Value Capture Financing: Can Somerville Use a DIF to Fund a Capital Contribution to the Green Line Extension?

by Bill Valletta

Content Outline

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A comparative study of District Improvement Financing presented to the City of Somerville, February 2016, by Bill Valletta[1]

Introduction

As the MBTA and Mass DOT carry forward the search for cost savings and new sources of revenue for the Green Line Extension, it seems likely that Somerville will be called upon to contribute funds or create a mechanism of value-capture financing for some of the rail line improvements.[2] No specific proposals have yet been made but some planners and public officials have suggested that District Improvement Financing (DIF) or a similar mechanism might be used to draw revenue from properties, residents and businesses in the zones around the new rail stations.[3] Since other cities have used this type of financing for rail transit and infrastructure, it will be important consider the idea and draw from the past experience.[4] Somerville citizens will need to understand the issues, and they should engage the city administration before the May date when MBTA plans and proposals will be made.

We offer this report on DIF and value-capture financing to the City of Somerville as a tool of reference and as one citizen's recommendations for Green Line planning. It provides a comparative analysis of four relevant case studies, including the New York No. 7 Manhattan West Side Subway Extension and the District Improvement Financing (DIF) infrastructure projects of Somerville Assembly Square, Quincy Downtown, and Worcester City Square. By looking at these projects, we can identify key factors that led to their success, failure or uncertain results, and we can then apply the same factors to the situation of Somerville and the Green Line today. Could a DIF mechanism provide a substantial funding for the rail project? At what level would it be feasible in the bond market? Would it pose risks for the city's budget and credit status? How would it impact the financing of other infrastructure needed to support new development? Would a rail DIF crowd out the amenities and exactions that various citizen groups expect to impose on developers?

Part 1: Creating a model for analysis of DIF feasibility, risks and impacts

Massachusetts, in its General Laws, authorizes cities and towns to borrow money for infrastructure and pay back the principal and interest from a designated fund that receives the future taxes and fees paid by the properties, people or businesses in the district, which benefits

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[1] The author, a resident of Brickbottom, is an international urban planning and real property law consultant.
[2] See MBTA (11 January 2016), "Interim GLX Plan," presentation to the Financial Management Control Board; www.mbta.com/about_the_MBTA/board_meetings/fmcb.
[3] See Danielle McLean (31 December 2015), "Community fights to save GLX," www.somerville.wicked.local.com/article/20151231/NEWS/151239645/?Start=2. See also Boston GLOBE Editorial (24 December 2015), "Pursue creative funding for the Green Line Extension;" Adam Vaccaro (30 December 2015), "Canceling the Green Line extension would be expensive, too;" www.Boston.com.
[4] See the World Bank (2015), Financing Transit-Oriented Development with Land Values, report no. 93686; www.worldbank.org; also see Lincoln Institute for Land Policy (2012), Value Capture and Land Policies, (G.K. Ingraham and Y-H Hong, ed.); www.lincolninst.edu/pubs/.

from the new infrastructure.[5] For its subways and infrastructure, New York City has similar powers. Thus, we can create a model for analysis of the case studies that reflects the essential elements of the legal mechanism. As required by law, each city must make four pledges to its creditors:

- First, the city must promise to use the capital provided by the lenders for the specific infrastructure project.
- Second, it must agree to pay back the loan principal and interest (debt service) from a fund, held separately from the city's other budget accounts.
- Third, the fund must be created by segregating the taxes and fees from the district, which exceed the amount paid in the "base year" before the infrastructure was installed.
- Fourth, in any year when there is insufficient money coming into the fund to cover the debt service, the city must appropriate money from its general fund to make up the shortfall.

Following these required elements, the model uses a spreadsheet with four lines of figures, running chronologically through a period of 30 years:

Table 1.A: Simple model of District Improvement Financing

Category	Year											
	1	2	3	4	5	6	7	8	9	10-20	21-29	30
1. Capital fund												
2. Debt service												
3. New revenue												
4. Shortfall												

This model is based on the actual spreadsheets, contained in the DIF applications that each Massachusetts municipality has submitted to the Commonwealth Economic Assistance Council.[6]

The amount of borrowed money (revenue bond issue) is entered on the capital fund line in the year when the issue takes place and in subsequent years it diminishes as funds are drawn down to pay for the infrastructure work (line 1). The debt service pays out each year for the length of the loan (line 2). The costs are offset by the flow of new revenue (line 3) with small amounts in the early years, growing and reaching the level of the debt service in the middle years, and generating surplus in later years. In any year when the revenue and remaining capital fund are too small to cover the debt service, the city must make up the shortfall (line 4). Usually this happens for a few of the early mid-years. The case study comparisons use the spreadsheet at two stages in a four stage analysis.

At Stage 1, we show how the city and the bond buyers determined feasibility at the start – that is, how they calculated the revenue to cover costs and debt service. In order to comprehend the assumptions and test the strength of the projections, we ask the following questions:

[5] Massachusetts General Laws, Title VII, Chapter 40Q, Section 2. There may be new legislation that creates a specific financing mechanism for transit; see Massachusetts General Court (2012-2014), Bill H.3535; www.malegislature.gov/Bills/188/House/H3535.

[6] Quincy DIF Application for Downtown Center Project (2007), www.quincyma.gov. Worcester Amended DIF Application for City Square (2010), www.worcesterma.gov/. See also the Annual Reports of the New York Hudson Yards Development Corporation, www.nyc.gov.

- How much money did the city need to borrow? Did it require all the money at once or was it able to borrow smaller amounts in phases?
- How big was the district? Did it encompass a large number of properties, expected to redevelop individually? Or were there a few large consolidated parcels with development potential defined in a master plan or urban renewal plan?
- What impact was the infrastructure project expected to have on property values and business activities in the zone? Were prices and rents expected to rise? Would the new infrastructure open up the zone to new development – at what scale, volume and value?
- Were other actions being taken – such as re-zoning, master planning or urban renewal – that would further induce development and boost property prices and rents?

The answers to these questions reveal how the judgments were made about the feasibility of the DIF and the size of the loan the city could "buy" with the expected revenue flow.

At Stage 2, we consider how each city determined the parallel level of risk to its budget and credit status. If the revenue projections were to turn out wrong, how great an impact would this have on the city's credit and its general operating budget – in the worst case of no new revenue or in the more likely case of continuing shortfalls? Was the city already burdened with a high level of general obligation debt and other outstanding revenue bonds? What actions could the city take to mitigate risk – such as phasing or procedural protections?

At Stage 3, we look at how the DIF related to the total infrastructure needs of the district and how the city was able to keep the amount of borrowing within a feasible and prudent range. The strategies included finding other sources of revenue – federal, state, direct developer payments or developer financing – and structuring the project in phases to lower the risk of interim debt service shortfalls.

At the final Stage 4, we again use the spreadsheet model to see what actually has happened from the DIF starting date until today (2015). Has the project carried forward as anticipated in the plans? Have the initial cost and revenue projections proven accurate? Has the city been required to make the backup payments of debt service? Has the shortfall lasted only a few years or is it persistent? Has the debt burden impacted the city's overall budget and credit status?

Part 2: Applying the model to the Case Studies

The four case studies are presented in detail in the Appendix to this report, below. They show how the model has been applied to projects of different scale and in cities with a variety of economic conditions and development potential.

- Somerville created a DIF at Assembly Square to cover the costs of street, sidewalk and some parkland improvements, with authorized borrowing of $25 million.
- New York used a DIF-type mechanism to finance $3 billion of infrastructure to support the redevelopment of Manhattan's Mid-town West Side with an extension of the No. 7 subway line ($2.4 billion), extension of the High Line Park, and creation of a new boulevard between 10th and 11th Avenues.

- Quincy created a DIF to fund water, sewer and street improvements and construction of public parking garages in its Downtown Center redevelopment district. The initial DIF authorization was for $40 million, with eventual expansion to up to $289 million.
- Worcester created the DIF for the re-building of its obsolete enclosed City Square shopping mall, re-opening streets and sidewalks through the site and adding larger scale buildings and mixed uses. The initial authorized borrowing was $64 million with possible later expansion to $95 million.

In the following paragraphs, the key elements of each case study are shown in comparison and our major findings and observations are presented for each stage of the analysis.

Stage 1: Feasibility determination

At the first stage each city had to demonstrate to the bond buyers that its capital costs would be balanced by future revenue from anticipated new development and value gains.

Table 2.1: Comparison of DIF feasibility factors
Sources: DIF application forms submitted by Somerville, Quincy and Worcester to Massachusetts Economic Assistance Coordinating Council; New York City Planning Commission (12 July 2004), Presentation of Hudson Yards Infrastructure Corporation Financing Plan, www.nyc.gov/html/dcp/html/hyards/proposal/html.

Category	New York City No. 7 Subway	Quincy Center Downtown	Worcester City Square	Somerville Assembly Square
Infrastructure cost	**$3 billion**	**$289 million**	**$95 million**	**$100 million**
Authorized DIF loans	**$3 billion**	**$40 million**	**$64 million**	**$25 million**
Year fund created	2005	2007	2006	2010
Tax district and development zone size	330 acres (40 blocks) plus 26 acre platform	55 acres within 113 acre zone	21 acres	66 acres within 120 acre zone
Related actions	Rezoning of 40 blocks Rezoning of platform	Rezoning Master developer agreement	Rezoning Urban renewal plan	Master plan Developer agreement
Future development	40 mill ft2(zone) 12 mill ft2 (platform)	2.7-3.4 mill ft2	2.2 mill ft2	6.5 million ft2
Previous (base) tax revenue from zone	--	$5.7 million/year	$870,000/year	$2.8 mill/year
Expected new revenue in the future	$67 billion aggregate over 30 years	$7.1 million/year plus parking revenue	$4.3–5.9 million/yr. plus parking revenue	$17 million/year

The most important factors in determining feasibility were the amounts of authorized borrowing compared to the volume of anticipated future development – that is, the square feet of new tax-paying buildings and higher-value renovations expected in the district. Each city created its DIF simultaneously with rezoning and planning actions, which increased the permitted size, height and floor area of buildings and/or allowed higher value commercial and residential uses in the district. This combination was intended to add immediately some value to all properties and boost the interest of investors and developers. In Somerville and Worcester, the land in the district was consolidated under the control of one or two developers with a master plan so the city could expect that its expenditures on infrastructure work would be simultaneously or quickly followed by the private construction. In Quincy and New York City,

the zones encompassed multiple private landholdings, whose owners would make their own deals with developers, as well as some city-owned parcels on which strategic projects were planned. This made the linkage between the public investments and the expected private investments more indirect.

Given these differences, the chart illustrates how the feasibility balance was achieved in concept. The New York Manhattan project required an enormous capital fund – $3 billion – but the city was able to pair it with an equally enormous development potential – 52 million ft2 – and with a prediction that the Manhattan real estate market would be strong. By contrast, the Massachusetts cities had to find ways to balance infrastructure costs with much more limited development potential. They authorized modest amounts of borrowing, they sought other federal or state monies to cover parts of the infrastructure, and they structured the projects in order to phase the borrowing. This would allow limited bonds to be issued in the early years to be followed by additional bonds when portions of the new development would be completed and paying in revenue.

Stage 2: Measurement of risk

The primary risk each city had to accept in creating the DIF was the possibility that the infrastructure work and expected new development would encounter problems or delays, (i) causing the city to hold borrowed capital remaining unspent or maintaining infrastructure, not being used, and (ii) requiring the city to draw money from its annual operating budgets to cover debt service shortfalls. These risks could be measured either as the worst case – the project would fail completely and the city would carry the whole debt burden without any new revenue – or as a more likely case that new revenue would come more slowly than predicted, requiring the city to carry debt service shortfalls for a longer period of interim years. In making a judgment about its level of risk, each city had to consider:

- The debt limitations, imposed by law;
- The city's own policies of prudence in financial management;
- The city's current debt obligations, annual debt service payments, and other commitments, as defined by its capital plans and budgets.

Because the typical DIF made use of revenue bond (rather than general obligation bond) financing, the limitations imposed by state law did not strictly apply.[7] However, the standards of prudence set in both the laws and city policies reflected the same tests made by bond buyers and market rating services, so it was appropriate to apply them.

In Massachusetts, the law allows any city or town on its own authority to issue general obligation debt up to a level of 5% of the total value of all taxable real property (the "equalized value").[8] Most Massachusetts cities have tried to be more prudent and many have adopted

[7] Somerville Assembly Square DIF is the exception. The city issued general obligation bonds because the project was small and the infrastructure work was under city control.

[8] Massachusetts General laws, Title VII, Chapter 44, Section 10. The law allows a city to exceed this level up to 10% if the Commonwealth Municipal Finance Oversight Board gives permission.

standards or special procedures in order to keep their borrowing and risk within lower limits. In Somerville, the city financial officers have stated the following policies:

- First, long-term debt under general financing for municipal purposes is constrained to a maximum of six percent of total general fund expenditures;
- Second, separately-financed water and sewer enterprise debt service should not exceed 20% of water and sewer operating revenues; and
- Third, the city endeavors to apportion a minimum of 30% of its yearly free cash to the Capital Plan (in order to minimize the need to borrow).[9]

Boston's policy has fixed a debt ceiling of 3% of its equalized value and the city has stayed below 1.5%, in practice, over the years. Boston also has tried to hold its annual debt service payments to 7% of its general operating budget.[10] Worcester has followed a "Five Point Financial Plan" with extra procedures for its capital and financial planning and the requirement that 50% of any surplus funds in the general operating budget each year be placed in a stabilization fund.[11] Quincy has applied a series of "principles" when adopting its Capital Improvement Plan, in particular, giving priority to projects that protect and maintain current city assets and offer cost savings (over new projects).[12] As an indicator of the effectiveness of these standards and procedures, the Massachusetts cities have boasted high credit ratings:

Table 2.2.A: Ratings of General Obligation Bonds[13]

City	Moody	S&P	Fitch
Somerville	Aa2 (2013)	AA+ (2014)	
Quincy	Aa3 (2013)	AA+ (2014)	
Worcester	Aa3 (2013)	AA- (2013)	AA- (2013)
Boston	Aaa (2015)		

How did the four DIF cities calculate risk and take measures to minimize them? The following chart shows the key factors:

[9] See the City of Somerville (2014), Capital Investment Plan 2014-2018, at page 17; www.somervillema.gov.
[10] Boston Municipal Research Bureau (April 2014), A City in Transition: Managing Change and Retaining Financial Stability in Boston, section on "Debt Management Policies," at page 75; www.bmrb.org.
[11] See the City of Worcester (2015), Fiscal Year 2016 Annual Budget, at page 29; www.worcesterma.gov.
[12] See the City of Quincy (2015), Capital Improvement Plan, at pages 3 and 7-9; www.quincyma.gov.
[13] See City of Somerville, Mass. (2014), "City jumps two bond ratings in rating report…", www.somervillema.gov; City of Quincy, Mass. (2015), "Credit Rating Reports," www.quincyma.gov; City of Worcester, Mass. (2013), "City of Worcester receives Standard and Poor's Bond Rating Upgrade, Moody's and Fitch affirm high ratings," www.worcesterma.gov/announcements/...; Moody's Boston ratings; www.moodys.com.

Table 2.2.B: Comparison of indicators of City debt capacity

Source: Massachusetts Department of Revenue, Municipal debt analysis database FY2010-2013, www.mass.gov/dor/ *and the FY2015 and FY2016 proposed budgets on the city websites*

Project	Somerville	Quincy	Worcester	New York City
DIF total	**$25 million**	**$289 million**	**$95 million**	**$3 billion**
Year of reference*	(2010)	(2010)	(2008)	
Equalized value[14]	$9.1 billion	$11.8 billion	$13.7 billion	
Debt limit @ 5%	450.0 mill	590.0 mill	691.0 mill	
General obligation bonds outstanding	$91.1 mill	$72.3 mill	$641.2 mill	
-as percent EqV	1.00%	0.61%	4.67%	
-DIF percent EqV	0.27%	2.44%	0.69%	--
Worst case total	1.27%	3.05%	5.37%	
City budget	$178.6 mill	$226.5 mill	$619.1 mill	$41.5 billion
City debt service	$9.1 mill	$12.9 mill	$20.6 mill	2.2 billion
DIF debt service*	$1.3 mill	$15.8 mill	$3.5 mill	$140 mill[15]
Combined burden	5.6% budget	12.4% budget	3.9% budget	

*Note: The equalized values for each city are given for the reported year, closest to the year of its initial DIF bond issue; Massachusetts Department of Revenue Bureau of Local Assessment Equalization Study, www.mass.gov/dor/local-officials/assessor-info/equalized-valuations-eqv.html. DIF Debt service is estimated at 5.5% of the total authorized DIF amount.

At the time of creating their DIF, Somerville and Quincy had outstanding general obligation debt of 1% or less of equalized value (compared to the legal 5% standard). If Somerville added the full $25 million of authorized Assembly Square DIF debt, the worst case was that its debt would rise to the level of 1.27% of equalized value. Similarly, adding to the debt service in the worst case would require 5.6% of an annual budget, respecting the 6% standard of prudence.

The Quincy DIF involved greater risk because of the high total project cost – $289 million. In light of the city's low outstanding general obligation debt, the combined old and new debt would reach 3.05% of equalized value, an acceptable level. However, the city was paying $13 million out of its general operating budget for debt service and in 2010 it added more debt for school and other projects.[16] If a total DIF debt service of $15.8 million (on $289 million) had to be added in the worst case, the general budget burden would be 12.4% – well beyond a typical standard of 6% or 7%. Quincy avoided this worst case risk by limiting the first bond issue to $30 million.

In Worcester the outstanding debt before the DIF was high, at 4.67% of equalized value.[17] Adding the full $95 million of DIF debt would push the combined total beyond 5%. This risk was avoided by keeping the DIF authorization at $64 million and phasing the project. Additional factors, lowering risk, were the city's larger population and its much larger budget

[14] See Massachusetts Department of Revenue Bureau of Local Assessment (January 2015), "Final 2014 Equalization Study," DOR website: www.mass.gov/dor/local-officials/assessor-info/equlaized-valuations-eqv.html.
[15] Average amount contributed from New York City operating budget to pay Hudson Yards debt service in years 2008-2015; see Hudson Yards Infrastructure Development Corp, Annual reports; www.nyc.gov.
[16] See City of Quincy (2011), Report on Examination of Basic Financial Statements, www.quincyma.gov.
[17] See City of Worcester (2008), Comprehensive Annual Financial Report, www.worcesterma.gov.

compared to Somerville and Quincy. Also, much of its earlier debt was already covered by revenue so that the annual debt service appropriation was a reasonable $20.6 million in 2008. Another $3.5 million for a failed DIF would equal 3.9% of the city's general operating budget – an acceptable risk.

For New York City, we have not presented the tax base figures because of the city's differently-defined financial structure under New York law. We make the simple comparison between the city's annual general operating budget of $41 billion, its typical annual debt service of $2.0 billion and the project debt service of $140-150 million.[18] Under the worst case scenario, the DIF debt service would place an additional burden of 0.34% of the city's annual operating budget – not a good outcome but bearable.

Stage 3: The DIF in relation to other infrastructure and improvements

Another measure of the costs and potential risks of each DIF was made by comparing the size of the authorized DIF to the total of costs for infrastructure, needed to support and achieve the redevelopment of the district, and for any other improvements promised to residents and businesses. As seen in the case studies, each DIF capital fund has been pledged to cover certain elements of required infrastructure, while other elements are being paid by federal or state grants, by general obligation borrowing through the regular city capital plan, by direct appropriations from annual budgets and from city-wide improvement programs, or by "partnership" responsibilities placed on the private developers.

Table 2.3: Comparison of structure of total costs for the Improvement Districts

Category	New York City No. 7 Subway	Quincy Center Downtown	Worcester City Square	Somerville Assembly Square
Estimated total	**$5 billion**	**$289 million 81 million**	**$95 million**	**$100 million**
Authorized DIF loans	**$3 billion**	**$41 mill (Ph 1) 18 mill (Ph 2)**	**$64 million**	**$25 million**
DIF funded	Subway track and stations: $2.4 billion High line park and new boulevard: $600 million	Remove public parking and prepare city-owned sites to dispose; New garages; Street realignment, sidewalk and open space improvement	New streets, infrastructure lines and public plaza Public parking garage	Street, sidewalk and park improvements
City budget funded	Regular sewer and water improvements Street and sidewalk adjustments at platform site	New boulevard "Concourse" construction	Rebuild adjacent Worcester Boulevard	--
Sale of city assets	Air rights for platform	Two city parcels: $10 million	--	--
City property tax abatements or subsidies	20-year housing and 10-year commercial tax	20-year housing and 10-year	15-year tax subsidies for	None; however, the Partners building

[18] See the New York City Office of Management and Budget, Budget Summary (2010), www.nyc.gov/html/omb/html; also see the Hudson Yards Infrastructure Corporation Annual Report (2015), www.nyc.gov/html/hyic/html.

	subsidies for developers	commercial tax subsidies for developers	developer/tenants (TIF)	will pay PILOT
State/federal funded	West Side Highway and riverfront park improvements	New boulevard and historic improvements $12.5 million	Mass Works grant of $11 million	Transit station: $50 million Other roadway and land remediation: $21 million
Developer costs for public elements	Construction of the platform over the rail yard: $1.6 billion	Land consolidation and parcel adjustments Finance costs for infrastructure until reimbursed by city	Removal of old building elements on new street areas	Developer builds park and street-level amenities as part of project design

The particular details of each district's financing structure are not significant but, conceptually, the chart reflects the practical reality that the property value-gain, from which funding for all costs were drawn, was understood to have a finite total. If the cost commitments and expectations of citizens for new services exceeded the level of the new revenue flow, then money would have to come from other funds and sources. The city might take funds away from other services or projects in its city-wide capital plan or, alternatively, cut back on promised improvements for the District. This, in turn, could jeopardize the achievement of full redevelopment if investor and developer interest would diminish. Similarly, if the developers and landholders perceived that the improvements, which they were required to provide, would be too costly, they would seek to abrogate or cut back on these or other responsibilities, with the possible result of frustration of the plans and public expectations.[19]

Stage 4: Actual performance of the projects and DIF

What has been the actual performance of these infrastructure projects and their financing schemes? Are they realizing the expected developments, generating new revenues and covering the debts? The interim results – to 2015 – are varied. Somerville's small but optimistic DIF has been a fast success. The Quincy project has failed. Worcester and New York City have both made interim debt service payments out of general funds to cover shortfalls, but both projects should reach a balance of costs and revenues in the near or mid-term future.

Table 2.4: Status of the DIF projects in 2015

Source: *annual city budgets and DIF Amendments for Somerville, Worcester and Quincy; Annual Reports of the New York Hudson Yards Infrastructure Corporation.*

Project	Somerville Assembly Sq.	Quincy Center Downtown	Worcester City Square	Manhattan No. 7 Subway Extension
Starting year	2010	2007	2006	2005
Authorized total	**$25 mill**	**$41 mill**	**$64 mill**	**$3 billion**
Bonds issued	G.O. bonds: $15 mill (2011)	Bond Anticipation Notes (2011): $33	Revenue bonds: $34.7 million (2007-2014)	Revenue bonds: $2 billion (2007) $1 billion (2011)

[19] An example can be seen at North Point, where the master developer, having made commitments to Cambridge to pay for park and public space improvements, then applied to the Commonwealth for increased tax subsidies. The argument was that these public costs now made the parcels non-competitive for tenants and investors. HYM…

		million replaced by long-term bonds (2015)		Private for half platform: $700 mill (2014)
Completed new construction by 2015	670,000 ft2 mixed use	-0-	280,000 ft2 mixed use	Subway line opened; 57 buildings in zone
Under construction 2015	600,000 ft2	-0-	120,000 ft2 hotel	Multiple sites in zone and 3 million ft2 on the platform
2015 balance of costs and revenue (one year)	Debt service covered with $900,000 into general fund	Debt service: $1.2 mill Revenue: -0-	Debt service: $1.4 mill Revenue: $0.4 mill	Debt service and costs: $409 mill Revenue: $104 mill
2015 cumulative deficit	-0-	$31 million	$5.037 mill	$2.59 billion

The progress of the projects and their interim success in achieving coverage of costs by new revenues has been influenced by three factors: (i) market timing, (ii) the structure of the public/private relationship, and (iii) project and district size.

The primary factor has been market timing. By starting its Assembly Square DIF in 2010, when the national recession was ending and regional market demand was gaining strength, Somerville has achieved quick success. The city issued bonds in the amount of $15 million in 2011 and by 2015 the revenue from the completed first phase of construction was covering the debt service and sending a surplus into the city's general fund.

In Worcester, Quincy and New York City, the DIF began at the start of economic recession, delaying the sequence of actions and forcing each city to carry financing and face higher project costs. Their ability to sustain through the lean years was influenced by the two other factors: (i) the structure of the public/private relationships and (ii) size. For both Quincy and New York City the multiple private parties and small number of city-controlled parcels in the districts required an indirect linkage between the infrastructure work and costs and the revenue generating redevelopment. New York, however, has been able to proceed with the infrastructure work and carry debt service shortfalls out of its $41 billion annual budget and the huge development potential of 52 million ft2 has sustained market interest.

The Quincy project has failed because of its complex structure and limited size. It placed the responsibility of infrastructure financing and construction on the developer with later city reimbursement, but gave the developer direct control of only two city parcels. The developer's own financing sources were too weak to carry forward when work delayed and the market outlook diminished. In 2014, the city abrogated the developer agreement and plans and the taxpayers were left holding the burden of debt service on an unused $40 million capital fund.

Worcester, like Quincy, did not have a large reserve for interim back up funding but it was able to precisely match a series of small bond issues with specific work and private investments. This was because the whole project area was under control of one developer. The city has had to make some small back up payments for shortfalls in debt service coverage, but with a better economy, project construction is moving forward.

Part 3: Applying the Lessons to Somerville and the Green Line

In Part 1, we have identified the apparent factors determining the level of debt that can feasibly be obtained with a pledge of revenue from future development and carried over time with reasonable risk. We now look for these same factors in Somerville today, and estimate the debt it may carry as a contribution to the Green Line. Our analysis follows the four stage structure and focuses on two specific transit zones – Union Square and Boynton; and Brickbottom and Inner Belt.

It is important to note that we do not try to define a city transit contribution, based on the rail project cost needs or on a fair share balance among the benefitted municipalities, state and MBTA. We assume that, even with cost savings, the project will need the maximum amount of capital each source can produce. We also assume that the total capital fund will have to be borrowed all at once; the project will not lend itself to a structure of phased borrowing.

The benefitted zones

The Green Line project anticipates the construction of eight stations, serving zones with very different levels of potential development.

Table 3.1.A: Somerville zones with estimated development potential

Source: Plans published by the Somerville Office of Strategic Planning and Community Development

Zone	Classification	acres	Residential	Office/lab	Retail	Fabrication
Zones classified as Transformation with substantial development potential						
Union Sq (1)	Somer Vision	20	380,000	600,000		
Union Sq (2)	U2 Plan (Nov 2015)	--	1,700,000	1,120,000	120,000	100,000
Union Sq (3)	Tufts Students Plan (2014)	Add 2.3 mill ft2 on 7 blocks now assessed at $26 mill				
Boynton (1)	Somer Vision	28	550,000	900,000		
Boynton (2)	U2 Plan (May 2015)	--	770,000		90,000	
Boynton (3)	U2 Plan (Nov 2015)	--	1,400,000	2,000,000	190,000	180,000
Boynton (4)	Parsons Plan (2014) = 186 parcels	43	480,000	1,120,000		
			640,000	960,000		
			900,000	2,100,000		
			4.8 million total all uses by zoning FAR			
Brickbottom(1)	Somer Vision	52	820,000	1,600,000		
Brickbottom(2)	MIT Student plan (2013)	--	4,100,000	500,000	700,000	2,000,000
Inner Belt(1)	Somer Vision	92	1,100,000	2,800,000		
Bb/Inner Belt	Goody Clancy (2013)	140	2,250,000	3,250,000	165,000	
Zones classified as Enhancement with limited infill development potential						
Gilman Sq (1)	Somer Vision	15				
Lowell St/ Magoun Sq(1)	Somer Vision	10				
Magoun Sq (2)	Community Plan (2012): Zoning FAR potential	--	200,000		212,000	
Ball Sq (1)	Somer Vision	9				
Zones that straddle the city boundary lines						
Tufts Univ	(Medford)	--				
Rte 16 (1)	(Medford)	6				

Rte 16 (2)	MAPC Plan (2012) two cities		150,000	67,000	15,000	
Lechmere (1)	(Cambridge)	4				
	North Point HYM EDIC		373,000	442,000		

Note (1): The Somer Vision Plan (1) calculates the development potential of all of the zones of conservation and enhancement at 900 residential units and 5,000 jobs – roughly 900,000 ft2 residential and 1.7 million ft2 of commercial/production/retail (using the standard of 350 ft2 per employee)

In the Somer Vision plan, only the neighborhoods adjacent to the Union Square and Joy/Washington Street stations are defined as Transformation zones, anticipating significant future development. The areas around the stations at Gilman, Magoun and Ball Squares are defined as areas to Conserve and Enhance, where only low-density, infill development is foreseen. In these three small-scale squares, future revenue may grow incrementally with re-assessments, but added revenue from new development will be sporadic and of too small a volume to substantiate a pledge to bondholders. In the zones adjacent to the three other stations, which straddle the Cambridge city line (North Point at the Lechmere station) and the Medford line (Tufts University and Route 16 stations), the land areas in Somerville are minor in development potential.

Therefore, for this DIF analysis, we consider only the zones around the Union Square and Joy/Washington Street stations. City officials will need to look at all the zones as potential contributors in order to insure an equitable burden on benefitted properties, businesses and residents.

Stage 1: Calculating development potential and a feasible DIF

Our calculations of development potential in Union Square and Boynton Yards are drawn from the studies and plans, which predict the potential square feet of new residential, commercial/research, retail and fabrication space. The numbers vary from plan to plan, in part, because they cover larger or smaller study areas and have been written at different times in the real estate cycles. We assume that demand will be sufficient over the 20-30 year period to fulfill the development potential, but we expect that residential demand will be strong in the early years while office/lab and fabrication space will lag to later years.

Table 3.1.B: Estimates of development potential in Union Square/Boynton Zones
Sources: U2 Union Square and Boynton draft Plan (2015); Tischler/Bise Fiscal Impact Study (2015)

	Residential	Office/research	Retail	Fabrication
Union Square	1,084,000 ft2	1,100,000 ft2	166,400 ft2	103,800 ft2
Boynton	1,410,000 ft2	2,005,000 ft2	193m000 ft2	181,100 ft2

The Tischler/Bise Fiscal Impact Study uses these numbers to predict cumulative new revenues of $200 million (Union) and $270 million (Boynton) over a 20 year period. The revenue will be offset by costs of municipal services and infrastructure, totaling $156 million and $102 million, with a net surplus of $44 and $168 million per zone. This is then divided by 20 years in order to estimate the annual revenue surplus of $2.2 million and $8.4 million.

Table 3.1.C: Projected new revenue and offsetting costs in Union Square/ Boynton Yards
Source: Tishler/Bise (2015) Fiscal Impact Study

	Union Square	Boynton Yard
Total general fund revenue	$200,785,951	$270,810,381
Total special revenue	128,973	182,298
TOTAL REVENUE	**$200,914,924**	**$270,992,679**
Total general fund operating expenses	60,402,277	45,638,079
Public school operating expenses	4,544,768	7,050,966
City capital expenditures	91,726,251	50,227,089
TOTAL EXPENDITURES	**$156,673,317**	**$102,916,133**
Net cumulative fiscal impact	44,241,607	168,076,546
Average annual impact	2,212,080	8,403,827

The Tischler Bise analysis implies that the resulting Cumulative Fiscal Impact will be a net gain to the city revenue, which can be spent on other functional and social needs or can reduce the tax burden of property owners and businesses generally. For purposes of this analysis, the two annual surplus figures of $2.2 and $8.4 million are recognized as the flow of future revenues, which can be pledged by the city to provide the debt service for a capital contribution to the Green Line. At an interest rate of 5 to 6% and a debt service of 6.5% this combined $10.6 million could "buy" a loan of $150 million in a Union Square and Boynton Yards DIF.

The same methods and assumptions can be applied to estimate the future revenue from the redevelopment of Brickbottom and Inner Belt.

Table 3.1.D: Estimates of development potential in Brickbottom/Inner Belt Transit Zones
Source: Goody Clancy (2013), Brickbottom/Inner Belt Plan

	Residential	Office/lab	Retail	Fabrication
BB/Inner Belt	2,250,000 ft2	3,250,000 ft2	165,000 ft2	*--included in Office*

Applying the methods and property value and tax assumptions of the Tishler/Bise study to Brickbottom and Inner Belt, we show the following:

Table 3.1.E: Estimate of new tax revenue from Brickbottom and Inner Belt

Category	Volume	Assessed value	Total value gain	Tax/$1,000	Total tax/year
Residential units	1,800	$190,000/unit	$342,000,000	$12.61	$4,500,000
Affordable units	200	91,000/unit	18,200,000	$12.61	
Office/lab	3,000,000 ft2	$340/ft2	1,020,000,000	$20.38	$22,950,000
Retail	165,000 ft2	$340/ft2	56,000,000	$20.38	
Creative fabric.	250,000 ft2	$200/ft2	50,000,000	$20.38	
TOTAL					$27,500,000

Over 20 years, new taxes would aggregate to $550 million before subtracting the operating and capital costs. The total revenue figure is similar in size to the estimate of $200 and $270 million for Union Square and Boynton; thus without a detailed calculation of required expenditures, we could foresee a similar annual surplus of $10-$11 million, available for a DIF. It might be necessary to discount this amount in order to take into account additional factors. First, there is likely to be an imbalance between high residential demand in the early years and lagging

office/lab and fabrication space demand to later years.[20] Second, commercial/industrial developers will likely ask for tax reductions (TIF) or PILOT classification, rather than paying taxes at the regular rates. Third, in order to access the interior blocks of the zones, there may be need for expensive infrastructure projects – rebuilding the "tubes" in Inner Belt Road, other rail line crossings and drainage works; a bridge from North Point, etc.[21]

We therefore offer a quick projection that Brickbottom and Inner Belt will generate a surplus of $8 million per year, which can "buy" $120 million of capital for the rail and station improvements.

A combined transit contribution of $270 million appears to meet the test of feasibility. The figure appears conservative in light of optimistic predictions of revenue gains that have recently been published. The Mayor has been quoted for a figure of $2.5 billion of expected new revenue for the city, generated by the Green Line.[22] In comparison, the Tishler/Bise estimates of Union Square/Boynton revenue ($200 and $270 million) and our calculations for Brickbottom and Inner Belt ($550 million), our $270 million is conservative and highly feasible. The Mayor may foresee stronger value gains in the other rail station zones or may base the estimate on a 30-year projection, rather than 20-years.

Stage 2: Can Somerville bear the risks of a $270 million rail DIF?

Despite the finding of feasibility, would a combined $270 million DIF meet the tests of city credit and taxpayer risk? To answer the question, we look at the $270 million with smaller alternative amounts in relation to Somerville's credit and prudent financing policies.

Table 3.2: Risk analysis of three alternatives for a Somerville Rail DIF

	Somerville (2015)	Future scenario (2016)		
Project		High level	Medium level	Low level
DIF authorized		**$270 million**	**$170 million**	**$100 million**
Equalized value[23]	$10.4 billion	$11.2 billion[24]		
General obligation debt limit by law	502.0 mill	550.0 mill		
Actual general ob. debt[25]	$95.1			
-as percent EV	0.91%	0.84%	0.84%	0.84%
-DIF as percent EV		2.41%	2.0%	1.00%
Worst case total		3.25%	2.84%	1.84%
City operating budget	$203.4 mill	$211.0 mill		
-actual general ob. debt	46.7%	45.0%	45.0%	45.0%
-DIF as percent		127.9%	80.5%	47.3%

[20] See Goody Clancy (2013), Brickbottom Inner Belt Plan, Program Opportunity analysis at page 29.
[21] See Goody Clancy (2013), at page 30
[22] See E.Trickey (January 2016), "Out of Service: Will We Ever Fix the MBTA?" Boston Magazine, www.bostonmagazine.com/news/article/2016/01/05/mbta-out-of-service.
[23] See Massachusetts Department of Revenue Bureau of Local Assessment (January 2015), "Final 2014 Equalization Study," DOR website: www.mass.gov/dor/local-officials/assessor-info/equalized-valuations-eqv.html.
[24] See City of Somerville (December 2015), "FY 2016 Property Tax Update."
[25] See City of Somerville (June 2015), Comprehensive Annual Financial Report FY2015.

Worst case total		172.9%	125.5%	92.3%
City debt service	$10.6 mill	$9.8 mill	$9.8 mill	$9.8 mill
DIF debt service*		17.5 mill	11.5 mill	6.6 mill
Worst case (% of budget)	5.2%	12.9%	10.0%	7.7%

*Note: annual debt service calculated at 6.5% of total

In the worst case scenario of no new development and revenue, the city would need to spend 12.9% of its annual operating budget on debt service to cover $270 million and its own general obligation debt – far beyond the prudent level of 6%. This worst case is unlikely because several residential development projects are already permitted and underway and, given regional demand, more projects should move forward as soon as new zoning and the redevelopment and neighborhood plans are put into place. With a growing flow of new revenue, there will remain a risk of debt service shortfalls during interim years, but the worst case scenario will be avoided.

Nevertheless, a more prudent approach would be to consider a mid-range combined DIF of $170 million. At this level, the worst case calculation of uncovered annual debt service would be 10% and the more likely risk would be a back-up debt service reaching 6 or 7% of the general budget for a few interim years.

Stage 3: Considering impacts on other infrastructure needs, amenities and programs

The analyses of market feasibility and risk, above, have looked only at the amounts of capital, which could be generated by pledging the new revenue surpluses. We have not taken into account the much larger portions of the anticipated revenues that are expected to cover other necessary infrastructure and improvements.

As we saw in the case studies, when infrastructure and improvements could be covered by federal and state grants, the city could limit the DIF to a modest amount. Otherwise, the costs had to be financed by city borrowing and budget appropriations, by the master developer, by subordinate site developers as contractual obligations and conditions of permitting, or by the property owners, developers, businesses or residents as surcharges on taxes and fees. Thus, the calculations of feasibility and risk must apply to the total aggregation of district financing needs, not just the particular cost items to be encompassed by the DIF capital fund.

For this analysis, two questions must be asked: First, what is the total expected level of infrastructure and improvement costs that the city will have the responsibility to finance? Second, what are the specific components in this list and what will be their priority? Which components are essential and must be accomplished in early stages in order to enable the revenue-generating development to proceed? Can some elements be moved to later phases in order to lighten the burden of debt service in the early years? In applying this analysis to the Union Square/Boynton and Brickbottom/Inner Belt districts, we look to the city's planning and budget documents.

The Somerville Capital Investment Plan (2014-2018) does not identify any major infrastructure projects for these zones and its list of city-wide needs will not expand the city's borrowing substantially beyond current levels. In particular, the city will adhere to the limitation

of general obligation debt service at 6% of the annual operating budget – that is, $10-$11 million per year plus $2-3 million to cover sewer and water projects.

For Union Square and Boynton Yards, the Tishler/Bise Fiscal Impact Study has estimated an aggregate of City Capital Expenditures of $91 million and $50 million. If fully financed by general obligation and revenue bonds, this would create an annual debt service cost of $9.2 million, which would be added to the regular financing ($10-11 million), the sewer and water debt ($2-3 million) and Green Line DIF debt ($8 million). In combination, at $30 million per year, these numbers would be 14.5% of the annual budget with a more likely risk of 10-11% for a few interim years.

To consider how to minimize this risk, it is useful to compile a full list of cost components to determine which items are essential and must be financed at the start; which lesser priority items may be delayed for later financing; which items may be shifted from city responsibility to that of developers and property owners, non-profits or voluntary citizen organizations; and which items are simply visionary.

Table 3.E: Proposed improvements for Union Square and Boynton Yards

Proposed Improvement	**Cost estimate**	**Funding source stated**	**Reference**
Union Sq. streetscape and utility	53,000,000	Gen Ob, state/fed	Capital Investment Plan
-street and utility	(34,000,000)	TIGER/federal	Brief Book
-Union Sq. infrastructure plan phase 2	(16,340,000)	MassWorks	Brief Book
Block D-2 acquisition and site prep	2,500,000		Union Sq. Revitalization Plan
Block D-1 Civic Center acquisition	2,500,000	Gen Obligation	Capital Investment Plan
Block D-2 acquisition and site prep	8,000,000	Gen Obligation	Union Sq. Revitalization Plan
Environ remediation on redevelop sites	??	Redeveloper, state/fed	Union Sq. Revitalization Plan
D3-D7 relocation and site preparation	67,000,000	City or state/fed	Union Sq. Revitalization Plan
Boynton roadway paving, sidewalk	3,490,000		Parsons Brinkerhoff
Boynton drainage	6,600,000		Parsons Brinkerhoff
Boynton water mains	2,306,000		Parsons Brinkerhoff
Boynton sewers	915,000		Parsons Brinkerhoff
Boynton street lighting	1,513,000		Parsons Brinkerhoff
Heavy Infrastructure TOTAL	***147,800,000***		
Union Square library	40,300,000		Capital Investment Plan
Lincoln Park/Argenziano Field	2,400,000	Gen Obligation	Capital Improvement Plan
Open Space improvements Union Sq.	15,000,000		Union Sq. Revitalization Plan
Boynton Trans. Area #2 improvements	??	Owner participation	Union Sq. Revitalization Plan
Subsidies for an “anchor” institution	??		US2 Union Sq. (Oct. 2015)
Subsidize business incubation space	??		US2, LOCUS
Subsidize small local businesses	??		US2, LOCUS
Rent subsidy, tax incentive for startups	??		US2
Mandate 5% arts space in commercial	??	Developer	US2
Tax free zones for artists	??		US2
1% of Capital Plan for public art	1,800,000		US2
Community garden	??		US2
Food and kitchen incubators	??		US2, LOCUS
Grants for urban farms	??		US2
Rent stabilization vouchers	??		US2
Residential property tax circuit breaker	??		US2
Increased inclusionary housing %	??	Developer	US2

Other housing diversity strategies	??		US2, LOCUS
Adult apprenticeship programs	??		US2
Residential apartment size mandates	??	Developer	US2
Shared use of streets	??	DIF or similar	US2
Neighborway, Playborhood, PlayStreet	??		US2
Boynton Yard park system	??		US2
Subsidize historic building maintenance	??	Comm. Preservation	US2
Ground floor, lobby design control	??	Developer	US2
Hubway stations	??	Developer	US2
Bicycle tracks	??		US2
Bus route expansions and adjustments	??	MBTA	US2
New crossing over rail at Target site	??	MassDOT	US2
Urban Forest Initiative improvements	??		US2
Parking improvements	??		US2
Guaranteed Ride Home program	??		US2
21/22 acres open space	??		US2 Boynton (May 2015)
15% or 34% open space dedication	??	Developer	Union Sq. CAC
Community benefits Agreement	??	Developer	Union Sq. CAC/ Locus
Affordable units priority programs	??		LOCUS
Land Trust for low income housing	??		LOCUS
Re-direct housing tax credits	??	Developer	LOCUS
Subsidize housing unit maintenance	??		LOCUS
Save Our Homes Fund	??		LOCUS
Homelessness prevention services	??		LOCUS
Programs to encourage hiring, wages	??		LOCUS
Rent stabilization for retail	??		LOCUS
Priority rental to local business	??		LOCUS
Artist exhibit and performance space	??		LOCUS
Integrated Community Center	??		LOCUS
New family health clinic	??		LOCUS
Substance abuse rehab center	??		LOCUS
Preserve Garden Center	??		LOCUS
Programs to promote energy efficiency	??		LOCUS

In this list for Union Square and Boynton, the costs of heavy infrastructure, land acquisition and site preparation (without a new library) total $147 million, corresponding to the Tishler/Bise estimates of City Capital Expenditures. As noted, the planning reports suggest that the city can seek funding for some of these from federal and state grants, and thus diminish its own level of financing obligations.

The list also shows a large number of desirable improvements – in particular related to open space and parkland – as well as other community benefits and subsidies, which presumably will be sought from developers as conditions of permits or contractual obligations in acquiring city assets or development rights. The impact of cost obligations for these items on the city credit, budgets and revenues are likely to be indirect. To the extent that they add burdens to the costs of acquiring and redeveloping each site, they may diminish the underlying value-gains, discourage or delay some investments, and thereby result in a smaller and delayed revenue flow. They may also induce developers to seek more offsetting tax discounts and asset price reductions.

The list for Brickbottom and Inner Belt contains a similar array of (i) heavy technical infrastructure systems, which have been given cost estimates by the consultants, (ii) other higher-value improvements and property acquisitions without projected costs; and (iii) amenities and subsidies that various citizens and groups have advocated.

Table 3F: Proposed Improvements for Brickbottom and Inner Belt

Proposed Improvement	Cost estimate	Funding source	Reference
Community Path maintenance equip	500,000	Cap Stabilization	Capital Improvement Plan
Waste treatment site interim use	200,000	--	Capital Investment Plan
Waste treatment site remediation	??		
Enhance existing streets, sidewalks	500,000 500,000		Goody Clancy
Replace Inner Belt tubes	12,000,000		Goody Clancy
(alternative tube bypass rail crossing)	3,000,000		Goody Clancy
New street segments	500,000 500,000		Goody Clancy
Poplar Street walk/bike greenway	6,000,000		Goody Clancy
North Point Bridge	40,000,000	City, MBTA, owners, Cambridge, federal	Goody Clancy
Inner Belt Road under Lowell Line	12,000,000	City, MBTA, owners	Goody Clancy
Green Line crossings	6,000,000		Goody Clancy
Public parking structures	4,000,000		Goody Clancy
Community Path to Brickbottom	15,000,000	Undetermined	Goody Clancy
Community Path to Lowell St	15,000,000	FTA new starts	Goody Clancy
Bus/Rapid Transit vehicles	4,000,000	TMA	
Grounding McGrath Highway	55,000,000	State	
Washington Street improvement	4,000,000	City	
New Washington St. improvement	2,000,000	City	
Joy/Chestnut Streets improvement	1,000,000	City	
Linwood Street improvement	1,000,000	City	
MBTA Yard 8 drainage	2,000,000	State	Goody Clancy
Old Stone Culvert drainage	20,000,000	Undetermined	Goody Clancy
Local sewers and storm	10,000,000	City	
Land area dedication by all projects	??		Goody Clancy
Joy Street public space – Milk Plaza	??		Goody Clancy, MIT students
Joy Street pedestrian subway crossover	??		
Berm Park at Squires Bridge	??		MIT students
Poplar Street Plazas	??		MIT students
Zoning bonus for park space	??		Goody Clancy
Arts theme streetscape improvements	??		Goody Clancy
Public art	??		Goody Clancy
Artists living work space	??		MIT students
Off street recreation path network	??		Goody Clancy
Cycle tracks and bike lanes	??		Goody Clancy
Joy/Washington station bike facilities	??		
New Washington Common park	??	City, rail owner	Goody Clancy
Brickbottom Square open space	??	Owner 86 Joy St.	Goody Clancy
Inner Belt Charlestown street connect	??	City, Boston, owners	Goody Clancy
Subsidy for Joy Street studio	??		
Yard 10 lead track improvements	??	City, MBTA, rail line	
Private funded access points to Path	??	Owners	
BID for Brickbottom	??		MIT students
Jobs Trust Linkage Fee @ $1.40/ft2	4,400,000	Developers	MIT students

Subsidize start up work space	??	Developers	MIT students

Because the city has not yet published a detailed redevelopment plan, it is less clear for Brickbottom and Inner Belt, which infrastructure systems will be essential and which will be of lesser priority. If we assume that the McGrath Highway reconstruction will be a state-funded project, then the total of heavy infrastructure appears to be about $88 million. Again, when added to the rail DIF, the city's regular borrowing and the Union Square/Boynton financing, the risk measurements for these items push higher into the realm of 16% worst case and 11-12% percent of interim debt service risk.

Ultimately the questions of which improvements will be taken on as city financing obligations, which can be achieved with federal/state money, and which can be shifted to developers and the community will be worked out in the political process. The recommendations we make in the following final section of this report reflect our own preferences and should be considered one citizen's proposal.

Conclusion

The transit-oriented districts will require heavy infrastructure improvements – improved rail and roads, water, sewer and drainage – in order to function properly and make redevelopment possible. Paying for these systems must be the priority in use of the public credit and tax revenues. To date, the city has not included costs of the rail system in its capital planning or in the neighborhood and redevelopment plans. However, given the likely shortfall of state funding, Somerville must undertake the types of cost and financing analyses, shown in this report, and add a rail transit contribution to the calculations. The use of a DIF or some similar mechanism of value-capture financing will be an appropriate way to provide for this funding.

The inclusion of a rail transit contribution to the other essential needs will require an adjustment of the priorities for the other improvements and subsidies, which will also draw from the new city revenues, developer resources and property value gains, foreseen in the districts. Of these, the highest priority elements should be the developer contributions to affordable housing, given the goals of maintaining a diverse workforce and residential population in the city.

Addition to the city's stock of open space and the improvement of public spaces are a second level priority, which may partly be satisfied by appropriate design of blocks, streets and building placement and by dedication of space and the imposition of standard conditions for building placement, setbacks, etc., when projects are being designed and permitted.

All of the other amenities and good planning ideas are of lesser importance and should be put into a lower priority category at this stage of planning. Some of these items may be considered later if the market for space in the transit-oriented districts proves to be strong and new revenue flows exceed the anticipated levels. The city should re-direct the current planning process away from the encouragement of negotiated subsidies and amenities and, instead, engage in a sober and cost conscious review of how the zones will function and how the higher levels of population and built space will impact on basic economic factors of rents, prices and transactions.

Finally, in the rezoning process, the city should take steps to insure that the transit-oriented district regulations will allow developers to realize the newly-defined floor area, modern uses and functions with the least burden of procedural complexity, discretionary decision-making, and unpredictable negotiation. There should be maximum opportunity to design buildings and accomplish development as of right.

APPENDIX 1: The Four Case Studies

Somerville Assembly Square

The Somerville Assembly Square DIF illustrates how a modest-sized capital fund has been quickly balanced by new revenue with minimal risks.

Initial cost and revenue projections

For the Assembly Square redevelopment, Somerville was able to limit its infrastructure financing participation to a very modest level – only $25 million – even though the development potential for the district was substantial – at 6.5 million square feet. This was because large investments had been made in the past and federal and state funds were available to cover much of the $100 million current infrastructure cost. Market demand in 2010 was strong and, under control of the master developer, the planners anticipated that substantial construction would be completed in a reasonable time period, bringing in revenue to cover the financing costs. The spreadsheet, which the city presented to the Massachusetts Office of Business Development, showed the calculations, as follows:

Table 4.1: Somerville Assembly Square DIF projections

Source: Somerville Assembly Square DIF Application Form, www.somervillema.gov/sites/default/files/documents

Year	Fiscal Year	Captured assessed value	Tax Increment	*Debt service*
Base	2011	0	0	
1	2012	0	0	*$1.3-1.5mill*
2	2013	$29,355,874	$464,812	*$1.3-1.5*
3	2014	89,239,735	1,444,344	*$1.3-1.5*
4	2015	115,028,700	1,816,621	*$1.3-1.5*
5	2016	116,528,700	1,847,281	*$1.3-1.5*
6	2017	130,028, 700	2,123,221	*$1.3-1.5*
7-30	To 2040	130,028,700/ year	2.123,221	*$1.3-1.5/year*

If the city were to borrow the full $25 million, authorized by the DIF, the debt service would be in the range of $1.3-1.5 million per year; thus by Year 4, projected revenue would cover the full principal and interest payment.

Actual performance of the project

For Somerville, the market timing of the Assembly Square project was highly favorable. Permits were issued for the first phase of construction simultaneously with the creation of the DIF in 2010 and the city moved quickly to issue general obligation bonds (rather than project revenue bonds) in the amount of $15 million. Construction then proceeded without delays and, by 2015, the Mayor was able to announce that revenue from the completed first phase of Assembly Square would cover the debt service and put an additional $900,000 into the city's general fund.[26]

[26] See City of Somerville, Mayor's Introductory Message to the Annual Budget (2015); www.somervillema.gov.

New York City Manhattan No. 7 Subway

Compared to Somerville, the New York City project began with a much more complex relationship between its costs, development potential and future expected revenues.

Initial cost and revenue projections

In 2003/2004, when New York City first approved the extension plans for the Manhattan No. 7 Subway, its purpose was to connect Grand Central Station to the site of the proposed 2012 Olympics stadium, which was to stand on a platform over the Hudson River Rail Yards at 10th Avenue and 34th Street. The estimated cost was set at $2 billion for the subway line and station and for some open space improvements. Since it would now be possible to move large numbers of workers and residents into West Midtown, the project justified a rezoning of the 40-block area surrounding the rail yard site. The old loft warehouses, factories and tenement houses could be converted to high-value residential, hotel, retail and office uses, or replaced with buildings, ranging from 8-10 up to 40-50 stories. In total over the 40 blocks, the zoning added a potential 40 million ft2.[27] This action immediately increased property values and induced owners to begin discussions with developers. Tax assessments began to rise.

In 2005 after the Olympics bid was lost, the rail yard platform was no longer defined for athletic and public facilities. Instead, the city and transit authority decided to create "air rights" parcels on the platform and auction them to developers. Another rezoning was approved to allow these projects to have the highest commercial and residential floor area ratios – that is, buildings in the range of 70-90 stories. This created 12 million ft2 more of potential development, which was welcomed into the spreadsheet balance because the subway construction costs were rising quickly. Based on new cost projections, the city borrowed another $1 billion. Debt service on the total $3 billion reached $141 million per year.

Thus, for the Manhattan No.7 Subway Extension, the $3 billion capital loan was balanced by expected future revenue from four sources:

- The already increasing taxes on the existing properties in the re-zoned 40 blocks;
- The future taxes from the high-value conversions and new development in the zone (up to 40 million additional ft2) and on the platform (up to 12 million ft2);
- The proceeds from the auction sales of 12 million ft2 air rights on the platform;
- Higher receipts from some other business taxes and licensing fees, and the proceeds from sale of other small city-owned parcels in the zone.

Despite the very large infrastructure and debt service costs, the balance with development potential appeared to be comfortable and the city has had no problems selling the revenue bonds at market interest rates.[28]

Actual performance

With the rezoning and the DIF in place, the city began the subway construction project, under control of a new quasi-public Hudson Yards Development Corporation. Work moved more slowly than planning, both because of unforeseen complexities in engineering and construction and the removal of the

[27] See New York City Planning Commission (2004), "Reports concerning Hudson Yards Zoning Change 040499A and text amendment 040500A, www.nyc/gov/html/dcp/html.

[28] See Business Wire (29 August 2013), "Fitch Rates Hudson Yards Infrastructure Corporation Senior Revenues "A;" www.businesswire.com; see also Bloomberg Business (7 June 2012), "PIMCO Bets on Hudson Yards as Yield Penalty Falls: Muni Credit," www.bloomerg.com.

Olympics 2012 deadline date. The subway stations only opened in October 2015. Similarly, the expected property transactions, air rights sales and startup of development projects all faced delays due to market weakness during the economic recession and the more complex coordination of development with infrastructure work. These delays had impact on the financing structure because they lengthened the period of draw down on the $3 billion capital fund, and delayed the build-up of substantial new revenue flowing in. This is shown in the following table, which shows the actual performance to 2015:

Table 4.2: Hudson Yards Infrastructure Corporation spreadsheet (million dollars)

Source: Annual Financial Statements 2009-2014 and Budget FY2016; www.nyc.gov/html/hyic/

	2008	2009	2010	2011	2012	2013	2014	*2015*
Project costs	516.2	353.2	384.5	348.0	279.7	346.2	268.6	*159.8*
-Subway work	248.7	391.9	310.2	275.6	316.4	325.4	175.2	
-Land/air rights	264.4	(43.8)	70.0	69.2	(39.7)	18.8	91.1	
Bond debt service	89.1	87.5	86.0	85.6	122.6	140.4	140.4	*153.1*
TOTAL expenses	**613.4**	**445.6**	**473.5**	**433.8**	**404.9**	**487.1**	**409.4**	***315.7***
Program revenue	8.6	12.3	13.3	30.5	30.6	47.0	63.2	
- TEP		7.8	13.3	25.9	27.6	32.6	38.5	*48.5*
- DIB		4.4	--	4.6	2.5	3.2	10.8	*156.5**
- PILOT			--	--	--	11.1	13.8	*2.0*
- ISP			--	42.6	79.3	--	38.1	*28.0*
- TDR	--	--	--	--	--	--	--	*90.5**
Other revenue	127.3	72.6	19.9	45.2	236.3	4.8	41.5	
-City grant		15.0			155.5			
TOTAL Revenue	**135.9**	**84.9**	**33.2**	**75.8**	**266.9**	**51.8**	**104.7**	***327.7***
Net position	(528.2)	(888.8)	(1,329.1)	(1,687.1)	(1,851.3)	(2,286.5)	(2,591.2)	*(2,578.0)*

The chart shows how the project costs drew down on the initial $2 billion (2008-2010) and later $3 billion (2011) capital fund and then adds the debt service to give the total expenses that the fund paid out each year. The Revenue lines show the monies received in total and from each of the five major revenue sources. These are the following:

- TEP (tax equivalency payments) – the increased taxes from new projects in the 40-block zone and on the platform;
- DIB (district improvement bonuses) – one-time payments from sale of bonus development rights to projects in the zone;
- PILOT (payments in lieu of taxes) – received from projects and tenants on properties owned by the city, the MTA (subway) or the Hudson Yards Development Corporation;
- TDR (transfer of development rights) – city share of sales paid from auction of the platform air rights;
- ISP (interest support payments) – from the city operating budget to cover the shortfall in debt service.

Other revenue includes transfers of money from other state, federal and city-wide programs – such as Community Development Block Grant monies and historic preservation funds, which have applied to eligible work in the zone.

Because the combination of receipts from the various sources has not covered the project costs and debt service each year, the City of New York has had to make interest support payments and has transferred money as grants to the public corporation. These are seen on the ISP line and the City Grant line. In the aggregate, they total $358 million. Given the city's $41 billion annual operating budget, the impact has not been significant, but nevertheless it has required some other budget lines to adjust.

The line of Total Revenue does not yet show a pattern of steady growth and thus reflects the delay in market demand as well as developer caution, waiting for the new subway to open before moving forward on large projects. This is expected to change because market demand has reached a strong level and many projects are now under construction. In particular, in 2015, half of the platform over the Hudson Rail Yards was completed at a cost of $600-700 million carried by private developer financing.[29] Two office buildings of 52 and 90 stories are rising on the platform project and there are some 57 other projects in construction or planned in the 42-block surrounding zone.[30]

New York City officials expect the level of revenue to surpass the debt service and project costs in 2018 or 2019, and then the surplus revenues will begin to amortize the accrued fund deficit (which is shown at $2.578 billion on the spreadsheet above).[31]

[29] See David Leavitt (19 March 2014), "Yards Start Next Phase as Deck Begins," Bloomberg News; www.bloomberg.com/news/. Also see The Real Deal (10 December 2014), "Related raises record setting $600 million through EB-5 program," http://therealdeal.com/blog/2014/.

[30] Charles Bagli

[31] See Hudson Yards Infrastructure Corporation Annual Financial Statements, 2009-2014 and Budget FY 2016, www.nyc.gov/html/hyic/.

Worcester City Square

In 2007, Worcester created a modest-size DIF that authorized $64 million of borrowing to fund street, sewer and water improvements and a rebuilt public parking garage for the renewal of the obsolete, enclosed shopping mall. The project was intended to restore open streets and sidewalks, thus creating a transit-oriented, city downtown environment. A simultaneous re-zoning and amended master plan allowed the project developer to add new buildings and new uses – residence and hotel, in addition to office and retail – on the site with up to 2.2 million ft2 of new space. The anticipated trend of property value growth and revenues, covering debt service, is shown as follows:

Table 4.3.A: Worcester City Square DIF projections

Source: Worcester City Square DIF Application Form (2007), www.worcesterma.gov.

	Assessed value	Total Taxes	Increment tax*	Garage revenues	Debt service	Revenue after bond
Base	$31.76 mill	0.87				
2007	58.30	1.61	0.72	0.14	0.28	0.57
2008	70.91	1.99	1.08	0.59	0.28	1.49
2009	134.65	3.37	2.43	0.80	0.28	0.66
2010	211.40	3.44	2.48	0.96	2.55	0.48
2011	220.67	3.78	2.78	0.98	2.96	(0.14)
2012	276.67	3.84	2.86	1.00	3.90	0.33
2013	276.67	3.92	2.92	1.02	3.52	(0.12)
2014	276.67	3.99	2.96	1.04	4.05	(0.67)
2015	276.67	4.07	3.04	1.06	4.69	(0.73)
2016**	276.67	4.16	3.11	1.08	4.80	(0.54)
2017	276.67	4.24	3.17	1.10	4.80	(0.45)
2027	276.67	8.24	3.94	1.37	4.80	0.51
2028-35					4.80	
2036		10.95	4.62	1.60	4.75	1.42
2037			4.71	1.60	--	7.60

*Note: The column Total Taxes shows the anticipated amounts of taxes that all properties in the district will pay each year, including a 2% per year incremental growth of the base tax (assumed as the overall inflation market value gain). The column Increment Tax shows the portion of the property tax that will be attributed to the project impacts – new value and new development. These figures take into account that the new buildings will have TIF benefits until 2016 – that is, they will have a tax discount, which will decline gradually over nine years, and will reach full tax payment in 2016. The debt service numbers assume full amortization of the loans over 25 years. The total amount of the DIF capital fund will be $64 million debt, borrowed in phases with the final tranche in 2015.

In comparison with Somerville and New York City, the balance in the Worcester DIF of a $64 million capital fund with 2.2 million ft2 of potential development appeared less comfortable. The project had a poor history because the 1970-era shopping mall had never been successful and had gone through bankruptcy twice. With hindsight, the DIF was badly timed in 2006, just before the national recession. There was high risk that the anticipated development would be delayed and, as shown on the chart, there were a number of years from 2011 beyond 2017 when a shortfall of revenue was predicted.

Nevertheless, there were certain factors that made the financing feasible. First, the future revenue included profits from the parking garage. Second, the project was structured in phases, with units of infrastructure work linked to portions of the building construction. Third, a single developer controlled the site and its agreement with the Worcester Redevelopment Authority placed the responsibility of

constructing each phase (public and private work together) on the developer.[32] This allowed the city to delay issuing the bonds for each phase of work until commitments were in place to proceed with the construction of that phase. Thus there was minimal risk that infrastructure would be installed only to sit idle with the city carrying debt.

Actual performance

The structure of phasing and the direct control of all work elements under one developer appear to be the factors that have kept the Worcester project on track, even though with the poor market conditions it has moved more slowly than planned.

Table 4.3.B: Worcester City Square DIF actual performance and revised projections
Source: Amended DIF Application Form (March 2015), www.worcesterma.gov.

	Bonds issued	Loan Principal	Principal repayments	Interest payments	Total debt service	*Revenue*
2007	$0.5 mill	0	0	0.023	0.023	*0.280*
2008	$8.7 mill	0	0	0.036	0.036	*0.110*
2009		8.7	0	0.036	0.036	*0.336*
2010		8.7	0.268		0.507	*0.384*
2011		8.5	0		0.443	*1,380*
2012	$6.8 mill	15.6	0.115		0.558	*0.825*
2013		15.5	0.818		0.854	*1.411*
2014	$11.6 mill	15.6	0.818		0.854	*1.569*
2015		27.1	1.162		1.304	*1.568*
						2.636
2016		26.9	1.506		1.652	*2.308*
2017	$1.4 mill					*3.141*
2019	$10.4 mill	37.7			3.2	*3.208*
2020	$23.9					*3.236*
2021	$6.7	60.7			4.3	

The chart shows how the revenue bonds were issued in small tranches, beginning with only $500,000 in 2007 and $8.7 million in 2008. This debt required principal and interest payments that were minimal in the first two years and rose to $507,000 and $443,000 in 2010 and 2011. Meanwhile, the project began to generate some revenue from rehabilitation and leasing of existing building space, so a shortfall of funds to cover debt service occurred only in 2010. In 2012 and 2014, when the recession had ended, the developer secured tenant commitments for the next residential and office components and more revenue bonds were issued in tranches of $6.8 million and $11.6 million for the corresponding infrastructure work. Combined with the earlier obligations, this would raise the debt service to a level of $1.6 million a year by 2017. But by 2015, the completed first phase buildings are already paying in revenue of $1.5 million per year, so the new debt service will be covered.

Revenue is expected to rise again in 2017 and 2018 when parking garage fees and hotel taxes will start to flow. The project has now been amended with plans for a Phase 3 to start in 2020 or 2021, when another $10 million and $23 million of bonds may be issued. This additional debt will cause the debt service to exceed revenue flow in the years between 2020 and 2029, but afterwards, the completion of Phase 3 buildings and garage space will re-balance. In summary, the Worcester experience shows how, with prudence and careful management, a risky DIF is likely to be successful in the long term.

[32] See City of Worcester, (2007) City Square DIF Application, and Development Agreement between Worcester Renaissance LLC and the City of Worcester for the City Square Project; www.worcesterma.gov/development/initiatives-master-plans/citysquare.

Quincy Center Downtown

Quincy provides the example of an ambitious re-development plan that has failed. The plan involved re-zoning and creation of a DIF for a 113-acre zone in the city center. The plan envisioned improvement of streets, park and sewer and water systems, and the strategic redevelopment of city-owned sites, which in turn would stimulate private reinvestment and new development projects.

Initial assumptions and projections

At the start in 2006/2007, the plan was ambitious and risky because of several factors. First, the total infrastructure cost would be high – $289 million – in relation to the modest new development potential of 2.7 to 3.4 million ft2 of office and residential space. This meant that the ability to cover debt service would rest more heavily on the value-gain to existing properties and rehabilitation of older buildings, rather than new construction projects. The data, presented in the Quincy Center District DIF Plan of May 7, 2007, shows the estimates and calculations of the financing costs and future revenues. The first table presents the assumptions about the gains in assessed value of all 271 properties in the zone.

Table 4.4.A: Quincy Expected Increase in Property Assessments

Source: Quincy Center DIF Plan 7 May 2007 at page 44

Year	Fiscal year	Base assessment with inflation 2%	Assessment with projects
1 Base	2006	$285.28 mill*	
2	2007	290.98	332.39 mill
5	2010	308.79	409.41
10	2015	340.93	688.00
15	2020	376.42	759.60
20	2025	415.60	838.66
25	2030	458.85	925.95
30	2035	506.61 mill	1,022.33 mill

*Note: the base assessment omits $129 million of 33 tax exempt properties.

This chart shows the estimates of how the tax base was expected to grow with both (i) an overall value-gain of 2% a year with inflation and stimulation by the redevelopment activity and (ii) the added assessment value of the new construction. The numbers show the contrast of this Quincy project with the other DIF cities and New York, in that the amount of new assessed value is modest. The 113 acre downtown zone already had 5.7 million ft2 of built space and the plan would add, at most, only 3.4 million ft2. (At Somerville Assembly Square the change would be from zero to 6.5 million ft2) Thus, in Quincy, the anticipated revenue from parking fees would have a larger role in making the project financially successful.

Because of this limited tax increment capacity, the initial authorized bond issue for the DIF was only $30 million, which the combined tax and parking fee revenue would easily cover:

Table 4.4.B: Quincy Projected Debt Service and Revenue for $30 million DIF

Source: Quincy Center DIF Plan 7 May 2007 at page 44

Year	Fiscal year	Debt service	Revenue for Bond Repayments		Base taxes without project	Revenue to General Fund
			Incremental Taxes	Parking fee		
2	2007		--	--	824,826	824,826
	2008	420,000				
	2009	800,000				
5	2010	1,220,000	1,472,955	--	665,839	81,604
	2011	1,660,000				
10	2015	2,060,000	4,296,098	217,829	735,140	238,011
15	2020	1,970,000	4,743,239	307,617	811,654	262,783
20	2025	1,970,000	4,961,292	339,634	896,131	580,268
25	2030	1,970,000	3,651.778	374,983	989,401	2,562,651
30	2035	-0-	2,687,905	414,012	1,092,379	4,244,061

In order to further minimize risk, the DIF Plan outlined a process of very small incremental bond issues:

Table 4.4.C: Quincy Borrowing Plan – Debt Service Schedule (million dollars) $30 million

Source: Quincy Center DIF Plan 7 May 2007 at page 47

FY	BAN -	Bonds $10	Bonds $5	Bonds $5	Bonds $5	Bonds $5	TOTAL per year
2008	0.42						0.42
2009	0.80						0.80
2010	1.22						1.22
2011	1.66						1.66
2012	1.77						1.77
2013	1.28	0.64	0.09				2.02
2014	0.65	0.64	0.32	0.32	0.09		2.05
2015	0.33	0.64	0.32	0.33	0.33	0.09	2.06
2016	--	0.64	0.32	0.33	0.33	0.34	1.97
2017-34	--	0.64	0.32	0.33	0.33	0.34	1.97
2035	--	0.64	0.32	0.33	0.33	0.34	1.97

Actual performance

The Quincy Downtown Center project encountered problems from its start. The redevelopment plan was approved in 2007 but the process of finding and negotiating agreements with a master developer stretched until 2010. The delay was due, in part to the economic recession, but it also reflected the complexities and risks inherent in the project structure. Unlike Worcester and Somerville, the Quincy District had multiple private owners – 271 separate parcels in the zone – and the master developer would only control two substantially-sized sites, transferred from city-ownership. More problematic, the master developer was required to build and initially finance the public infrastructure components and then receive payment from the DIF fund only when each component was finished and ready for use.[33]

[33] See Quincy (25 January 2011), Land Disposition Agreement for the New Quincy Center; www.quincyma.gov/Government/PLANNING/LandDispositionAgreement.cfm.

Table 4.4.D: Quincy Center Concourse Fund performance

Sources: City of Quincy: Annual Budgets (2008-2014) and Annual Audited Financial Statements (2008-2013), www.quincyma.gov.

	2008	2009	2010	2011	2012	2013	2014	2015
Authorized funding	$40.0							
BAN outstanding	$20.0	$30.0			$33.0			$33.0*
Revenue						$1.0		
Annual spending	(3.0)	(5.4)	(6.2)	(5.6)	(5.8)			
Annual debt service		(1.2)	(1.6)	(1.2)	(1.1)	(1.6)	(1.2)	(0.54)
Cumulative deficit			($17.7)		($29.1)	($28.1)	($31.0)	

The city sold $33 million in bond anticipation notes in 2008 and 2009, which were converted into long-term bonds in 2012. The capital fund was held for the later reimbursement payments to the master developer. Project work moved slowly in 2012 and 2013, with demolition and excavation started on two of the strategic city-owned parcels. But the master developer encountered problems in dealing with private owners, whose agreements were needed to rearrange the parcels and insure infrastructure system connections. Work lagged while the master developer was carrying the burden of debt for the combined private and public components. Its financial backing wavered, and several "milestones" of performance were missed. In March 2014, the Mayor abrogated the master developer agreement and declared that the city would revise the redevelopment plan.[34]

In 2015, Quincy taxpayers are carrying the debt service of $2 million per year and the $30 million capital fund has not yet bought any infrastructure. Added to the city's overall $20 million debt service, the combined cost is a bearable 7% of the general operating budget. Property values in the downtown district are rising gradually, following the market trends of the Boston region, and the city expects that it will find new investors for the incomplete projects. Nevertheless, the ambitious revitalization plan and the DIF that was envisioned at $289 million have proven beyond the city's capacity.

[34] See Boston Business Journal (13 March 2014), "Street-Works out of $1.6 billion downtown Quincy redevelopment," www.bizjournals.com; also see the message of the Quincy Mayor, "Ten Updated Things to Know About Quincy Center," on the city website; http://stage.quincyma.gov/Utilities/news.cfm?news_story_id=530&action+print.

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