

BART State of Good Repair: Regional Impacts

Results of an Independent Study

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Key Questions

- **What is the cost** of maintaining BART in a state of good repair over the next 20-30 years, and what **investments by category** will be needed?
- **How much funding is currently available** for SGR and what uncertainties are there about future funding?
- **What would happen to system performance** if lower levels of funding were available?
- **If performance declines, what are the consequences** for ridership and for the region?

Methodology

- **Identified needed Investments** from BART databases
- **Evaluated three funding levels:** SGR within 10 yrs., 50% of SGR, 30% of SGR
- **Only considered existing system** – extensions / expansions not included
- **Took deterioration rates from underinvestment from other systems that have experienced far more serious problems than BART has ever faced**

Methodology (2)

- **Forecasted changes in BART condition & performance** if funds for reinvestment fall short
- **Estimated ridership impacts & social, economic, environmental effects** of reduced performance
- **Held focus groups on traveler responses** to changes in condition and performance
- **Interviewed regional business leaders and other major stakeholders** to identify key concerns & responses to scenarios.

New York MTA in the 1970s



It took three decades to recover.

Current Status

- **BART has maintained very good performance** through preventive maintenance, rehab, reinvestment.
- As BART approaches 40 years of service, the District is preparing for a **large reinvestment program**.
- Some BART capital assets are **already beyond recommended replacement life**
- **Funding for reinvestment is uncertain – needed actions may have to be deferred unless** additional funds are secured
- **Ridership growing** – if quality can be maintained, will top 500K/day or more in 30 yrs (proposed new services will generate additional ridership)

BART's Best and Worst Features Today

(focus group findings)

Best:

- **Highly reliable** – almost always on time
- **Good info** if there is a problem
- Can almost always **read or relax** on the train
- Can almost always **get a seat** for most of a long trip

Worst:

- **Unsanitary seats**
- **Parking** in suburban stations fills up early
- **Noise** in stations and on trains (squeals)
- **Dirty stations**
- **Some stations scary after dark**, not enough security
- **Inattentive station staff**

MTC's Cost Estimates for BART SGR by Category (15 & 25 yr. assets only)

| Category | Needs (\$M) |
|-------------------------|-------------------|
| Facilities | \$1,018 |
| Guideway | \$1,018 |
| Track work | \$2,588 |
| Stations | \$1,973 |
| Communications | \$971 |
| Electrification | \$2,010 |
| ITS and Utilities | \$59 |
| Revenue Collection | \$124 |
| Non-rev vehicles | \$269 |
| Revenue Vehicles | \$4,971 |
| Total | \$15,388 M |
| Average Per Year | \$513 M |

Other Known BART Needs by Category

-- NOT included in the calculations!

| Category | Needs (\$M) |
|---------------------------|--------------------------|
| Earthquake Safety | \$1,318 |
| Security | \$258 |
| Safety | \$21 |
| Extensions? | Not included here |
| Other new efforts? | Not included here |
| Total | \$1,597 (+) |
| Average Per Year | \$53 M |

BART Performance Measures - Current

| Measure | Value in 2011 |
|---|----------------------|
| Mean Time Between Failure - Revenue Cars (hrs) | 2,850 |
| Cars Available 0400 (%) | 100% |
| On Time - Customer | 96% |
| On Time - Train | 94% |
| Elevator Availability | 96% |
| Escalator Availability | 94% |
| AFC Availability | 99% |

Note: system-wide averages; some locations perform better/worse than others

Average Annual Performance Deterioration for Assets Which Are Past Their Useful Lives

| Asset Life | Deterioration Rate (%/Year) |
|-------------------|--|
| 10 Years | 29 % |
| 15 Years | 20 % |
| 20 Years | 16 % |
| 25 Years | 13 % |
| 30 Years | 11 % |

**Sources: Cambridge Systematics, based on NY
MTA experience in the 1970s**

Underfunding: Effect on Speed

| Scenario | 2012 Base | 2032 | 2042 |
|----------------|-----------|------|------|
| 50 percent SGR | 33 | 32.0 | 28.9 |
| 30 Percent SGR | 33 | 31.9 | 28.3 |

Travel Time Costs for BART Riders Due to Slower Speeds

| Year | 2032 | 2042 |
|------------------|-------------|-------------|
| Travel Time Cost | Costs (\$M) | Costs (\$M) |
| 50 percent SGR | \$65.4 | \$196.2 |
| 30 Percent SGR | \$55.1 | \$140.5 |

Underfunding: Effect on Passenger Capacity

| | 2032 | 2042 |
|----------------|---------------------------------|---------------------------------|
| Scenario | Peak Period Passenger Capacity: | Peak Period Passenger Capacity: |
| 50 percent SGR | 22% decline | 36% decline |
| 30 Percent SGR | 37% decline | 57% decline |

Costs of Worsened Reliability (\$M/Yr)

| Year | 2032 | 2042 |
|----------------|-------------|--------------|
| 50 percent SGR | \$88.1 M/yr | \$468.9 M/yr |
| 30 Percent SGR | \$92.2 M/yr | \$464.6 M/yr |

Underfunding: Impact on Ridership

| Scenario | Loss of peak period riders | Av. Daily Ridership |
|----------------|----------------------------|---------------------|
| 50 percent SGR | 43% decline | 382,000 |
| 30 Percent SGR | 57% decline | 343,000 |

**Note that this is a conservative estimate –
could lose some off-peak riders too**

Other Costs

- **Added travel costs for BART users who switch to auto:** based on auto operating cost per mile and on an assumed \$10 parking charge applied to one half of trips (conservative!)
- **Increased delay for auto users** - based on MTC's increased delay per increased VMT in the 2035 plan alternatives (could be higher in some corridors)
- **Congestion + environmental costs** from more driving
- **Costs to the regional economy:** multiplier of 1.7 times the direct costs to travelers (from the literature - based on modeling of the regional economy in other regions)

Impact of 30% Funding by Measure, Selected Years and Cumulative (\$M)

| Measure | Year: 2022 | Year: 2032 | Year: 2042 | Cumulative Costs |
|---|--------------|----------------|----------------|------------------|
| Added Delay Costs Due To Unreliability | \$17 | \$80 | \$422 | \$2,695 |
| Added Delay Costs Due to Reduced Speed | \$27 | \$56 | \$195 | \$1,724 |
| Added Costs to BART Users Who Switch Modes | \$107 | \$393 | \$1,028 | \$9,722 |
| Added Costs to All Other Roadway Users | \$121 | \$444 | \$1,162 | \$10,986 |
| Total Added Transportation Costs | \$272 | \$972 | \$2,807 | \$25,127 |
| Total Added Economic Costs | \$466 | \$1,662 | \$4,799 | \$42,958 |

Impact of 50% Funding by Measure, Selected Years and Cumulative (\$M)

| Measure | 2022 | 2032 | 2042 | Cumulative |
|--|--------------|----------------|----------------|-----------------|
| Added Delay Costs Due To Unreliability | \$15 | \$70 | \$383 | \$2,404 |
| Added Delay Costs Due to Reduced Speed | \$27 | \$57 | \$206 | \$1,765 |
| Added Costs to BART Users Who Switch Modes | \$68 | \$232 | \$621 | \$5,839 |
| Added Costs to All Other Roadway Users | \$76 | \$262 | \$702 | \$6,597 |
| Total Added Transportation Costs | \$186 | \$623 | \$1,912 | \$16,605 |
| Total Added Economic Costs | \$318 | \$1,064 | \$3,269 | \$28,389 |

Economic Balance Sheet (\$M)

| Scenario | Cost Savings | Disbenefits | Net Loss |
|--------------------------|-----------------|-----------------|-----------------|
| 30 Percent of SGR | \$10,769 | \$42,958 | \$32,189 |
| 50 Percent of SGR | \$7,533 | \$28,389 | \$20,856 |

Not spending on SGR could result in 21-32 BILLION DOLLARS in losses to the San Francisco Bay Area!

Summary: Impacts of Not Providing SGR

- **More frequent breakdowns**, leading to lower capacity and slower speeds
- **Higher costs to BART riders** due to delays, lower speeds
- **Loss of riders**, especially during peak
- **More traffic congestion**
- **Higher costs to drivers** due to congestion
- **Lower accessibility** for transit dependents
- **Negative environmental impacts**
- **Big hit on the regional economy**

Rider Reactions

- Riders: BART reliability is essential, and capacity needs to increase, not decrease, as the region grows - must maintain quality of service
- Many riders would be willing to pay more - \$1-2 a trip - to avoid service cuts or quality declines

BUT

- Riders also think costs should be widely shared, because benefits are widely shared - tolls, sales taxes, bonds all seen as fair ways to proceed
- AND
- BART leadership needs to get its act together, demonstrate cost control and lay out a clear action plan

Stakeholder Reactions

- **Business community:** hit on economy is not acceptable; BUT BART needs to show that it's a prudent steward of public funds, and must develop and advocate for a clear and sustainable plan for re-investment
- **Environmentalists:** hit on environment is not acceptable; declining transit service would undermine state efforts to reduce pollution, greenhouse gas emissions
- **Elected officials:** a multi-year investment program is needed – for BART and for other transit operators – with clear proposals for funding the investments

How to Pay for SGR

- **Knowledge gaps are a potential barrier:** Little understanding of costs of transportation of any kind
- **How costs are expressed matters:** cost per person per day (e.g.) more useful than total dollar costs (billions of dollars)
- **Who should pay:** everyone! Share costs of improving transit widely, since benefits to the region are broadly shared.
- **Concerns about impact on low income populations:** Low income respondents concerned about ability to pay; others suggest **lifeline fares for low income populations.**
- **A potential credibility problem:** BART Board need to develop responsible, sustainable, transparent expenditure policies
- **BART plus other partners:** BART as one piece of the transit puzzle and other transit services also need adequate funding