
- Jeral Poskey, Board Member, ATRA - Advanced Transit Association
- Bob Brodbeck, Cincinnati PRT project: AERC committee, skyloop.com
- Ed Anderson, Taxi2000 founder
- Irvin Dawid, Sierra Club
- Rod Diridon, Trixie Johnson, Research Director, Mineta Transportation Institute
- Jerry Schneider, University of Washington Professor, Innovative Transportation Technologies
- Judy Nicastro, City of Seattle Council Member, cosponsor of \$6MM monorail study
- Susan Serres, City of Bellevue Transportation Dept
- Ingmar Andréasson, Chalmers University of Technology, Sweden, PRT Professor
- Bob Graham, Transportation Product Mgr, Electric Power Research Institute
- Stephen Gehl, Director, Strategic Technologies & Alliances, Electric Power Research Institute; SVMG board.
- Steven Perliss, Associate Principal; Jenny Baumgartner, Project Engineer, Lea+Elliott Transportation Consulting
- James Schmidt, CH2M Hill, Transportation Research.
- Prof. Suzanne Crowhurst Lennard, Prof. Henry Lennard, International Making Cities Livable Council
- Professor Nieh, Stanford University Urban Planning Dept, San Jose Economic Development Council
- Jeanne Siegman, Junipero Serra homeowner representative
- Will Beckett, Barron Park Association
- Pria Graves, John Ciccarelli, College Terrace Neighborhood Association,

- Autumn Bernstein, Greenbelt Alliance, South Bay Field Representative
- David H. Walworth, Citizens for Personal Rapid Transit, Santa Cruz
- Margaret Okuzumi, Peninsula Rail 2000
- Jane Ratchye, P.E., Senior Resource Planner, Resource Mgmt Division, City of Palo Alto Utilities
- David Lewis, Executive Director, Save The Bay
- Julia Levin, CA Policy Coordinator, Union of Concerned Scientists
- Puget Sound Regional Planning Council

Section 14: Bibliography

- [Union Street] Towards Livability and Sustainability, A study of density, diversity, growth, and change in a San Francisco Area community. Richard Beckman, UNLV School of Architecture, Beckmanrichard@hotmail.com.
- [Parking] Proceedings of the Commuter Parking Symposium, December 6-7, 1990, Seattle, Washington, Supported by the Urban Mass Transportation Administration and Federal Highway Administration, <http://www.bts.gov/NTL/DOCS/cps.html>
- [Conservative] Does Transit Work? A Conservative Reappraisal, by Paul M. Weyrich and William S. Lind, <http://www.apta.com/info/online/weyrich2new.htm>
- [Coalition Building] American Public Transportation Association: Local Coalition Building Handbook, <http://www.apta.com/govt/advocate/toc.htm>
- [Sweden] A thematic research programme, "Advanced transit systems", performed during the years 1994-97 at Chalmers University of Technology, The multidisciplinary programme aimed to investigate if Personal Rapid Transit (PRT) may be a suitable system for urban areas in Sweden. <http://www.kretsløop.se/rapp/prt98sw.html>
- [MTC] MTC Transportation Blueprint for the 21st Century, http://www.mtc.ca.gov/projects/blueprint/blueprint_index.htm
- [BATLUC] Bay Area Transportation and Land Use Coalition: World Class Transit for the Bay Area, Released Thursday, January 13, 2000, <http://www.transcoalition.org/wct/introduction.html>
- [Mode Choice] Psychological Aspects of Mode Choice, WA-RD 189.1, December 1989, Washington State DOT, Cy Ulberg. Order from Washington State DOT Library, 360 705 7750.
- [Skyloop] AERC (Advanced Elevated Rail Committee) Evaluation Committee Findings, Conclusions, and Recommendations on Elevated Transit Systems, September, 1998. This is currently a private document. See <http://www.skyloop.org/>.
- [N & K] Sustainability and Cities : Overcoming Automobile Dependence, by Peter Newman, Jeffrey Kenworthy. Please search amazon.com or another bookseller for this.
- [Cervero] The Transit Metropolis : A Global Inquiry, Robert Cervero, Please search amazon.com or another bookseller for this. See also <http://www-dcrp.ced.berkeley.edu/cervero/>
- [Mineta] Mineta Transportation Institute Report 00-1, Why Campaigns for Local Transportation Funding Initiatives Succeed or Fail: An Analysis of Four Communities and National Data, Peter J. Haas, Ph.D. (Principal Investigator) Kristen Sullivan Massey, M.P.P., Linda O. Valenty, Ph.D., Richard Werbel, Ph.D., June 2000, <http://transweb.sjsu.edu/CoalitionFinal.htm>
- [Bowling], Bowling Alone: The Collapse and Revival of American Community, Robert D. Putnam. 10 page book summary may be found at: http://muse.jhu.edu/demo/journal_of_democracy/v006/putnam.html.
- [Funding] Moving Costs: A Transportation Funding Guide for the San Francisco Bay Area, http://www.mtc.ca.gov/publications/funding_guide/fgindex.htm.
- [CH2M Hill] "Promoting Reduced Private Car Dependency Under Conditions of Sprawl," James Schmidt and Ed Granzow of CH2M Hill, ch2m.com. This paper will be available in late January, 2001.
- [Bundy] "Why Rail? Why do we support systems that almost never work?", Emory Bundy. <http://www.open-spaces.com/article-v3n2-bundy.php>. Hard hitting explanation of the need for least cost transit projects, pork barrel politics, transit demand management, "yuppie subsidies" which worsen transit options for low income people, and an appeal to consider least cost technology such as personal rapid transit.

Appendix A: Design Competition

Design Competition History:

A design competition brings legitimacy to the selection of leading edge technologies. The competition process may serve to increase the involvement of interest groups, making the process more democratic. Broad participation improves the chances of political success. The Mineta Transportation Institute study on Political Success Factors of Transportation Initiatives sites broad participation of constituent groups as a requirement for political success. Broad participation improves the quality of the resultant solution by addressing multiple viewpoints, raises public awareness of the issues, and lays a foundation for continued participation to improve/evolve the system once it is operating.

The 1998 Cincinnati / Northern Kentucky Forward Quest Design Competition provides an excellent model to follow. Forward Quest is much smaller version of SVMG that is chartered to help shape a vision for the future. For the Cincinnati Design Competition, Forward Quest's recommendation was then taken as one of several inputs which are still under consideration by OKI (Ohio Kentucky Indiana Regional Council of Governments). Forward Quest formed their Advanced Elevated Rail Committee to judge the competition and produce the final 60 page report. The 16 AERC Evaluation Committee members represented real estate, chamber of commerce, state dept of transportation, local transit authority, city government, and retailers. The Design Competition should make a final recommendation to be put to citizen vote, therefore the Competition Committee must cover an even broader group of constituents than AERC. AERC was chartered to explore leading edge technology, thus it sought elevated rail proposals solely. The Page Mill Competition charter is to provide the best solution for travelers, regardless of technology; therefore dedicated busways, paratransit / minibus, and possibly standard bus service will be considered.

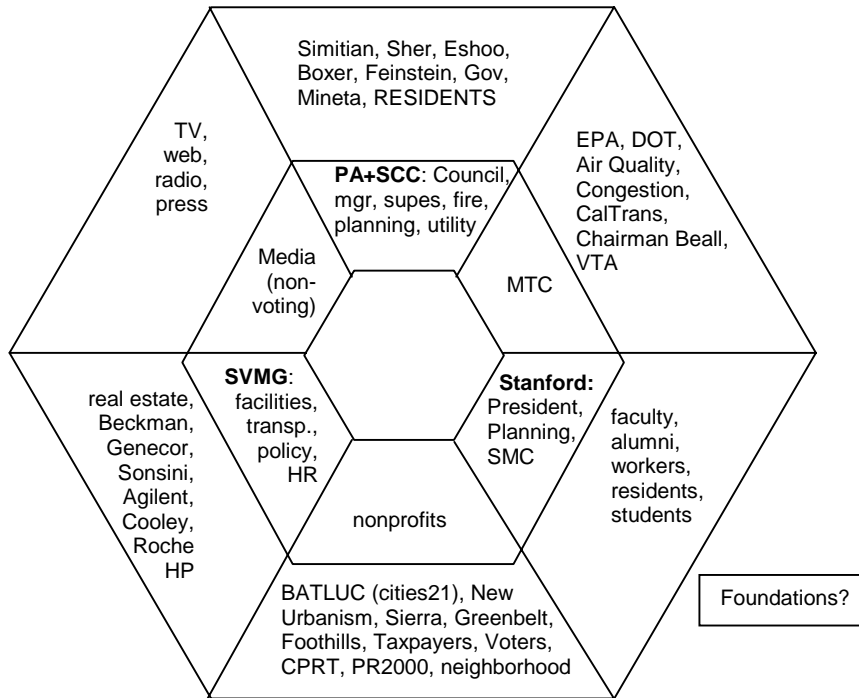
AERC distributed 50 Requests for Qualifications to elevated rail companies world-wide. These companies were invited to submit proposals based on predetermined criteria. Respondents provided project concepts with cost estimates. Preliminary judging was held and a smaller number of companies were invited to continue forward in the selection process. AERC sponsored a symposium for these invitees. The symposium allowed area residents, business leaders, and public officials to personally see and learn about innovative transit solutions. The symposium marked the largest collection of rail technologies ever presented to solve a specific application. Amended proposals and symposium presentations were weighted before final recommendations were made. Taxi 2000 won the Cincinnati competition. [AERC]

Page Mill Corridor Design Competition Implementation:

1. Cities21 provides preliminary concept
2. The triad of Palo Alto, Stanford, and SVMG then
 - Provides a political champion who takes ownership
 - Defines a win, win, win project (with substantial financial benefits to all 3 parties)
 - Authorizes a design competition that might cost \$1.4MM plus substantial "donated" salaried time.
3. Design Competition Committee is formed:
 - Elects Competition Judges
 - Facilitates proposal development
 - Prioritizes competing requests by constituents
 - Educates the public
 - Arranges funding for the winning project and the associated public/private partnership
 - Submits a ballot measure for the Nov 2002 election encompassing: A) zoning code changes, B) planning code changes, C) public approval of the winning project, D) public funding portion of the project
 - Create Corridor Authority to oversee parking, security, feeder operation (includes marketing & commuter web software), transportation allowance implementation, bike/pedestrian pathway construction and maintenance, landscaping modifications, station car implementation, metropolitan village design.
 - Define the "default" land use vision for competition proposals. Most proposals will encompass feeder transit and use this land use vision. Some "out of box" proposals will identify unique land use schemes.
 - "Trip matching" commute database consisting of 9 digit home zip codes of all corridor employees. This will assist commuters in getting from home to Caltrain.

- Conducts “concept validation study” to forecast ridership. Provide a commuter with an in-depth explanation of Caltrain + feeder experience individualized for that particular commuter’s residence location and weekly travel needs.

Competition Constituents:



Proposal submitters: Small transit technology companies, Vehicle makers (autos, trains, planes), Construction/engineering firms

Theorists, academics, transit consultants, architectural/planning firms: A) Submit proposals or assist proposers, OR B) assist competition committee

Page Mill Corridor Design Competition Implementation Details:

Proposal objectives:

- Eliminate 8,000+ “cold start” auto trips to/from Page Mill Corridor every day
- Provide housing for 900+ Corridor employees, teachers, and professors.
- Make Page Mill Corridor a more desirable place to work in order to increase property values and employee retention.

Timeline:

1. triad convenes and authorizes the contest – Feb 2001
 - Judging, funding, specification/guidelines, and many other issues are decided.
 - Requirements for judges: transportation & land use expert, high integrity, strong communicator, available for 500 hours (1/4 year) for this effort.
 - 1 judge per each of 5 voting constituencies.
 - Request for qualification will be sent directly to likely participants. The competition will be open to anyone, including nonprofits and academia. “Request for Concept” will be publicized widely in the press and transit/land use web sites.
 - Proactively solicit concepts from likely sources. It would be desirable to have competing PRT, dedicated busway, and paratransit proposals so that the fundamental differences of the technologies could be debated.
 - As the field is narrowed, may attempt to form partnerships between complementary organizations.
 - “Concepts” should be 3 pages, “proposals” should be 20 pages, “detailed proposals” should be 100 pages. Sample “concept” and “proposal” should be provided by the judges for the example Taxi2000 implementation. This sets the bar high for other proposals, and illustrates required proposal segments.
 - Media buy-in to the open debate process is crucial because the public must be educated on this complex technical subject.

- Media produces “Transit Metropolis” 6 part TV series (archived webcast available) to educate the public
 - “Customer support” (by interest group experts) for proposal writers will be provided on public web boards so as not to provide unfair advantage to individual proposals. Customer support will also provide planning documents.
 - Local rail and land use non-profits such as Peninsula Rail 2000 and CPRT will be enlisted to help proposal writers.
2. 3 page Concept – due April 1, 2001
 - All proposals posted on web.
 - Open, publicized debate
 - Qty 10 \$10,000 awards awarded April 15 2001
 3. 20 page Proposal – due July 1 2001
 - Qty 4 \$100,000 awards awarded July 11
 - Open, publicized debate
 - Winning proposals presented at a symposium.
 - TV media gives each winner 30 minutes to present.
 4. 100 page Detailed Proposal – due Dec 2001
 - Open, publicized debate – Jan 2002
 - Detailed technical analysis of the proposed technologies by civil, mechanical, and transportation engineers. This is a great job for Stanford University professors. Financial review of proposals is also very important.
 5. Winner announced – Feb 2002
 - Slight chance that judges may want to pick and choose winning ideas from different proposals.
 - **Ballot Measure** placed on Election Primary Ballot – March 2002. A successful ballot measure will lead to a transit project which might have \$50MM budget.
 - EIR and major investment study move forward
 6. Phase II and Phase III – addressed after Phase I complete & meets objectives.

Additional notes on Interest Groups not shown in Competition overview graphic:

- Elected Government: SCC Senior Care Commissioner. Note that PA Council Member Gary Fazzino also represents HP and has served on the Santa Clara Transit Authority.
- Nonprofits: League of Conservation Voters, League of Women Voters, Committee for Green Foothills, Audubon Society, Santa Clara County Taxpayers Association
- Transit: BART,
- Vehicle makers & construction/engineering contractors: Lockheed Martin, Bechtel, Morrison Knudsen, Mitsubishi Heavy, Bombardier, Tutor-Saliba/Slattery-BART SFO, CH2M Hill
- Transportation Consultants: Jakes, Lea+Elliott, Cambridge Systematics
- Theorists: U.C. Berkeley’s Robert Cervero, Prof Newman & Kenworthy, Calthorpe, Rocky Mtn Institute, Stanford Urban Planning Dept, Congress for the New Urbanism, Mineta Transportation Institute, International Making Cities Livable Council.
- Philanthropic Foundations – Gordon E Moore \$5BB Foundation covers areas including environmental. Rockefeller, Pew Charitable Trusts, W Alton Jones give environmental grants.

Draft design competition budget

\$400,000	Qty 4 \$100K long proposal winners
\$200,000	Funding pgmming preparation: bike/ped, ungn d pking, Indscpng, car share, stn cars, CalTrain fare integration, CalTrain "cell phone booths" & cellular signal increase
\$125,000	Non-triad judge salaries + RFP development support
\$100,000	Education / webcast
\$100,000	Qty 10 \$10K short proposal winners
\$50,000	Civil/Mechanical engineering proposal analysis
\$50,000	Judges expenses
\$50,000	Marketing communications / web / PR
\$50,000	Corridor energy analysis by EPRI
\$50,000	Ballot initiative prepration (signature collection will not be required)
\$40,000	2 symposiums
\$20,000	Web based concept validation/ridership study
\$20,000	Palo Alto GIS dept budget for proposal development support
\$5,000	Architectural drawing development + charrette participation: Mogavero, Nia
\$5,000	Local non-profit web board monitoring
\$5,000	RIDES support of concept validation study
\$3,000	2 pillar full scale model development
\$1,273,000	total

Appendix B: Policy Theorems

1. New transit technology and major zoning/planning code changes are best advanced via ballot measures. These can't be forced on the public.
2. To increase the chances for a controversial ballot measures to succeed, early outreach needs to be made to interested parties who will typically support or oppose such a measure: corporate, elected government, government agencies, transit companies, media, citizen groups, & theorists. [Mineta] [Coalition Building]
3. No U.S. transit project with budget > \$10MM was ever awarded to an unknown firm. IE companies like Taxi2000 will need to partner with a company like Bombardier or Bechtel. Reasons include: staying power, liability, financing ability.
4. A proposed PRT system must not compete with commuter transit that it connects to.
5. Nonprofit advocacy organizations cannot get major public smart growth / transit projects approved. Politicians get major public projects approved.
6. Nonprofit organizations cannot pick a technology vendor for a major public project. Public sector experts or a public/private committee select technology for public projects. Technology selection is made via a structured, open process with multiple inputs. In addition, a major project that is wedded to a single technology vendor will be lambasted by losing vendors in a devastating way.
7. Public institutions take ownership of major public projects. Private sector should build, operate, and maintain projects deploying new transit technology.
8. A proposal must have a thorough understanding of the client commuter. The commuter profile generates numerous implementation features, provides 50%+ ridership improvement over technology-driven proposals, assists in converting NIMBYs, and drives public relations/marketing communications.
9. The Page Mill corporate campus concept must change to better serve affluent commuters. Space outside corporate buildings must become public to enable commuters to reach their destinations.
10. High stature public persons cannot publicly advance a technology until sufficient, credible backing is gathered. Politics unmercifully attacks risk takers. Public persons advancing unproven technology may be permanently tattooed.
11. Local press plays a crucial role in the adoption of controversial new technologies. In addition, complex technical issues need repetitive coverage. Public literacy and familiarity is very important. Debate with competing, controversial approaches accelerates retention. Press especially likes to cover feuding between different factions and will sometime instigate feuds.
12. Proposals need political champions. The allies and enemies of the champion are very important.
13. Some transit-only proposals have been "technology in search of a solution". A top down approach where citizen problems are first identified, then solved is required. Land use patterns are just as important as transit systems. A holistic approach leads to tremendous synergies.
14. Selecting the institution to run a transit system is a crucial decision and is a political minefield. New transit institutions cannot be allowed to form in the Bay Area because there are too many already.
15. When new transit technology is introduced into a region, a small segment of the complete plan should be implemented first. Contractor must meet budget and schedule in order to proceed with full plan. In addition, quality of service and ridership goals must be met before the full plan may proceed. [Conservative]