A BART-SFO Extension

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On June 22, 2003 the 8.7 mile-long extension of the Bay Area Rapid Transit (BART) system to the San Francisco International Airport (SFO) was officially opened for public service. This extension, which also incorporated three new stations in Santa Clara and San Mateo counties, was intended to be the first major extension of the original BART system, which opened in the early 1970’s. The BART-SFO extension as it would commonly be known, was the product of over 30 years of planning and development easily lasting longer than the planning and constructing of the original BART system.

The aim of the BART-SFO extension could be described as an infrastructure mega-project meant to better connect the regional transit system with the region’s major airport. Originally intended to be a “no frills” project costing only $580 million, the project spiraled into a cycle of increasing complexity and expense. At the end of construction the cost of the mega-project reached $1.483 billion, nearly tripling the original estimate\(^1\). The central question we are forced to look at is simply: *What went wrong?* Why was the planning process so needlessly complex? Why was the finished system designed as it was? Why did it take so long? Why did it cost so much? And, eventually, was the project worth it?

The creation of the BART-SFO Extension is a realization of many contemporary trends, especially when compared to SFO’s European and Asian peers. The extension was an attempt to link the rapidly expanding airport to the greater Bay Area while also providing access to other forms of transportation like Caltrain, the Bay Area regional railway. With these motivations present, it is easy to see why this system can be justified. Rapid transit to an airport can ease traffic congestion,
facilitate airport growth, all while propelling SFO into the forefront of modern airport design and infrastructure. As compelling as these reasons may sound, why was the most expensive BART-SFO Extension alignment eventually chosen for construction? BART could have gone to the airport for several hundred million dollars less if a more modest design was chosen. Instead, a debate centered around what route the extension would take and who would pay for it went on for decades costing taxpayers, the airlines, and BART millions of dollars.

In the original 1956 Regional Rapid Transit plan, the original BART development was intended to run down from San Francisco through San Mateo county finally terminating in Palo Alto in Santa Clara county. During this time both Santa Clara and San Mateo counties were still primarily rural, low populated, suburban developments. In 1957 Santa Clara county leaders quickly realized that the original BART development was an unfavorable deal for them. The proposed development would lead to a heavy tax burden with relatively little services offered to them compared to the other counties included in the plan.

San Mateo county leaders were having similar thoughts regarding the San Francisco oriented nature of the BART system and the tax burden it would bring the citizens of San Mateo County. The plan called for San Mateo County to pay $142 million for the introduction of BART to the county. This money was to be raised by a property tax increase of 14 cents per $100 of property assessed. The estimates at the time meant showed that this meant that San Mateo county would be playing 22 percent of the BART development, but only 14 percent of the ridership would originate in the county. While San Mateo County had a better established
commuting pattern compared to its peer, Santa Clara, it was enjoying its own economic boom after the Second World War.\textsuperscript{4} County leaders, hoping that this trend would continue, feared that BART would hinder any further increase to the local economy due to ridership estimated to be more unidirectional into San Francisco rather than increasing trade between San Mateo and San Francisco.

In 1961 San Mateo County officially dropped out of the BART District. County leaders stated that it was bot because the county was opposed to improved transit, but they were worried that the specific plan was too costly and oriented towards San Francisco’s interests, not the entire region’s. In parallel the West Bay Rapid Transit Authority (WBRTA) was created in 1964 by the California legislature to further investigate rapid transit in San Mateo County.\textsuperscript{5}

In a $1.2 million study funded by a one-time tax on motor vehicle licensing, the WBRTA proposed that in addition to the preexisting BART infrastructure to extend BART from Daly City to the San Francisco Airport. A WBRTA promotional mailer extended discussion on the topic and confirmed that part of the reason San Mateo originally dropped out of BART was due to a lack of service to and from the airport.

“Did BART’s lack of service to SFO influence San Mateo County’s decision to stay out of BART----Yes, the airport is one of San Mateo County’s most important economic resources. Thousands of San Mateo residents work at the airport and use its facilities. Air travel will increase; Some means must be found to link the Airport’s internal
movement of people with the Peninsula mass transit system. BARTS plan did not include any convenient linkage with the airport”

In 1968 the San Francisco City Planning Department released plans for potential airport linkages between downtown San Francisco and the San Francisco International Airport. The plan included four alternatives: two utilizing the private Southern Pacific Railway, one calling for a BART extension, and another asking for a new General Electric monorail system. The Southern Pacific upgrades, while inexpensive due the extensive use of preexisting track and other infrastructure, were lacking of capacity. It was estimated that when completed the Southern Pacific upgrade would only be able to carry 2,800 passengers per hour versus an upwards of 25,000 on a BART extension. With this in mind the BART extension was the preferred method of the transportation, but entire new lines of track would have to be created causing the estimated price to be significantly higher than any Southern Pacific upgrade. The last plan, a General Electric monorail, was deemed too specialized for the project. Both the BART and Southern Pacific plans included proposals be connected to preexisting lines of Bay Area infrastructure, something that would eventually become a primary concern in the creation of the extension.

From 1970 to 1972 BART, San Mateo County, and the city of San Francisco worked together in the San Francisco Airport Access Project (SFAAP). The project, costing $557,000, was funded primarily by the Federal Department of Transportation. Though not a significant amount of money, this showed, for the first time, that the federal government had an interest in helping fund a form of rapid transit to and from SFO to downtown San Francisco. The project eventually
chose the Muni Corridor as the preferred route for a BART-SFO extension due to few environmental impacts and a relatively small of visual impact to the surrounding communities. The extension had an estimated cost of $345 million.

The BART-SFO extension efforts went relatively quiet until the late 1980’s. On November 3, 1987 citizens of San Mateo County voted to pass Ballot Measure K in a 61 percent to 39 percent margin. This measure called for both the extension of BART to a station near SFO and the construction of a new Colma station that would extend BART into San Mateo County. In October of 1991 it was decided that the BART-SFO extension would be a two stage project with the first stage being the construction of the 1.6 mile extension to a newly build Colma station. The project, which was forecasted to take 40,000 cars off the road, would be paid for by a 5 cent to the dollar transpiration tax.  

Beginning in the late 1980’s, traffic from San Francisco to both San Mateo County and SFO were finally reaching critical levels. A 16 percent increase in traffic from San Mateo to downtown San Francisco and a 52 percent increase to SFO was projected from 1987 to 2010. At this rate the congestion on Highway 101 and Interstate 280 would exceed capacity by 1995. 

Besides traffic and the public mandate of Measure K other reasons for a BART-SFO extension included airport growth and the growing concerns of the air quality in the bay area. From 1990 to 2006 it was projected that annual air passengers at SFO would increase by over 70 percent due to the increase in globalization and the Asian market. The growing number of automobiles on the
road was another problem. The projected 40,000 auto trips per day that a BART-SFO extension would eliminate would reduce reactive hydrocarbons by 1.2 tons per day, nitrogen oxides by 1.7 tons per day, and carbon monoxide by 17.0 tons per day.

With all of these factors in mind, on March 1, 1990, San Mateo Country Transit District (SamsTran) and BART signed an agreement that constituted a political arrangement of how BART could be built into the San Mateo County to a location near SFO. This agreement did not mean that San Mateo county would be part of the BART District, but only that SamsTran “bought in” for $200 million. In addition to the $200 million, 25 percent of the proposed budget, brought to the table by SamsTran, BART would be responsible for obtaining the remaining 75 percent, ideally from the federal government.

The BART-SFO Airport Extension Draft Impact Report was published in 1995. The document was meant do accomplish many things: describe the nature of the project, its potential affects both on the environment and existing transportation infrastructure, find various measures to reduce or eliminate any significant negative effects on the area, and finally to propose any possible alternatives that could achieve the projects objectives. The report eventually identified six alternatives to reach SFO from downtown San Francisco. Each alternative would be evaluated on a wide variety of issues. The most obvious of which, cost, included total cost and the sources of any and all funding. Convenience, another key factor, included how the extension would be integrated with existing infrastructure. This meant how the extension would connect to the airport, if and how it connected with the CalTrain regional rail system, and how end-of-line stations would deal with potential traffic
issues due to large numbers of commuters. The third main issue, operations, dealt with how the extension would operate with the current BART system. The most important of which was number of expected passengers predicted for all of the alternatives. The final issue at hand was the predicted environmental impacts of the alternatives.

The latest alternative to be proposed, Alternative VI, was eventually chosen by SamsTran to be the locally preferred option. This option would build a subway station directly in SFO and create a Millbrae terminal to provide a convenient link between BART and Caltrain. At an estimated cost of $1.269 billion this was by far the most expensive plan, but all parties involved got what they wanted: BART would build the extension, CalTrain got airport access, and the Airport got a direct-to-airport design scheme. How these agreements were formed and if they were eventually completed will be further discussed below.

The following analysis will focus on three main themes:

1. **Political vs. Technical Reality**: BART was a highly symbolic technological system and thus was promoted by a well organized public relations campaign from the very beginning, but some of the decisions made by those involved made little to no sense from a functional stand point

2. **No Harm Planning**: The BART-SFO mega-project could have entailed simple design. In the late 80s it was intended to be a relatively simple project, but the design became increasingly complex and expensive due
to concerns and interferences by politicians and the need to sustain a fragile political consensus to secure federal funding.

In September of 1990, local state Senator Quentin Kopp began to argue that BART had to go directly to the airport. “If the SFO extension does not go directly into the airport people will simply not use it. People will not use a system that requires them to transfer.” In 1993 Kopp still sought to push his point about the importance of an internal airport station for BART, and he saw the opportunity in making the issue into an advisory measure.

Measures H and I were placed on the ballot for on June 7, 1994 with Senator Kopp’s Measure I advising San Francisco officials to take all actions necessary to extend BART service directly into the Airport terminal area. Measure H, sponsored by San Francisco Supervisor Tom Hsieh, advised the airport station site to the most-effective, safest, and most convenient location possible.

Backing up his argument for Measure I, Senator Kopp stated, “A BART station inside the international terminal means that approximately 70 percent of people going to and coming from the airport are within a five to six minute walking distance from their destination.”

The San Francisco Chronicle stated in an editorial:

*There is no question that the Proposition I alternative is more expensive - estimates vary between $180 million and $400 million more- but we believe that the added convenience of direct airport service makes it worthwhile to explore Kopp’s idea for finding other revenues. As a last resort, we also*
would back his plan to impose a passenger fee of up to $3 per departure
ticket to pay for the extra costs, a levy in effect in nearly 200 other airports
in the nation.

Vote yes on Proposition I for BART to the airport. 12

On June 7, 1994, Measure I was passed at nearly a 2:1 ratio. “The passage of
Prop I is indispensible to the future of Bay Area transportation,” said Kopp. 13

With the passage of Measure I, it was no mandated by the people of San
Francisco that Alternative VI, a direct subway link to SFO, would be the chosen
option for the BART-SFO Extension. What San Francisco voter’s were not aware of
with the Measure I ballot was that extra track and an extra station to the south of
SFO in Millbrae would also have to be built adding over $500 million to the total
project costs with negligible gain in ridership.

With Measure I passed and Alternative VI selected focus turned towards
securing revenue streams for the project. BART planned on using the Federal New
Starts Program to fund 75 percent of the project.

The Federal Transit Administration’s (FTA) discretionary New Starts program is
the federal government’s primary financial resource for supporting locally
planned, implemented, and operated transit "guideway" capital investments.
From heavy to light rail, from commuter rail to bus rapid transit systems, the
FTA’s New Starts program has helped to make possible hundreds of new or
extended transit fixed guideway systems across the country. 14
However, in 1994 Republicans took over Congress promising to significantly cut federal funding. Any expensive project like the BART-SFO extension was vulnerable, especially due to the fact that it was located in an overwhelming left leaning area. In June of 1995 the House Transportations Appropriations Subcommittee approved only $10 million of the requested $22.6 million for the project citing that, "Numerous concerns have been raised regarding the locally preferred alternative which calls for an underground segment. It is the most expensive option among all those considered." 15

In a sobering response from BART Vice President Dan Richards, he stated, "Federal and state funding flows naturally to where people have figured out that they want. We still don't know what we want." 16

On October 31, 1995, the House and Senate Conference Committee of the Federal Transportation Appropriations once again sent BART a strong message that the feds will not fund unless deficiencies in the current plan is resolved. The conference committee named incomplete environmental analysis, potential for excess federal funding, and no restrictions on proposed usage of federal funding to be the main areas of doubt. 17

Though BART was pressured to lower the requested price, the project was not cut outright thanks to Californian senators Bill Baker and Nancy Pelosi who fought strongly for the BART-SFO Extension. In March of 1996, the Clinton administration stated that it would have the intention of approving the full $710 million for the BART-SFO extension. Though this was most likely a political move for the
November 1996 election, it kept the project in the eyes of congress. “The airport extension is a clear example of federal government successfully partnering with state and local government, Governor Pete Wilson of California wrote to Congressman Frank Wolf, chairman of the House Transportation committee.  

On the home front Senator Kopp reacted to the news by stating, “We want to keep the momentum going, it is most important to continue leveraging the rest of the funding...most importantly from the airlines.”

BART and SamsTran stated early on that they believe that the airlines should be responsible for a large portion of BART-SFO funding, as the extension would directly benefit the airport’s business. The Air Transportation Association (ATA) the lobbying arm of the airlines disagreed with the claim. “BART is looking to the airline industry and the federal government to finance this project. If they think it’s such a great project they should finance it themselves.” States ATA Chairman Chis Chaiames.

In response Tom Huening chairman of the SamsTran stated

"United Airlines has not been friendly to the extension of BART to SFO. They have been working through their industry group ATA to kill the approved BAR extension directly into the airport. Officially United supports the old and rejected extension alternative of the airport terminal across the freeway. By continuing to support this unbuildable version they try to maintain the myth of public mindedness and support for public transportation.
In fact they seem not to care how the flying public actually gets to and from their boarding gates. They seem unconcerned that the flying public is also the driving public who will be caught in increasing congestion near the airport. Especially with the airport expansion project underway, traffic will grind to a half with out adequate transit” 21

The main political push behind the project, Senator Quentin Kopp was the leader behind a direct to airport measure. Unless the more expensive and technically difficult airport subway alternative was chosen the political backing for the project would surely crumble with the loss of its principal political support.

With the assumed all-or-nothing funding scenario looming over all party’s heads, in October of 1996 the FAA decided that SFO should allocate $200M for the BART-SFO extension, but federal law restricts airports from spending money collected from airlines on off-airport property. With this overall goal in mind the Federal Transit Authority, the ATA, SFO, and BART all looked for a solution that was financially sound and did not violate any federal laws. The agencies agreed that BART would run two lines, one to the airport and another to the Millbrae Station. This way Millbrae-bound passengers would not have to stop at SFO. “The SFO-BART station will be constructed to serve the airport patrons,” said Federal Transit Administrator Gordon Linton. “Any use of the station by a non-airport patron will be accidental.” 22

On March 3, 1997 it was agreed that the airlines would give BART $200 million to support the funding, but most of the $200 million would be paid back to the airport through a $2.5 million a year for 50 years rent agreement BART would have to pay for use of the airport property. 26 BART Vice President Dan Richards stated,
“Making BART pay rent is a terrible idea aimed at getting the airlines out of paying their share of the extension cost, but I am willing to listen to the arguments by the ATA to get the project moving. I’m astonished that’s even suggested. For me it’s inappropriate public policy. I’d like them to convince me that this is not just about their unwillingness to pay.”  

With the agreement by BART and the airlines to not terminate at the airport, another station would be needed as the official terminal of the extension. Each of the proposed stations were concerned that they would be destined for the same negative noise, congestion, and pollution impacts that tormented Daly City, the peninsula terminal for BART until the Colma extension of 1996. San Bruno Mayor Ed Simon said, “We didn’t want to be the end of the line because of the tremendous traffic impacts.”  Even though cities did not legally have the power to stop the BART extension they did have the ability to raise political ruckus and disrupt the process. After much debate Millbrae agreed to be the terminal after Burlington, the proposed next stop declined a BART extension. Millbrae Mayor Daniel Quigg later described the decision, “The bottom line is that Millbrae is responsibly and aggressively trying to maintain the upper hand for the interest of the community in the face of a strong and motivated transit organization. We think Millbrae will be the better for our vigilance and ongoing efforts to control and shape the project rather than just say no and wait for BART to stream into town.”

On April 1, 1998 in a 337-80 vote the house finally approved a transportation bill that included the $750 million for the BART-SFO Extension. The bill did not guarantee the money but gave BART a right to go to the House Appropriations
Committee each year and ask for the money. Official construction was estimated to cost just over $1.2 billion and end in 2001. Major contracts were given to Tutor-Saliba of $526 million for the construction of the track structures, power, control systems, and communications system and $70.5 million to Sverdrup/Conco for the creation of the Millbrae station. Due to high demand of construction in the Bay Area at the time these contracts came out to be 8.5 percent higher than expected bloating the projects even further. 39

After a plethora of small construction delays, most notably one in April of 2000 where a San Francisco Garter Snake was crushed by a construction truck causing construction to halt for 24 days costing the project almost $4 million and severely reducing the speed limits for all vehicles involved only further impairing construction speeds, the extension opened on June 22, 2003 at a final cost of $1.483 billion.

The final cost breakdown of the project was: 41

1. Federal Transit Administration: $750 million (51 percent)
2. San Francisco International Airport: $200 million (13 percent)
3. BART: $183.7 million (12 percent)
4. SamsTran: $171 million (12 percent)
5. California Transportation Commission: $152 million (10 percent)
6. Metropolitan Transportation Commission: $26 million (2 percent)
Though initial ridership was much lower than expected, both the entire SFO-BART extension line and the SFO station have seen a dramatic increase in ridership over the past 10 years.

BART Board President Gail Murray has stated that there are many factors behind the surge in ridership. She points largely to an increase in marketing efforts for the BART to SFO method of reaching the airport, as well as an increase in foreign riders, especially from Europe where the Euro is strong against the dollar. Other factors may include an increase in gas prices and continued heavy congestion in the
airport area. BART’s relatively low fares and 95% passenger on-time service allow for east solutions to both of these problems to travelers. A surge in low-cost cost carrier options out of SFO may also imply a shift in consumer spending habits.

The main problem in the BART-SFO Extension planning was the complicated network of political commitments that caused the project to become increasingly expensive and time consuming. As time went on he political will to do anything compromise the design only grew. The projects dependence on securing federal funding caused the need for a very fragile and complex local consensus among BART, the airlines, and the communities involved. This very fragile network, it seems, caused a “locked-in” planning mentality where local and national leaders simply did not let the project die even if the design was inherently flawed. When it was all said and down the creation of an in-airport BART station made little sense from a functional and engineering perspective, but due to the needs of the voters and politicians it was the only way the project could have been completed.
End Notes


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5 Ibid

6 Ibid


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