BART EARTHQUAKE SAFETY PROGRAM

ABAG Disaster Recovery Initiative
Regional Planning Committee

December 3, 2008

EARTHQUAKE
SAFETY PROGRAM
BUILDING A STRONGER SYSTEM

BART Today

5 Lines, <u>Including Recent Extensions</u>

104 Miles (167 Kilometers)

- Underground = 37 Miles (60 Km)
- Aerial = 23 Miles (37 Km)
- Surface = 44 Miles (71 Km)

43 Stations

360,000 Daily Ridership

$15 Billion Replacement Cost

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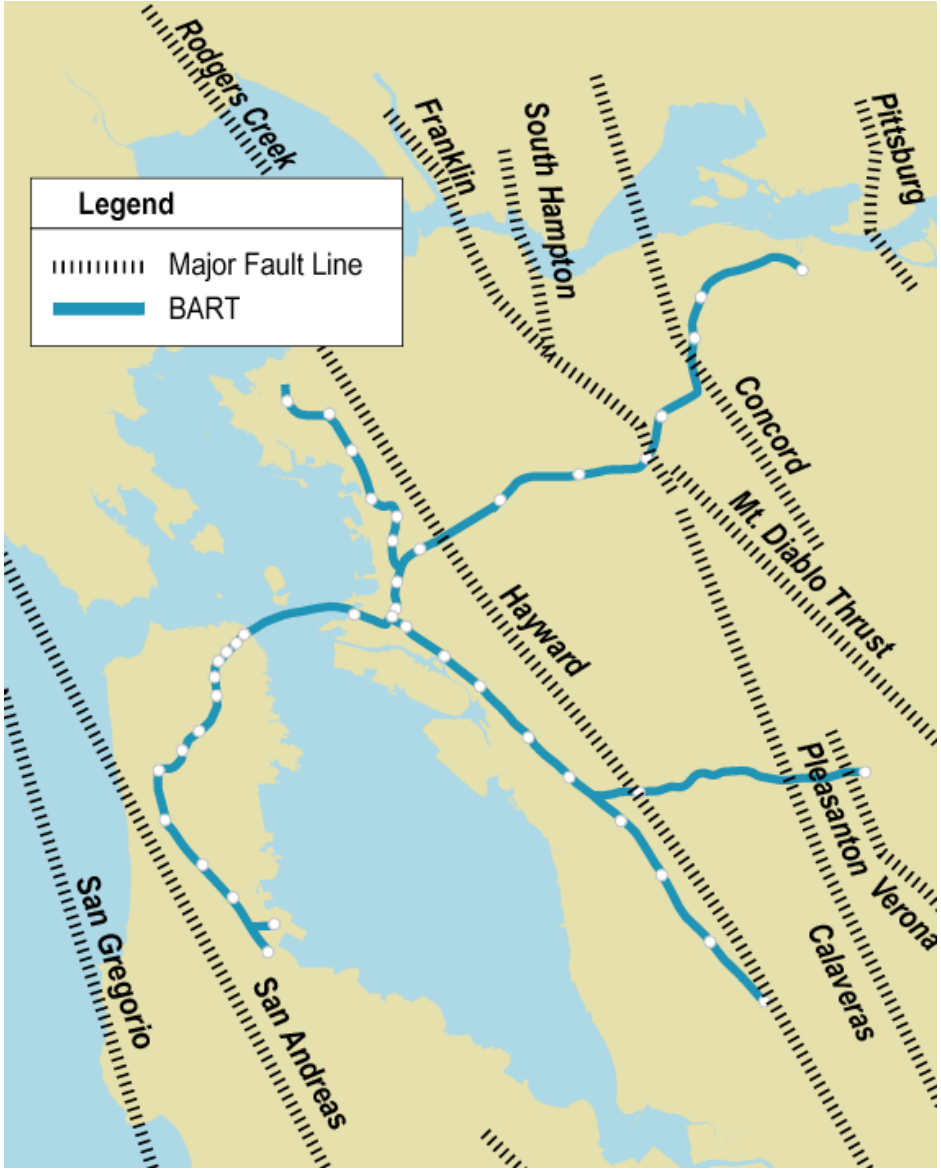
Bay Area Faults and BART



- Hayward Fault parallel to BART and crosses BART.
- **1868** last major rupture of Hayward Fault (130- to170-year return cycle).
- Four earthquake scenarios most likely to damage BART:
  - 7.0 Hayward Fault
  - 8.0 San Andreas Fault
  - 6.7 Concord Fault
  - 6.7 Calaveras Fault

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Shake Map Data

Northern California ShakeMap: Estimated Instrumental Intensity - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://earthquake.usgs.gov/shakemap/nc/shake/HaywardRC_5_se/intensity.html

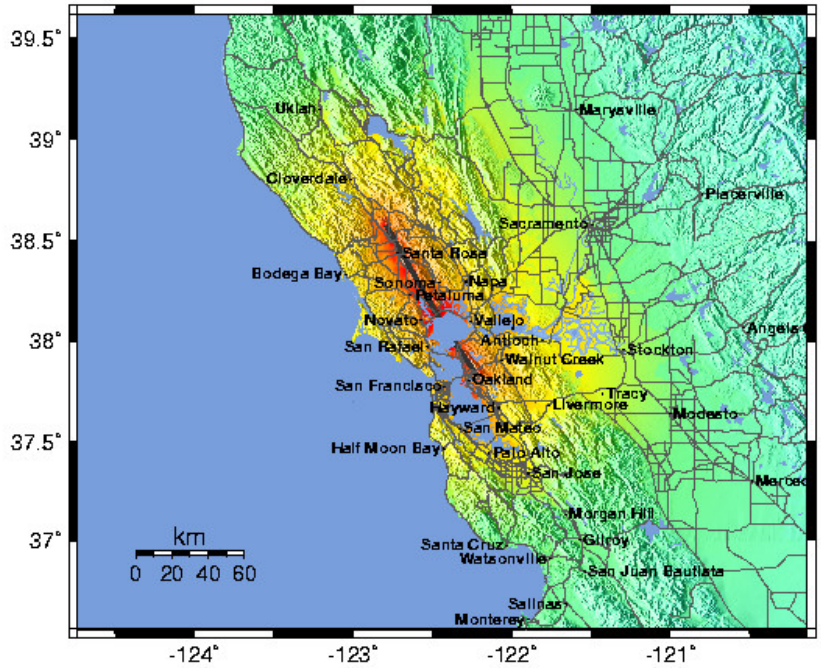
Home | Map Archive | Scenario HaywardRC_5_se | Related Links | Scientific Background | Disclaimer | Comment

SCENARIO: HRC HN+RC | Instrumental Intensity | Peak Ground Acceleration | Peak Ground Velocity | Spectral Response | Focal Mechanism | Download

-- Earthquake Planning Scenario --

Rapid Instrumental Intensity Map for HRC_HN+RC Scenario

Scenario Date: Thu Mar 6, 2003 04:00:00 AM PST M 7.1 N38.09 W122.43 Depth: 0.0km



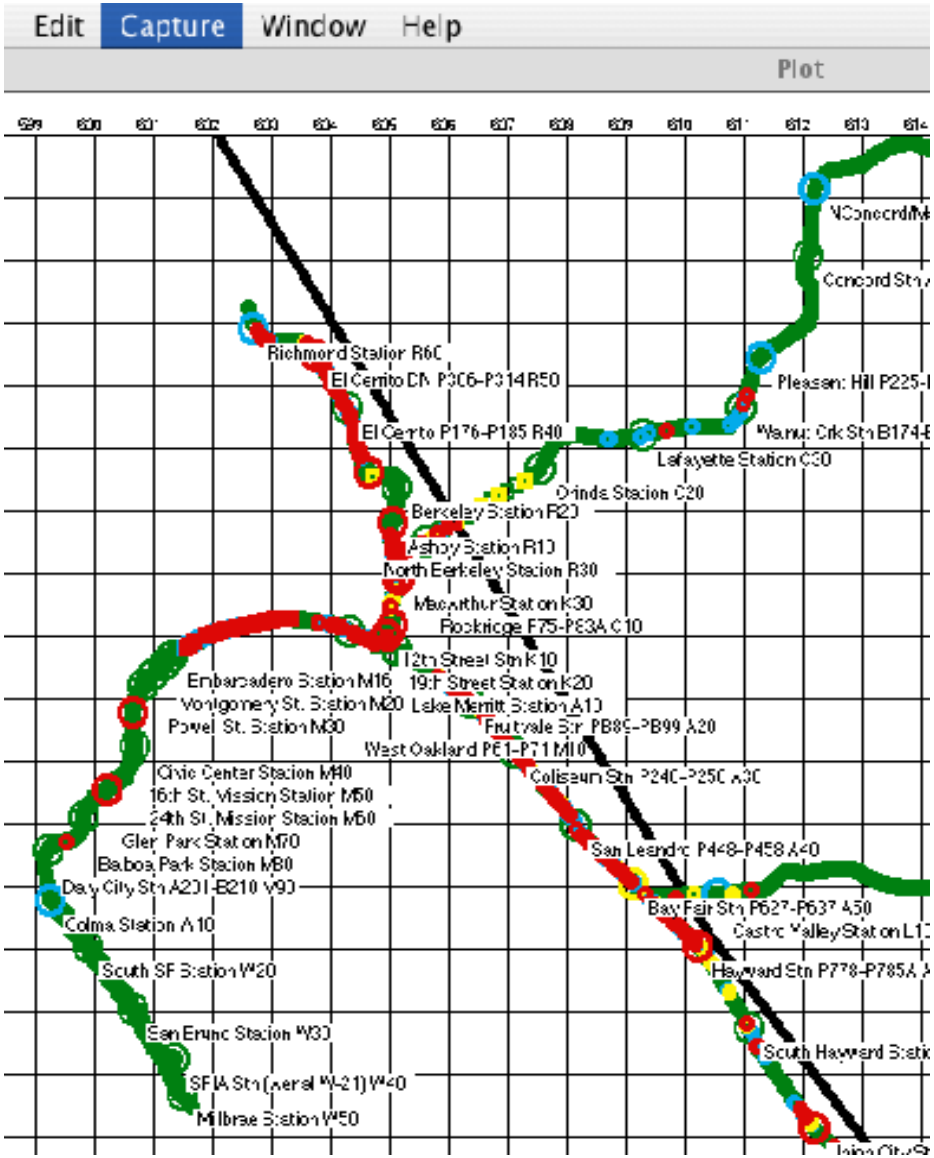
PLANNING SCENARIO ONLY -- PROCESSED: Wed Mar 12, 2003 09:17:40 AM PST

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

About Intensities

Internet

Vulnerability Study & Risk Assessment



- Input data into customized software called S.E.R.A. (System Earthquake Risk Assessment):
  - Fragilities of 17,000 Structures
  - Local Geologic Conditions
  - Four Scenario Earthquakes
  - Hundreds of Monte Carlo Simulations
- Obtained statistical probabilities of damage.
- Now using this software for emergency response.

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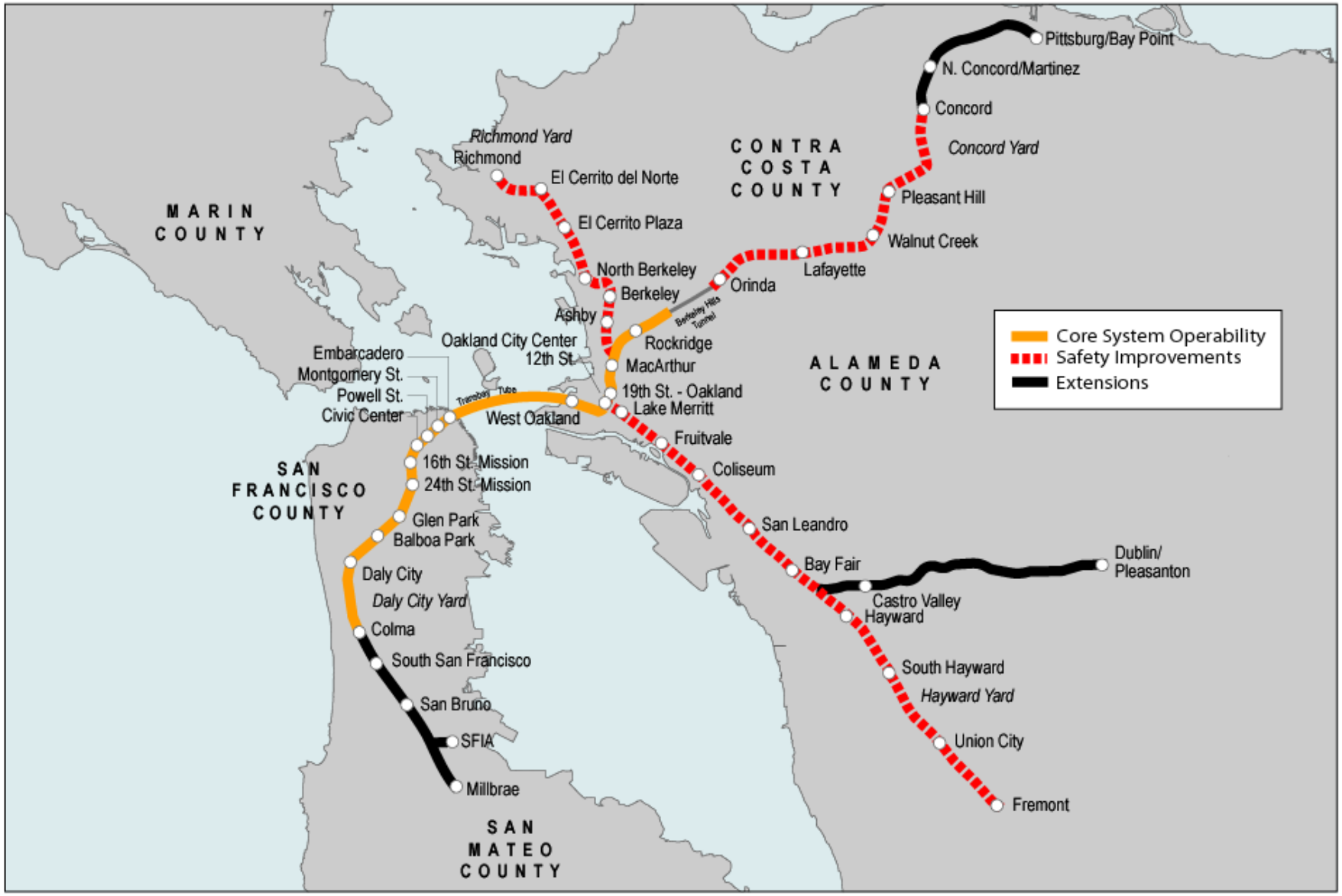
Core System Operability



Questions & Answers

BART is Committed to Safeguarding Bay Area Transportation and Economic Well-Being

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