

REINVESTING AND RENEWING FOR THE 21ST CENTURY



San Francisco Public Library

A Community and Economic Benefits Study of
San Francisco's Branch Library Improvement Program

TECHNICAL APPENDIX: ***Quantification of Benefits Methodology***

September 2015

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San Francisco Public Library



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INTRODUCTION AND OVERARCHING ASSUMPTIONS

This Appendix describes the assumptions and methodologies used in calculating the Return on Investment and Economic Benefit values associated with San Francisco Public Library's Branch Library Improvement Program (BLIP). The section below summarizes overarching assumptions and methodological procedures common to the entire study before addressing each calculation in more detail in the sections that follow.

Study Period

BLIP occurred over 14 years, from Fiscal Year (FY) 2000-01 to FY 2013-14, with some limited program spending occurring after that period in FY 2014-15. Most of these investments are being depreciated by the City over a period of 20 to 50 years. Based on previous major investments in library facilities, including those made to the Main, Chinatown, Mission, and Ocean View branches, we think it is most likely that these investments have a useful life of about 20 years. It is possible that some investments (for instance, land acquired and new buildings) may have a useful life longer than 20 years, while other investments (for instance, furnishings and technology) might have a useful life shorter than 20 years. In balance, 20 years presents a defensible period from which to measure the residual benefits of these investments. For the purposes of this study, we estimated that BLIP benefits would be fully realized for 20 years after the completion of BLIP, making our study period FY 2015-16 to 2034-35.

Most data used in this report was provided by the City and County of San Francisco's Fiscal Year which run from July 1st to June 30th. Any time data in another format was used, it is so noted in the text.

Projection Methodology

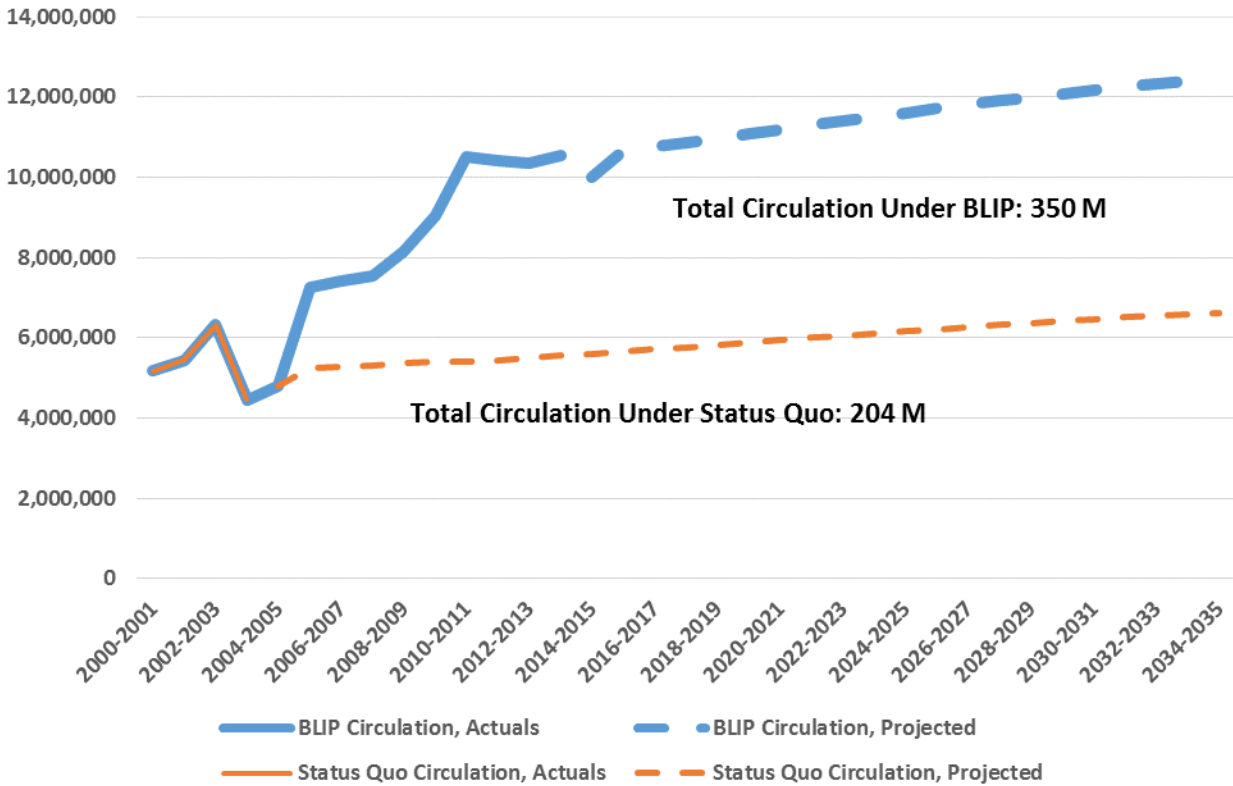
The projections used in the execution of this study relied on developing per capita estimates of usage and costs, as we assumed that per capita usage of the Library and per capita investment in the Library were likely to stay constant, while population continued to increase over the 20-year study period. We collected population data from the City and County of San Francisco Planning Department. We then multiplied per capita usage values by the forecast population, generating the estimated usage of each measurable library service for each year of the study period.

Projections of BLIP usage and investments were made based on the average per capita usage from FY 2009-10 to FY 2013-14. This is a conservative assumption, as BLIP was incomplete during this time, with several branches closed for different intervals. This represents the best available data at the time of this study.

Projections of status quo usage and investments were made based on the average per capita usage from FY 1999-00 to FY 2003-04. While this is a shorter historical period than we would have liked to show, this represents the best available data. This is liberal (resulting in a conservative effect to overall study results), as BLIP was underway during this period. With limited investment assumed in the status quo scenario, libraries would be expected to continue to degrade and become less in demand than they actually were in our baseline data for this period.

Exhibit 1 shows the underlying assumptions for circulation (which is indicative of projected usage of other resources).

Exhibit 1: Actual and Projected Circulation, With and Without BLIP, FY 2000-01 to 2034-35



Sources: SFPL, 2015; and BERK, 2015.

RETURN ON INVESTMENT

Return on Investment (ROI) is a comparison of the benefit earned on an investment and the amount invested. For the purposes of this report, ROI is expressed as a decimal to show the ratio of benefit to investment.

To determine the Return on Investment for BLIP, we first calculated the total increment of benefit attributable to BLIP (which represents the “return” in the return on investment calculation). Because we wanted to isolate this benefit for just BLIP, we had to first determine the net benefit generated by SFPL *with* BLIP, as well as the net benefit of SFPL *without* BLIP. The latter was subtracted from the former (net benefit with BLIP minus net benefit without BLIP) to isolate the increment of benefit attributable to BLIP.

Net Benefit Calculation

Net benefits are equal to benefits in excess of the cost of service delivery, quantified by subtracting the cost of service delivery from the value of benefits. While the cost of service delivery is known, and can be projected based on actuals, the value of benefits has to be quantified. A subset of SFPL services can be measured and valued in a quantifiable way. To be quantifiable, services must have a measurable unit of use and an estimable market value. Based on these criteria, quantifiable SFPL benefits to the San Francisco community include:

1. Circulation
2. Events and Programs
3. Reference services
4. Use of Space
5. Technology

To establish a baseline monetary value for the services that SFPL provides, a number of sources were consulted. First, we collected preliminary use data from SFPL for a historical period (FY 1999-00 to 2013-14). Each of these quantifiable uses was assigned a unit value based on the going rate to access a comparable good or service on the open market. This is a conservative methodology which underestimates the true benefits generated of library services, as it

Definitions

Return on Investment (ROI):

Comparison of the benefit earned on an investment and the amount invested.

Net Benefit: Benefits in excess of the cost of service delivery. This is generated by subtracting the cost of service delivery from the value of benefits.

Net Benefit of SFPL with BLIP: The value of community benefits generated by BLIP in excess of the cost of service delivery with BLIP.

Net Benefit of SFPL without BLIP: SFPL’s community benefits without BLIP in excess of the cost of service delivery without BLIP. This can also be thought of as the net benefit of maintaining the status quo.

Increment of Benefit Attributable to BLIP: The benefits generated as a result of BLIP, calculated by subtracting the net benefit of SFPL without BLIP from the net benefit of SFPL with BLIP. This represents the “return” portion (numerator) of the ROI calculation.

Community Investment in BLIP: The full amount spent by the community to accomplish BLIP. This includes public funding sources, including city bonds and the Library Preservation Fund, as well as the contributions by the Friends of SFPL. This value represents the “investment” portion (denominator) of the ROI calculation.

does not account for the full benefits derived by users. Non-quantifiable benefits include the value of knowledge gained and applied through accessing library resources and programs. The total value of the use of all services was summed to provide a total quantifiable value for SFPL's services. The methodology for each service type is described below.

1. Circulation

The greatest share of SFPL's quantifiable value is related to the circulation of materials. SFPL's circulation was aggregated for all content and formats and provided by branch and by month via SFPL's dataset titled Circulation by Call Number, FY 1999-00 to 2013-14. We also had data on the distribution of that circulation across different formats and content types for a shorter period (FY 2008-09 to 2013-14), provided in SFPL's dataset titled Circulation by Call Number, FY 2008-09 to 2013-14. We found that there was significant consistency across those years of data, and elected to use FY 2013-14 as the most likely circulation distribution moving forward. Because we can't predict how library usage will change over time, it is a simple caveat to these results.

Our approach to valuation was based on the value of the content of the materials, and not the format, except for in cases where demand for a format would not be transferable. Books, audio books, and ebooks with the same content were valued the same, while large print or other accessible versions of the same content were valued separately, as patrons who require accessible formats could not use a different format. We did not include a discount rate to account for the difference between borrowing and owning an item, recognizing that there are both benefits and disadvantages of owning materials.

While we cannot predict how the value of materials will change in the future, we did make an effort to use the best available information in providing defensible market values for materials. For example, we used low values of null to \$1 for juvenile software, as more and more of those programs are being delivered open source via the web (often for free) or via apps (often for \$0.99). We also used fairly low values of \$2 (low) and \$5 (high) for videos, as a significant amount of video materials are being streamed via web subscription services for low monthly fees. Other video distribution services (kiosks, cable on-demand menus, and the few remaining video rental services) charge fairly low rental fees, comparable to these values.

Exhibit 2 summarizes the total circulation for each format during the FY 2013-14 time period. **Exhibit 3** shows the estimated usage and corresponding value for FY 2015-16 to 2034-35. Separate assumptions are shown for the system with and without BLIP.

Exhibit 2: Distribution of Circulation Across all Contents, FY 2013-14

Material (Content)	Circulation	Share of Total Circulation
Board Books	788,258	8%
Family Adventure Pass	19,820	0%
Fiction	1,269,862	13%
Juvenile	1,683,642	17%
Juvenile Software	839	0%
Laptop Computers	22,111	0%
Large Print	30,070	0%
Law	21,835	0%
Music	18,437	0%
Non-English	1,225,572	12%
Non-English Board Books	80,809	1%
Non-English Juvenile	260	0%
Non-English Video	741,239	7%
Non-Fiction	1,496,159	15%
Other	185,268	2%
Paperback	89,880	1%
Software	20	0%
Teen	258,167	3%
Video	1,965,073	20%
Total	9,897,320	100%

Sources: SFPL, 2015; and BERK, 2015.

Exhibit 3: Summary of Benefits from Circulation, FY 2015-16 to 2034-35

	Circulation		Discount Rate	Market Value, Low	Market Value, High	With BLIP		Without BLIP	
	Total Usage	Without BLIP Total Usage				Total Value, Low	Total Value, High	Total Value, Low	Total Value, High
Circulation									
Board Books	18,666,000	9,904,000		\$ 8	\$ 10	\$ 149,328,000	\$ 186,660,000	\$ 79,232,000	\$ 99,040,000
Family Adventure Pass	469,000	249,000		\$ 10	\$ 20	\$ 4,690,000	\$ 9,380,000	\$ 2,490,000	\$ 4,980,000
Fiction	30,071,000	15,955,000		\$ 10	\$ 14	\$ 300,710,000	\$ 420,994,000	\$ 159,550,000	\$ 223,370,000
Juvenile	39,869,000	21,154,000		\$ 8	\$ 12	\$ 318,952,000	\$ 478,428,000	\$ 169,232,000	\$ 253,848,000
Juvenile Software	20,000	11,000		\$ -	\$ 1	\$ -	\$ 20,000	\$ -	\$ 11,000
Laptop Computers	524,000	278,000		\$ 5	\$ 8	\$ 2,620,000	\$ 4,192,000	\$ 1,390,000	\$ 2,224,000
Large Print	712,000	378,000		\$ 12	\$ 16	\$ 8,544,000	\$ 11,392,000	\$ 4,536,000	\$ 6,048,000
Law	517,000	274,000		\$ 15	\$ 25	\$ 7,755,000	\$ 12,925,000	\$ 4,110,000	\$ 6,850,000
Music	437,000	232,000		\$ 4	\$ 6	\$ 1,748,000	\$ 2,622,000	\$ 928,000	\$ 1,392,000
Non-English	29,022,000	15,399,000		\$ 15	\$ 17	\$ 435,330,000	\$ 493,374,000	\$ 230,985,000	\$ 261,783,000
Non-English Board Books	1,914,000	1,015,000		\$ 10	\$ 12	\$ 19,140,000	\$ 22,968,000	\$ 10,150,000	\$ 12,180,000
Non-English Juvenile	6,000	3,000		\$ 12	\$ 14	\$ 72,000	\$ 84,000	\$ 36,000	\$ 42,000
Non-English Video	17,553,000	9,313,000		\$ 5	\$ 8	\$ 87,765,000	\$ 140,424,000	\$ 46,565,000	\$ 74,504,000
Non-Fiction	35,430,000	18,799,000		\$ 16	\$ 18	\$ 566,880,000	\$ 637,740,000	\$ 300,784,000	\$ 338,382,000
Other	4,387,000	2,328,000		\$ 3	\$ 5	\$ 13,161,000	\$ 21,935,000	\$ 6,984,000	\$ 11,640,000
Paperback	2,128,000	1,129,000		\$ 3	\$ 5	\$ 6,384,000	\$ 10,640,000	\$ 3,387,000	\$ 5,645,000
Teen	6,114,000	3,244,000		\$ 10	\$ 14	\$ 61,140,000	\$ 85,596,000	\$ 32,440,000	\$ 45,416,000
Video	46,534,000	24,691,000		\$ 2	\$ 5	\$ 93,068,000	\$ 232,670,000	\$ 49,382,000	\$ 123,455,000
Total						\$ 2,077,287,000	\$ 2,772,044,000	\$ 1,102,181,000	\$ 1,470,810,000

Sources: SFPL, 2015; and BERK, 2015.

2. Events and Programs

SFPL hosts many events and programs throughout the year. These are free of cost, but are valuable to residents who would have to pay for comparable experiences otherwise. We reviewed the costs from fee-based sources, such as preschools, community colleges, before and after school programs, nonprofits, San Francisco Recreation and Parks, and others, to find conservative values for these kinds of programming. The resulting prices are consistent with other prominent library ROI studies.

We assigned a 50% discount rate to events, as many of the events the Library held during this period were related to BLIP – for example Grand Reopenings and community engagement events related to library design. These events would not have occurred without BLIP, and we do not anticipate the occurrence of similar events in the post-BLIP period; therefore, we think that event attendance was overstated during the valuation period and the discount rate helps us to correct for that. We also used a null value of the low market value of event attendance, as many of the types of events the Library hosts (for instance, open houses and community engagement events) would likely be free regardless of who was holding them.

Exhibit 4: Summary of Benefits from Events and Programs, FY 2015-16 to 2034-35

	With BLIP	Without BLIP	Discount Rate	Market Value, Low	Market Value, High	With BLIP		Without BLIP	
	Total Usage	Total Usage				Total Value, Low	Total Value, High	Total Value, Low	Total Value, High
Events and Programs									
Event Attendance	369,000	125,000	50%	\$ -	\$ 10	\$ -	\$ 1,845,000	\$ -	\$ 625,000
Pre-School Programs - Attendance	4,744,000	1,557,000		\$ 15	\$ 25	\$ 71,160,000	\$ 118,600,000	\$ 23,355,000	\$ 38,925,000
School Age Programs - Attendance	2,283,000	2,637,000		\$ 20	\$ 30	\$ 45,660,000	\$ 68,490,000	\$ 52,740,000	\$ 79,110,000
YA Programs - Attendance	597,000	0		\$ 25	\$ 40	\$ 14,925,000	\$ 23,880,000	\$ -	\$ -
Adult Programs - Attendance	1,189,000	683,000		\$ 25	\$ 40	\$ 29,725,000	\$ 47,560,000	\$ 17,075,000	\$ 27,320,000
Total						\$ 161,470,000	\$ 260,375,000	\$ 93,170,000	\$ 145,980,000

Sources: SFPL, 2015; and BERK, 2015.

3. Reference Services

SFPL provides patrons with access to reference librarians who are able to answer specific research and information queries. This is a highly valuable service, as many comparable services would require accessing a professional on the subject, such as a legal professional for a legal query or a university professor for an extremely specific academic inquiry. Library reference services are significantly more accessible and do not have a set unit of time for which they bill. To value these reference services, we estimated that comparable professionals who provide this kind of service would charge between \$60 and \$120 an hour, and that a reference inquiry would take about ten minutes to resolve. This is likely to be highly conservative, but considering the variability of these kinds of request, we feel that this is a defensible pricing structure.

Exhibit 5: Summary of Benefits from Reference Services, FY 2015-16 to 2034-35

	With BLIP	Without BLIP	Discount Rate	Market Value, Low	Market Value, High	With BLIP		Without BLIP	
	Total Usage	Total Usage				Total Value, Low	Total Value, High	Total Value, Low	Total Value, High
Reference									
In-Library Circulation	161,234,000	51,016,000	50%	\$ 5	\$ 10	\$ 403,085,000	\$ 806,170,000	\$ 127,540,000	\$ 255,080,000
Reference Question Support (per question)	20,870,000	21,905,000		\$ 10	\$ 20	\$ 208,700,000	\$ 417,400,000	\$ 219,050,000	\$ 438,100,000
Total						\$ 611,785,000	\$ 1,223,570,000	\$ 346,590,000	\$ 693,180,000

Sources: SFPL, 2015; and BERK, 2015.

4. Use of Space

SFPL provides informal space for users to read, relax, meet others, and enjoy library services. We refer to this function as “gathering space.” SFPL tracks the number of visitors who come to the library in its SFPL Annual Statistics dataset. We were able to access this data for FY 2004-05 to FY 2013-14 and imputed previous years based on the per capita values of the closest year of data available for that period. We conservatively estimated that 50% of visitors use the Library as a gathering space for some amount of time. This estimate was anecdotally confirmed as being conservative by library staff, and is supported by other library studies including “So Much More: The Economic Impact of the Toronto Public Library on the City of Toronto.” The value for the Library’s role as a gathering space was based on the cost of using comparable space—likely a coffee shop or café, where one might have to purchase a coffee or other refreshment to use the space.

Publicly accessible meeting spaces are important quantifiable benefits that SFPL offers to San Francisco residents. Access to free room rentals is valuable to residents who would otherwise have to pay the hourly market rate to rent a facility for their event. This can be cost prohibitive in San Francisco, as real estate is extremely expensive. SFPL’s meeting spaces are comparable to those rented for a fee by other City institutions including Recreation and Parks, and several non-profits. The pricing of those meeting spaces was used to create the range of values for SFPL’s meeting space as shown in **Exhibit 6**.

Exhibit 6: Summary of Benefits from Use of Space FY 2015-16 to 2034-35

	With BLIP	Without BLIP	Discount Rate	Market Value, Low	Market Value, High	With BLIP		Without BLIP	
	Total Usage	Total Usage				Total Value, Low	Total Value, High	Total Value, Low	Total Value, High
Use of Space									
Gathering Space (per library visit)	160,450,000	151,490,000	50%	\$ 5	\$ 8	\$ 401,125,000	\$ 641,800,000	\$ 378,725,000	\$ 605,960,000
Meeting Space (per hour)	35,000	3,000		\$ 45	\$ 90	\$ 1,575,000	\$ 3,150,000	\$ 135,000	\$ 270,000
Total						\$ 402,700,000	\$ 644,950,000	\$ 378,860,000	\$ 606,230,000

Sources: SFPL, 2015; and BERK, 2015.

5. Technology

SFPL offers patrons access to a variety of important technology resources, including computers, WiFi, and online databases. The market rate for computer use was developed based on several accepted reference points for the value of public access computing. The estimated market value for WiFi use was determined based on the market rate for WiFi in an internet café or other retailer offering fee-based WiFi. Databases are a challenge, as they provide materials that can be substituted by the web or other information formats, such that many users might not use them if they weren’t available for free through the Library. We used low market rates for these databases to reflect the value of their content, which may be available in other formats.

Exhibit 7: Summary of Benefits from Access to Technology, FY 2015-16 to 2034-35

	With BLIP		Without BLIP		Discount Rate	Market Value, Low	Market Value, High	With BLIP		Without BLIP	
	Total Usage	Total Usage	Total Value, Low	Total Value, High				Total Value, Low	Total Value, High		
Technology											
Public Computer Use (discrete session)	11,320,000	4,636,000	\$ 5	\$ 8		\$ 56,600,000	\$ 90,560,000	\$ 23,180,000	\$ 37,088,000		
Wifi Usage (discrete session)	4,262,000	0	\$ 5	\$ 8		\$ 21,310,000	\$ 34,096,000	\$ -	\$ -		
Databases (discrete session)	54,446,000	19,916,000	\$ 5	\$ 10		\$ 272,230,000	\$ 544,460,000	\$ 99,580,000	\$ 199,160,000		
Total						\$ 350,140,000	\$ 669,116,000	\$ 122,760,000	\$ 236,248,000		

Sources: SFPL, 2015; and BERK, 2015.

Calculation of Net Benefits Attributable to BLIP

The value accrued from the usage of the services described above were summed to provide a total quantifiable value for SFPL’s services, both with BLIP and as estimated for the continuation of the status quo (i.e. without BLIP investments). We subtracted the cost of service delivery over that same period to quantify the net benefits of SFPL with BLIP. Estimated costs of maintaining and operating the status quo system were similarly used to calculate net benefits under the “Without BLIP” scenario. To isolate the increment of benefits attributable to BLIP, we have to remove any benefits derived from the status quo system. This is accomplished by subtracting the net benefit without BLIP (the net benefit of maintaining the status quo) from the net benefit of the system with BLIP. Based on this equation, the total quantifiable benefits of BLIP are at least \$1.14 billion to \$1.99 billion as shown in **Exhibit 8** below.

Exhibit 8: Summary of Increment of Net Benefits Attributable to BLIP, FY 2015-16 to 2034-35

	With BLIP		Without BLIP	
	Total Value, Low	Total Value, High	Total Value, Low	Total Value, High
Library Services				
Circulation	\$ 2,077,287,000	\$ 2,772,044,000	\$ 1,102,181,000	\$ 1,470,810,000
Events & Programs	\$ 161,470,000	\$ 260,375,000	\$ 93,170,000	\$ 145,980,000
Reference Services	\$ 611,785,000	\$ 1,223,570,000	\$ 346,590,000	\$ 693,180,000
Use of Space	\$ 402,700,000	\$ 644,950,000	\$ 378,860,000	\$ 606,230,000
Technology	\$ 350,140,000	\$ 669,116,000	\$ 122,760,000	\$ 236,248,000
Total Benefits	\$ 3,603,382,000	\$ 5,570,055,000	\$ 2,043,561,000	\$ 3,152,448,000
- Operating Costs	\$ 1,907,662,299	\$ 1,907,662,299	\$ 1,485,371,549	\$ 1,485,371,549
Net Benefits	\$ 1,695,719,701	\$ 3,662,392,701	\$ 558,189,451	\$ 1,667,076,451
	Low	High		
Net Benefits Attributable to BLIP	\$ 1,137,530,250	\$ 1,995,316,250		

Sources: SFPL, 2015; and BERK, 2015.

Note: For ease of reference, these figures are provided in millions in the full report.

BLIP Investment

The above methodology describes how the “return” portion of the ROI equation was derived. The remaining component of the ROI ratio is the denominator: the investment. Our investment amount is the full amount invested in BLIP by the community from FY 2000-01 to FY 2013-14. As summarized in **Exhibit 9**, this includes public funding sources, such as City bonds and the Library Preservation Funds, as well as voluntary contributions made through the Friends of the SFPL.

Exhibit 9: Summary of BLIP Community Investment, FY 2000-01 to 2013-14

Summary of Capital Expenditures	Actuals	2015\$
Public Funding Sources, including City Bonds and Library Preservation Fund	\$ 166,939,592.43	\$ 206,929,851.76
Friends of SFPL Contributions (including in-kind)	\$ 9,847,739.32	\$ 12,061,579.20
Total	\$176,787,331.75	\$218,991,430.95

Sources: SFPL, 2015; and BERK, 2015.

Note: For ease of reference, these figures are provided in millions in the full report.

Return on Investment Summary

The total Return on Investment attributable to BLIP is between \$5.19 and \$9.11 as shown in **Exhibit 10**.

Exhibit 10: Total BLIP Return on Investment, FY 2015-16 to 2034-35

	Low	High
Increment of Benefit Attributable to BLIP	\$ 1,137,530,250	\$ 1,995,316,250
Community Investment in BLIP	\$ 218,991,431	\$ 218,991,431
Return on Investment	\$ 5.19	\$ 9.11

Sources: SFPL, 2015; and BERK, 2015.

Note: For ease of reference, these figures are provided in millions in the full report.

As this value conservatively quantifies only those SFPL services that can be easily measured, the actual return captured by the San Francisco community by SFPL is likely to be substantially higher.

ECONOMIC BENEFITS

BLIP necessitated significant spending. In addition to a capital investment of almost \$200 million made over 15 years, it also entailed an increase in operating costs. These investments generated calculable economic benefits for San Francisco residents. Economic benefits are positive results of a change in the economy in a specific area that causes increases in business revenue, profits, personal wages, and/or jobs. There are three kinds of economic effects associated with determining the economic benefits:

- **Direct:** Initial spending on capital and/or operations. In this case, the public investment in BLIP.
- **Indirect:** The purchasing and labor payments made by contractors as they implement BLIP.
- **Induced:** The respending of labor income in the local economy.

While we do not consider direct library expenditures to be a community benefit (see discussion on page 12), library spending on building construction and renovation, materials, and staffing create indirect and induced economic impacts as those dollars are respent and recirculated through the San Francisco economy.

To calculate the economic benefits of operational and capital spending attributable to BLIP, we first quantified the total operational and capital spending attributable to BLIP. This involved projecting the total operational spending with BLIP in 2015\$ and subtracting a projection for the total operational spending without BLIP, also in 2015\$. The same was done for capital spending: the total capital spending of BLIP was summed in 2015\$ and the capital investments that would have been required to maintain the status quo system were also summed in 2015\$ and subtracted from that value.

We used IMPLAN I-RIMS multipliers, an advanced version of the Federal Bureau of Economic Analysis' RIMS II multipliers, to estimate economic benefits. These multipliers provide a standard, defensible, transparent, and easy to communicate the economic benefits derived from operations and capital spending. One consideration to keep in mind when using such multipliers is that they assume local supply is perfectly elastic, with capacity to fully absorb the estimated impacts. For this assumption to be accurate, the projects or activities assessed under it need to be small or marginal relative to the economy's production input system, otherwise the projects will disrupt equilibrium prices, leading to significant factor or input substitution. In this case, BLIP investments, particularly when spread over time, are sufficiently small relative to the overall San Francisco economy to not warrant any concern.

For the purposes of this analysis we used two multipliers:

- **Operations:** To quantify the economic benefits of the increment of operations spending attributable to BLIP, we used the Sector 474 (other educational services) multiplier.
- **Capital:** To quantify the economic benefits of the increment of capital spending attributable to BLIP, we used the Sector 55 construction of new educational and vocational structures multiplier.

These multipliers were provided in 2013\$, which required an adjustment of the operating and capital costs described previously. Multipliers are derived from economic relationships which are

current to the year of the underlying data sets. Because productivity of workers and prices tend to increase, if you do not deflate production/sales being applied to the multipliers to the year of that multiplier, you are likely to misstate the employment and economic benefits. This correction was made using sector-specific deflators and inflators, available for 1997 to 2030. We used the calendar year of the first half of the fiscal year to match between the calendar year deflators and our fiscal year analysis. Additionally, we imputed the additional four years of inflators that we needed using the compound annual growth rate of the deflators/inflators.

Once this correction was made, the multipliers could be used. We then corrected the resulting economic benefit value to 2015\$. We used 2.5% as our inflation assumption, as it is the standard inflation assumption used by the City's Office of Economic Analysis.

The final calculations are relatively simple, as summarized here:

Equation for Calculating the Net Impact of BLIP Operational Spending:

$(\text{BLIP Total Operations Spending} - \text{Status Quo Operations Spending}) * (\text{Economic Multiplier})$

Equation for Calculating the Net Economic Impact of BLIP Capital Spending:

$(\text{BLIP Total Programmatic Capital Spending} - \text{Status Quo Programmatic Capital Spending}) * (\text{Economic Multiplier})$

In both cases, we exclude direct spending. This conservative assumption reflects the fact that the initial investment made in BLIP was funded by taxpayers and represents spending that would likely have occurred in other ways, either through government spending if captured as taxes, or consumer spending. We do include the indirect and induced impacts of BLIP investments, as they capture the relatively higher impact BLIP had on the San Francisco economy than other spending would likely have generated. Investments in capital spending and library staff positions are much more likely to remain local in the San Francisco economy than other forms of spending. Consumer spending, for example, very quickly leaks out of the local economy through the network of global suppliers and manufacturers responsible for providing consumer goods.

Exhibit 11 summarizes the total economic impacts of BLIP, which are estimated to be \$334.9 million.

**Exhibit 11: Economic Impact of BLIP Operational
 and Programmatic Capital Spending, FY 2015-16 to 2034-35**

	Multiplier	x	(BLIP Spending	-	Non-BLIP Spending)	= Economic Benefits (2013\$)	= Economic Benefits (2015\$)
Economic Benefits of Operations	1.61 - 1	x	(\$1,808,552,513	-	\$1,408,201,258)	\$245,337,732	\$258,782,390
Economic Benefits of Capital	1.44 - 1	x	(\$218,832,728	-	\$53,353,153)	\$72,506,845	\$76,103,905
= Total Indirect and Induced Economic Benefits							\$334,886,295

Sources: SFPL, 2015; and BERK, 2015.

Note: For ease of reference, these figures are provided in millions in the full report.