Bonds and Borrowing

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Why do planners need to know about borrowing?

Although many jurisdictions have large portions of their capital budgets funded by operating revenues, the cost of a new park, library or school or even a major upgrade of city hall or the police is usually well beyond the annual budget of a city or county government or special purpose agency. Most local governments will fund some portion of their capital facilities by borrowing. Bonds, sold to investors in a public market, are the chief mechanism used by municipalities to finance capital facilities. In fact, these bonds are usually called "municipal" bonds even though many are issued by state governments and special purpose districts.

Planners need to be familiar with the factors that go into the decision to borrow funds in order to develop the comprehensive plan and the capital improvement program. Planners might also be the lead for a large scale capital improvement project for the locality that requires financing and should therefore need to know about the bond issuance process. Planners also need to know about possible sources of community facilities funding during the permitting process for a large private project if it will negatively impact existing facilities. The following begins with some general facts about bonds before moving into a discussion of the decision to borrow. Different types of bonds are described as is the bond issuance process.

General Facts about Bonds

What are bonds?

A bond is an interest bearing certificate issued by an organization in order to borrow money. A bond is a loan between the borrower or *issuer*, and the lender or *investor*. Bonds are similar to a promissory note—a promise by the issuer to repay the investor the principal of the loan by the end of a fixed period of time plus interest. Bonds are often contrasted with stocks, which is a way of raising money by selling shares in a company. Stockholders are subject to both the ups and downs of a company. Because bonds are a loan they are considered a more secure form of investment than stocks.

Both corporations and governments can issue bonds but governments do not sell "shares" to raise money for the capital facility. Instead, governments issue *municipal bonds,* the term used for loans entered into by local and state governments, including special

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districts. These loans or bonds are repaid with taxes or revenues from user fees, exactions and leases.

Municipal bonds are also called *tax exempts* because the interest received by the investor is not subject to federal taxes and in some states the interest is not subject to state or local income taxes as well. Recently a market has emerged for taxable municipal bonds but for the most part the attractiveness of municipal bonds lies in its tax exempt status since corporate bonds are not tax exempt.

Issuers and the Market for Municipal Bonds

As one author notes, there is really no such thing as a municipal bond market per se since all transactions occur between individual buyers and sellers of these bonds, rather than in a centralized location such as the stock markets. In addition, bonds are tailored to the specific requirements of different state laws, and specific sectors such as health and hospitals and public power, for example.(Mysak 1998)

The amount of bonds issued in a year is dependent upon economic conditions and population pressures. In the 1950's, capital spending at the state and local level was financed primarily by bonds. In the 1960's and 1970's, federal funds grew in importance. In the 1980's and 1990's there has been increased reliance on debt or bond financing paid for by user fees. (Petersen 1985)

In 1985, prior to the 1986 Tax Reform Act, which eliminated many tax exempt activities, the bond market peaked at $200 billion of annual new issues. It has been growing since then. The amount per capita spent by state and local governments rose steadily from 1980 onward but there was considerable variation by region corresponding to the high growth parts of the country.(U.S. Bureau of the Census 1998) During the past thirty years, government general purpose debt as a percent of Gross National Product fell from about 14% in 1970 to 11% in 1980. Throughout the 1980's the figure stayed between 10 to 12%.(Petersen and McLoughlin 1991) In 2003, there was approximately $1.8 trillion outstanding in municipal loans.(Smith Barney 2005)

Within the state and local government system, the major borrowers were authorities. Cities and special districts borrowed the next highest amount, but their amounts were only one third that of the authorities. Counties and colleges borrowed the least. (See table 3-1 Bonds Issued by Type of Government from 1980 to 2000.)

Table 1 Bonds Issued by Type of Government from 1980 to 2000.

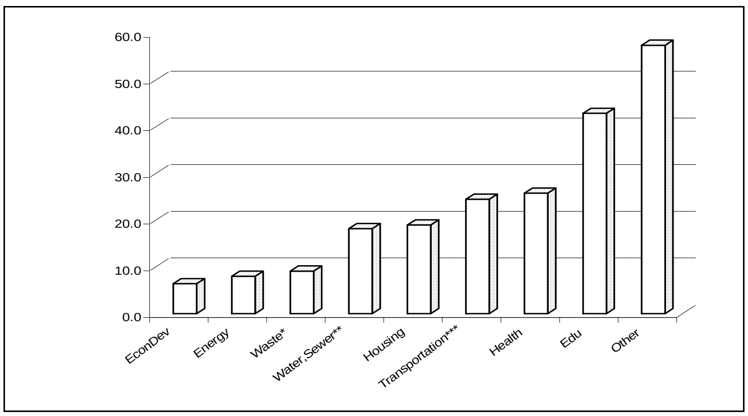
	State	*County*	*City*	*Authority*	*District*	*Colleges*
1980	5.1	4.6	8.5	23.3	3.9	0.2
1985	12.1	15.8	36.5	119.2	15.6	2.9
1990	15.0	10.0	22.7	61.3	15.2	1.5
1995	14.6	13.3	27.9	75.1	22.4	2.5
2000	20.8	12.7	29.3	97.3	27.8	3.8

Source: Reprinted from Elmer & Leigland, Forthcoming. Data from U.S. Census, 2002. Statistical Abstract of the United States. Table 502.

What are bonds used for at the local level?

State and local governments (which include the authorities and the special districts noted above) issue bonds for a wide variety of purposes, ranging from non infrastructure expenditures such as student loans, pollution control, to the more traditional categories of education, water, sewer and gas facilities, and economic and industrial development and health facilities. Although the amounts in each category fluctuate over time depending upon the economic cycle, the relationships have been roughly the same during the 1990's. The two largest uses of bonds (excluding other) in 1997 were for education and health, including both hospitals and nursing homes. The smaller amounts on energy reflect the fact that most energy utilities are private, and their borrowing is not included in these public state and local figures. (see Figure 1)

Figure 1 Use of Bond Proceeds by State and Local Governments in 1997 ($Billions).

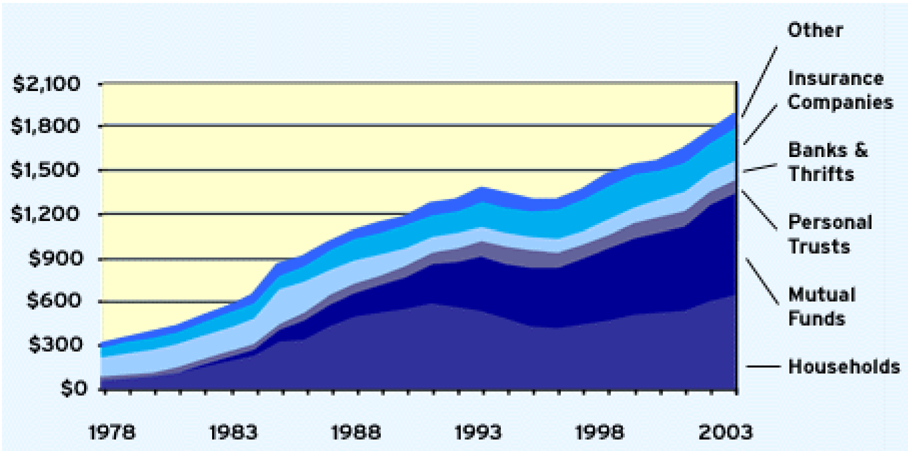


Source: U.S. Census.

Who Buys Bonds?

The market share by type of investors has changed from 1955 through 2003 primarily as a result of the changes to the tax code. In 1980 for example, investments by individual households or their proxies accounted for about 34% of all investment in municipals but this figure had doubled by 1999 to almost 75%. This coincided with the turn of households to investment in mutual funds, many of which invest on behalf of households in municipal bonds. By contrast, commercial banks were the largest holders of municipals in 1980 at about 37% but this figure dropped to 7% in 1997. This was due in part to reforms to the federal tax code that by 1984 allowed banks to deduct only 80% of interest on tax exempt securities. In 1980 the total cumulative municipal bond amount outstanding was about $400 billion but by 2003 this figure had grown to over $1.8 trillion. Figure 3-2 shows the growth of outstanding municipal debt and the fluctuation of holdings by different investor types from 1978 to 2003.

Figure 2 Holders of Municipal Debt from 1978 to September, 2003 in $Trillions



Source: Smith Barney, Inc. 2003.

The Decision to Borrow

In deciding to develop a particular capital facility, or in deciding to redevelop or promote development of greenfields, the planner and the policy makers will need to address basic core issues about who should pay for the improvements, local policy issues about debt as well as how much debt is affordable for the jurisdiction. The basic core issues revolve around big picture values, while the local policy issues about debt come from management philosophy and the third, the affordability issue, is based on more practical concerns about the ability of the jurisdiction to repay the loans.

Who Should Pay?

At the heart of the values question is who should pay for the new facilities. Those who are in favor of new debt argue that those who use the facilities should pay for them. Since most capital facilities are is long lived, borrowing today and paying back the debt overtime permits this to occur. This is the “Pay as You Use” argument. Those who are in favor of incurring debt for large capital facilities also argue that the locality will be better able to afford the payments over time rather than to pay for a large scale facility at a single point in time. This argument applies to both general obligation bonds backed by taxes as well as revenue bonds where users, not the general public, pay for the facility. “Pay-As-You” means that today’s users subsidize future users. However, there are no interest costs and future generations are not burdened with both debt, and capital investment decisions made by the present generation.(The Bond Market Association 2001)

What are appropriate debt policies?

The second consideration about borrowing is what the local management and financial policies and local strategies are about borrowing. These need to consider the mix between paying from current revenues and debt, as well as how much should be spent on capital improvements in the jurisdiction each year. There may also be debt limitations that the state has, or that are self imposed by the locality.

Considerations about the right balance of debt and pay-as-go. Most governments rely on both debt and pay as you go for financing capital needs. Fast growing communities with large operating fund balances may be able to finance half of their needs with current revenues but will likely need to issue debt for the balance. A fast growing community without significant fund balances may have to issue debt for three quarters of its need. Rapid development usually expands the tax base of a jurisdiction which makes it possible to meet the debt service. A community where population growth is more stable may choose to finance 75% of its replacement needs with current revenues, and debt used only for large projects. Communities with shrinking tax bases are challenged even to pay for adequate maintenance. Such jurisdictions should still try to keep significant fund balances but should also aggressively apply for grants for capital needs.(Vogt 2004)

Designation of Percent of Revenues to Capital. Some communities have an on-going percent of revenues devoted to capital, so that when the CIP is prepared, the players have an idea of how much money is available each year. In other communities, one time revenues are used, and as many of the top priority projects as can be funded are built. In other communities the CIP provides the context for a bond issue.(Kelly 1993)

Local Debt Limitations. State law, the local charter or voters impose limitations on the level of debt financing for many local governments. Sometimes the constraint is a requirement to go to the voters if the debt amount exceeds a certain threshold. Sometimes this acts as a real restriction, but in other cases the limit is greater than fiscal prudence warrants and the locality must generate its own “debt affordability” limit.

Debt Policies. Both GFOA and ICMA recommend that a jurisdiction adopt debt policies. Such principles should be written in a flexible enough way to allow for the under-funding of infrastructure during hard economic times, although from the public works perspective this might be seen as lack of commitment. The ICMA suggested policies are as follows:(Nollenberger, Groves et al. 2003)p 81.

1. Proceeds from long-term debt will not be used for current, ongoing operations.
2. Long-term borrowing will be confined to capital improvements too large to be financed from current revenues.
3. Bonds will be paid back within a period not to exceed the expected useful life of the capital project.
4. Where possible, special assessment, revenue, or other self-supporting bonds will be used instead of general obligation bonds.

5. Good communication with bond rating agencies will be maintained, and a policy of full disclosure on every financial report and bond prospectus will be followed.
6. Long-term debt issuance will have a level debt service with a life no greater than the expected life of the capital improvement being financed and no greater than 20 years.

Some examples of debt policies and best practices at the local level are given in the appendices.

What can the jurisdiction afford?

The third consideration about borrowing is whether or not the locality can afford to issue debt. This is called an "affordability analysis" and usually excludes bonds that are self supporting, ie, revenue bonds. So therefore, the affordability analysis is basically an assessment of the taxing capability of the jurisdiction, or the underlying population. This kind of assessment is very important to undertake, however, since it is forms the basis for how aggressive the locality wants to be in borrowing for capital facilities. The analysis is very similar to that followed by the rating agencies prior to issuing bonds.

There are three major indicators and benchmarks that are used by the bond rating agencies as affordability indicators and that are also recommended as indicators for the jurisdiction to use to evaluate its financial condition. (Nollenberger, Groves et al. 2003)

- **Overall net debt as a percentage of assessed or market valuation.** Net debt is that which is supported by taxes, specifically excluding self supporting, single purpose debt of the jurisdiction. If it is over 10% of either the assessed or market valuation of the properties of the locality, or if it has increased rapidly over the previous years, this is a warning sign.

- **Overall net debt per capita (or per household) as a percent of per capita (or household) income.** This index is what is known as the Standard and Poor's index. If this figure is close to or over 15% , this is also a warning sign of a problem.

- **Net Debt Service as a percentage of net operating revenues.** The rating agencies use the figure of 20% as a maximum figure that a jurisdiction should have to obtain the highest credit rating.

Rating agencies also like to have the first two indicators for the entire tax base, regardless of the jurisdiction involved. That is, they are interested in what the total burden is on the tax payer in the "underlying" or "overlapping" taxing districts. This information is difficult for a planner or even the local finance staff person to obtain. In lieu of this, an ICMA publication on financial capacity recommends that a list of all jurisdictions with the potential to issue debt in the area be made, and contacted to see what their plans are for future debt.(Nollenberger, Groves et al. 2003)

The local jurisdiction can generate its own debt affordability model even if it is constrained by state or local charter restrictions. An example of a debt affordability model is shown below for Anne Arundel County, Maryland. (See table 3-3) In this jurisdiction, the local charter limits outstanding debt to 10% of the assessable base of the county, which is about $2 billion. In 2003, the county was at 25% of that amount (ie, 25% of the 10%). If the county actually issued the full amount of debt permitted, the portion of the annual operating budget devoted to debt service would be 30%, which is too high. (Svendsen 2003)

Table 2 Debt Affordability Model from Anne Arundel County, Maryland, 2004 Budget

FY2004 DEBT AFFORDABILITY

	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
New Authority, Normal	$70,000,000	$70,000,000	$70,000,000	$70,000,000	$70,000,000	$70,000,000
New Authority, IPA	$3,590,000	$5,000,000	$4,500,000	$4,000,000	$3,500,000	$0
Total New Authority	$73,590,000	$75,000,000	$74,500,000	$74,000,000	$73,500,000	$70,000,000
Debt Service as % of Revenues (9%)	7.8%	7.9%	8.0%	8.1%	8.1%	8.0%
Debt as % of Est. Full Value (1.50%)	1.45%	1.46%	1.46%	1.46%	1.45%	1.43%
Debt Per Capita ($1,000)	$1,120	$1,161	$1,197	$1,227	$1,251	$1,272
Debt to Personal Income (3.0%)	2.8%	2.8%	2.8%	2.8%	2.7%	2.7%
Debt Service	$69,130,052	$73,078,363	$77,153,875	$81,679,012	$85,128,443	$87,767,261
Debt, at end of fiscal year	$560,294,704	$585,480,861	$607,784,370	$626,882,152	$643,763,835	$658,667,090
General Fund Revenues	$886,600,000	$926,100,000	$965,600,000	$1,006,500,000	$1,049,200,000	$1,094,500,000
Est. Full Value ($000)	$38,731,000	$40,087,000	$41,490,000	$42,942,000	$44,445,000	$46,001,000
Population	500,440	504,100	507,580	511,060	514,540	518,020
Total Personal Income ($000)	$19,718,000	$20,605,000	$21,532,000	$22,501,000	$23,514,000	$24,572,000

Source: Anne Arundel County 2004 Capital Improvement Budget. Courtesy of Kurt Svendsen.

Types of Bonds

Since there are no centralized markets for bonds (like the stock market) many different variety of bonds have evolved to meet the highly specific needs of local governments in particular states and particular sectors. Those who write about bonds put them into two to four different categories depending upon their audience. One author divides types of bonds into three categories: General Obligation, Revenue Bonds and Certificates of Participation.(Mysak 1998) Another divides up tax based bonds into General Obligation Bonds and Limited Liability bonds.(Petersen and McLoughlin 1991) A third expert notes that certificates of participation are just one way of marketing bonds based on Leases.(Vogt 2004)

This paper will use five categories since planners are interested in geographic issues as well as the more traditional question of the amount of liability incurred by the local taxpayers. Taxable bonds are also included since they are also used by some jurisdictions:

- Tax-Exempt General Obligation Bonds;
- Revenue Bonds (using fees)
- Leases/Certificate of Participation;
- Geographically Based Bond Issuances; and
- Taxable Bonds.

The following discussion is based on three sources: an article published by the Government Finance Officers Association in 1991, on the 5th Edition (2001) of the American Bond Association's *Fundamentals of Municipal Bonds*, and Vogt's chapters on bonds.

Tax Exempt General Obligation Bonds

General Obligation (GO) bonds are backed by the full faith and credit of the issuing (borrowing) government. This means that the government is obligated to use its unlimited taxing power to repay the debt. GO bonds have been subject to some restrictions over time. First, local governments in 44 states have constitutional or statutory limits on the amount of GO debt they are allowed to incur, while cities in 40 states have limits on the amount of interest they can pay. Second, 42 states require voter approval of GO bond issues. In some states, 2/3 of voter approval is needed at the local level while in others, a simple majority is required. In Oregon, what is called a "super majority" is needed—over 50% of the registered voters must vote, and of these, 50% must approve the issuance of the bond.

As noted previously, GO bonds were the original mechanism used by local and state agencies to finance large scale capital improvements. Today, these bonds make up a little over 30% of all new issues for state and local governments being overtaken by revenue bonds. (U.S. Census Bureau 1998) General obligation bonds generally have a lower interest rate than revenue bonds. If the issue is popular enough for the vote requirement not to be an impediment, this should be first choice of an agency since it provides money at the least expensive rate for the taxpayers.

If the capital facility or its operations is controversial, voters may reject it. For example, the City of Eugene, Oregon put the construction of a new police station on the ballot three times during a five year period at the beginning of this decade, but each time it failed. A local newspaper speculated that local controversies over police practices may have contributed to the failure of the issue. Parks are usually very popular items and land acquisition can often be funded by GO bonds. In one of the elections in Eugene, Oregon, where a new police building was turned down, the voters approved taxes for bonds to rebuild a favorite community center and its outdoor pool. (Johnson and Taylor 2001)

Revenue bonds (based on enterprise funds)

Revenue bonds, unlike general obligation bonds, rely upon user fees, or dedicated revenue sources from the proposed capital facility. They are also called "limited liability" bonds since they do not rely upon the taxing power of an agency for repayment.

As noted previously, limited liability bonds are increasingly the security of choice for local governments, special districts and authorities. In 1997, for example, about 70% of all new issues for state and local governments were limited liability bonds. Sometimes these are referred to as “special obligation” (SO) bonds.

When a facility has a revenue stream, revenue bonds are a good alternative to taking the issue to the voters. Special districts for water and waste functions frequently use these types of bonds. (See the discussion further on about how to set up a special district.) Usually these types of bonds do not require voter approval, and the amount of the debt is not legally part of the debt ceiling of the agency or locality. These bonds carry a higher interest rate in the market place because they are viewed as being less secure than GO bonds. However, they are still tax exempt.

Revenue bonds can also be called enterprise bonds because the money to retire the debt and pay the interest comes from the revenues of a government enterprise. Special purpose agencies or departments within a city or county that operate convention centers, parking garage, or water or sewage treatment plant typically use these kinds of bonds. Solid waste landfills can be funded with revenue bonds when “tipping fees” are charged to dump at these sites. In some localities, success with recycling reduced the expected revenue stream, and the agencies had to appeal to their parent bodies or the voters for more funds to bail them out. Federal rules were changed as part of regulating the private regulated monopolies to permit energy and telecommunications utilities to use tax exempt revenue bonds as well.

Revenue bonds are the workhorse of capital facilities for special districts, many of which must be self supporting with respect to their fees, which act like a “price” for the public service.

Lease Financing Bonds (sometimes called Certificates of Participation)

Lease financing bonds or certificates of participation (COPs) are secured with lease payments from the local jurisdiction that uses the facility. This kind type of bond issue is often used to finance projects such as prisons, courthouses, or convention centers where there might not be enough political support for a general obligation bond issue. The lease payments are usually subject to annual appropriations by the jurisdiction.

The local government will enter into an agreement with a developer, a non-profit or a joint powers authority to build a facility with a long term lease. Bonds to finance the capital facility can be issued at a tax-exempt rate, with the rental stream and interest rate determining the size of the issue, and hence the size of the facility to be built. Leases are a yearly obligation on the part of the municipality or special district to make rental payments, not a commitment to pay debt service. Therefore, leases are not legally considered debt and are therefore not subject to the limitations placed on debt by state and local laws. This enables the locality or the developing agency to issue the bonds without voter approval and the large majorities required for general obligation bonds.(Detweiler 2001)

Schools, public buildings, hospitals and even some parks and transportation facilities have been built using lease-rental bonds. This is also a source of funds that can be used to purchase equipment such as fire trucks, police vehicles, computer and telecommunications equipment. Title to equipment financed with a lease-purchase agreement remains with the locality throughout the repayment period, and belongs to the locality at the end of the time period without restrictions.

There are many terms that are used to classify leases, both official and unofficial. Both the Government Accounting Standards Board (GASB) and the Internal Revenue Service (IRS) distinguish between operating leases, where the lessor retains ownership of the property, and capital leases, where the lessee assumes the risks and benefits of ownership. Capital leases are used by cities and counties, and special districts, to finance the acquisition or construction of a capital asset. The capital lease transfers title to the leased property to the local government lessee and the present value of the lease payments approximate the value of the property. Since the leased property is the government's "asset", it also has the liability for lease payments. Three common types of capital leases include installment-purchase financing; lease purchases financing, and the long term true capital lease.(Vogt 2004)

It should be noted that the term "certificates of participation" actually refers to the way that the capital lease is marketed to investors. Certificates of participation are used for large leases, over $1 million. Here the capital lease is divided into certificates of participation that are sold publicly. For smaller leases, the debt can be privately placed. Smaller leases are usually for equipment acquisitions or small scale renovation projects with short time frames.(Vogt 2004)

Tax-Exempt Bonds for Geographically Defined Areas

A third category of tax exempt bonds, which local officials might be involved with, is defined by a specific geographic area. The following describes three types: the special assessment district including Business Improvement Districts (BIDs); the case of redevelopment and tax-increment bonds (also known as Tax Increment Financing—TIF's). Some authors group these kinds of bonds under "limited liability" since they are not secured with the full faith and credit of the taxing power of the jurisdiction. They are repaid, instead, with the special tax assessed for the specialized purpose. These can also be called Special Obligation (SO) bonds.

Special Assessment Districts: Sometimes the benefit of capital improvements can be linked with a particular geographic sub-area of the locality, such as a utility under-grounding district, or curbs and gutters for a specific neighborhood. Since the capital improvements benefit specific properties, the local government may consider the establishment of a special assessment district. Assessment districts have also been used by many localities to fund federally required storm water improvements. Assessment districts are not independent of the government which creates them, as special district agencies are. (Detweiler 2001)

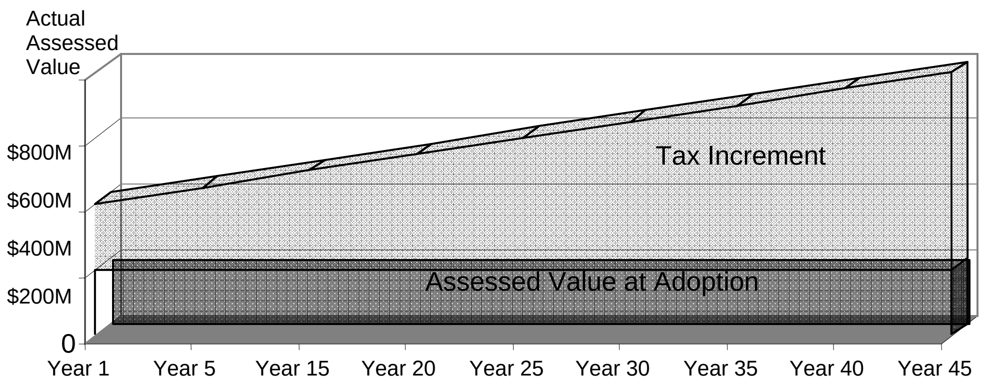
Special assessments are similar to property taxes, since the amount assessed is related to the value or size of the property. The assessment for the property owner can be a function of the property's value, or its street frontage for example, or any other mechanism that relates the cost of the capital improvements to the benefit received by the property owner. For storm water runoff improvements, the measure might be the amount of impervious surface on the parcel. To determine whether or not to levy the assessment, all the property owners are polled and if a majority concur, then the assessment is made mandatory for all properties in the area.

Business Improvement Districts (BID): BIDs are a variant of the special assessment district. The planner might find this a useful strategy to fund capital improvements for a specific commercial area. The past decade has seen the rise of BID's in the business areas of older urbanized areas. Generally the impetus for the BID comes from local merchants who are trying to revitalize a business area. Since they are voluntarily assessed, usually by a simple majority of property owners in the area, the funds can be used for whatever was put in the assessment district formation including operating costs and maintenance items. They are typically used for items like pedestrian lighting, street furniture, curbs, gutters and paving for a business district. The proceeds can be used to issue a bond, or to pay for improvements on a pay as you go manner.

Redevelopment Districts/Tax Increment Financing: Redevelopment agencies were originally intended to provide financing for "slum clearance" and infrastructure provision for blighted areas in the large urban areas. The funds to pay off bonds come from the difference in the property tax that would have been collected in the area, compared to the increase in property taxes that are anticipated to be collected in the future due to rising property values in the area because of capital improvements made with the proceeds of the bonds.

The original assessed value base is frozen (or allowed to climb at a modest rate), and the governments, such as the city, the county, the special assessment districts, continue to receive their base revenues. The difference between the frozen base for the assessed value (plus the modest increment mandated in many states) and what is actually generated in property taxes from the increase in assessed value is what is used to fund the redevelopment agency and to pay off any bonds for major capital improvements in the area. (See figure 3-3 Example of Tax Increment Increase Due to Capital Investments. (Seifel 1996))

Figure 3 Example of Tax Increment Increase Due to Capital Facility Investments



Source: Reprinted from Elmer & Leigland.

There are variations in how this actually works from state to state and the planner should contact the appropriate state agency to determine what the current rules and regulations are about TIF's before proceeding to do any degree of analysis. For example, until several years ago, in Oregon, property tax increments from the entire municipality could be funneled into the redevelopment district. This was changed in 1999. In California, because of the widespread use of redevelopment areas to capture tax increments in rapidly growing but undeveloped areas restrictions were adopted to require redevelopment agencies to share the increment with other taxing agencies that provide services for the area using a standard pass through calculation.

Redevelopment funds can be used to buy up small parcels of land and to aggregate them into larger parcels thought to be more advantageous for large scale commercial development. They can also be used to pay for capital facilities such as libraries, community centers and other municipal buildings within the redevelopment area. In addition, redevelopment funds can also be used for street improvements, street lights, stop signals, parks and any other physical improvements that improve property values in the district.

There are two types of risks associated with redevelopment districts. First, the assumption that sufficient growth in assessed value will occur in the district if improvements are made may not be warranted. Second, parent jurisdictions may drop their tax rates. The redevelopment district does not control the tax rate, just the increment. Local general purpose governments control the tax rate or the way the tax base is set. (Leithe and Joseph 1990)

Use of Taxable Bonds

Since the Tax Reform Act of 1986 limited the use of tax-exempt bonds for many purposes, local general purpose and special district governments have also used taxable bonds to finance capital facilities. They can be used to fund convention centers and sports arenas as well as any other capital facility desired by the government entity. Or, a government may not be able to legally structure a debt that complies with federal rules, usually when a private entity is receiving the benefit of the debt, such as with a stadium, commercial park or shopping mall. In that case a government may deliberately choose to issue taxable debt.

Taxable bonds have a higher interest rate than tax-exempt bonds. In the late 90's, however, the large federal surplus had reduced much of the difference between taxable bonds and tax-exempts. This may no longer be as advantageous with the disappearance of the surplus. However, the relative speed with which such a bond can be issued, (which may result in lower total project costs) as well as the fact that the issuance does not need to go before the voters, are factors which may make the use of taxable bonds an attractive alternative for capital financing.

Comparative Costs of Issuance for Bond Types

A study done in North Carolina showed that General Obligation bonds have lower issuance costs. Revenue bonds had higher issuance costs, and even higher were certificates of participation/lease bonds. (See Table 3-3)

Table 3 Issuance Costs per $1,000 of debt issued in North Carolina from July 2000 through May 2001 for GO Bonds, Revenue Bonds and Certificates of Participation

	General Obligation Bonds	Revenue Bonds	Certificates of Participation
Bonds Issued ($Millions)	$352.4	$151.8	$641.8
Bond Counsel	$1.59	$3.61	$4.19
Bond Rating Fees	$1.34	$1.25	$1.70
Underwriting Fees	$5.05	$7.94	$11.33
Financial Advisor Fees	$0.22	$0.87	$0.14
Other Costs*	$0.73	$1.08	$1.25
Total Costs*	$8.93	$14.75	$18.61

Source: Author. Data from Table 11-3, p 326 in Vogt, 2004. Capital Budgeting and Finance. * Does not include costs of feasibility, architectural and engineering studies.

Institutions and Actors in the Bond Issuance Process

The Government Institutions

As noted above, the major actors in the bond issuance process within the government agency usually are in the finance department or the budget office. However, if the local practitioner is working in the economic development department, the redevelopment agency, or even in the planning department, he or she may be the lead staff on a large scale capital project such as a library, jail, school or new city hall. The local practitioner might also be the project lead for a storm water sewer project, or a new jail, or a bridge or traffic facility that will be financed with bonds. As such, the local practitioner will be responsible for convening the team charged with issuing the bond, and would work closely with the finance and budget offices to select the alternative financing method and to present it to the elected body.

The development of a large scale subdivision, or a major industrial or commercial development, may require the construction of additional capital facilities to be funded by a combination of bond financing and exactions. The local practitioner charged with permitting the project or coordinating the internal agency process for the permits might be the lead on convening an interdepartmental team to provide some government financing.

Although as noted above, the finance department usually has the lead responsibility for bond issuance this may not be the case for redevelopment bonds. Because of the highly specialized nature of redevelopment law and financial reporting, often the redevelopment staff is in a better position to be able to manage the process. In larger cities, the redevelopment agency is a separate agency. However, even though the redevelopment agency is a different legal entity than the city or county, there is a common impact upon property taxes and the bond issue needs to be coordinated with the appropriate general purpose government. This is particularly true for bonds designated for capital facilities development since although the redevelopment agency may construct the improvements, they will not operate and maintain them. They might also contract with the city or country to construct the capital facilities.(Mysak 1998)

Outside Experts and Professionals

Since issuing a bond is usually a major event for most general purpose governments, even for special purpose districts and authorities, a team of outside experts is usually hired, or is put on retainer to complement the local staff. Hiring the experts is usually the responsibility of the finance department in a general purpose government. Often the finance department has many of these experts already on retainer to assist with other financing activities. The following describes these experts.(The Bond Market Association 2001)

Bond Counsel. Ever since some issuers of bonds for railroads in the later 19th century defaulted on their obligations by asserting that the bonds had not been properly authorized, bond issuers and underwriters have included a bond counsel opinion with the issue concluding that all the relevant laws and regulations have been complied with. The bond counsel prepares the bond proceedings, confirms their tax exempt status and drafts key financing documents. In addition, this firm certifies the issuer's compliance with all legal requirements. Today a bond issue is not marketable without a positive opinion by an outside bond counsel.(The Bond Market Association 2001)

The bond counsel should be selected early in the process because sometimes authorizing legislation at the local level is necessary, and this may take some time. There are several nationally recognized firms commonly used, and a listing of them is included in the so-called "Red Book" -- *The Bond Buyer's Municipal Marketplace*. If there is pressure to hire a local law firm, co-counsel arrangements can be made where by the local firm does some of the work which is then reviewed and signed off on by the national firm. This arrangement is usually more expensive however. An RFP process can be used to select the counsel.(Vogt 2004)

The local jurisdiction's attorney is essential to the process since he or she must certify that the appropriate authorizations have been adopted by the local government and that the covenants of the bond do not conflict with any other local government contracts or obligations. Sometimes in a particularly complicated issue, the underwriter and or the trustee may also have an attorney. This involves more cost to the issuer and so the need should be carefully justified.(Vogt 2004)

Financial Advisor. Local governments that do not routinely issue long term debt will want to have a financial advisor, and even though large issuers often have their own in-house financial staff, they too often hire financial advisors to assist in certain aspects of the issuance. The advisor helps to obtain a "good deal" on the financing and provides technical guidance about the "size" of the offering. The financial advisor also represents the local government's interests with the bond counsel, the underwriter, the rating agency and so on.

This professional should also be hired at the beginning of the bond issuance process. A competitive RFP process can and should be used to insure that the financial advisor will be sensitive to local needs in addition to have the technical qualifications (knowledge of municipal debt finance). In the past financial advisors were compensated by some fee per $1,000 of the bond issue but this provides an incentive to make the issue larger. Instead, an hourly or flat fee, or a retainer method should be used. (Vogt 2004)

The financial advisor helps the local government understand the amount of debt it can afford and decide about whether or not debt is the most appropriate strategy for the desired purposes. The financial advisor can develop RFPs to hire the other professionals and can help the locality prepare for the bond rating process. The financial advisor also advises the local government about whether to accept the bids in a competitive bond sales process or assist in the negotiated sales. (Vogt 2004)

Underwriter. The underwriter buys the debt from the issuer and resells it to investors. They act as a broker except that they actually buy the issue. If they are successful they hold the loan only for a very short time and sell it for more than they paid for it. The "underwriter's spread" consists of their management fee for helping to plan and structure the debt; the take-down, which is the sales commission to the individual sales staff; expenses and a fee for the underwriting risk. If the issue is strong and not unusual, sometimes the local government can pressure the underwriter to waive the risk fee. The underwriter can be an investment banker, a securities dealer, or a bank.

Consulting Engineer. Revenue bonds usually require the opinion of an outside engineer about the feasibility of the projected revenues. In addition, bonds funded from limited liability taxes, such as a special assessment district, also require a feasibility study. This study is used to reassure all parties that the revenues will be adequate to cover the debt service as well as operating and maintenance costs.

Polling Expert. To assist in determining the size or focus of a bond issue, a locality may contract with a polling firm to conduct a voter survey. There are many firms specializing in polling voter attitudes and although their primary expertise may be political campaigns, many can quickly and easily provide results on the feasibility of a prospective bond measure.

In deciding on whether to build a new city hall or to renovate the existing building, in 1998 the city council in Berkeley, California contracted with a local public opinion survey firm to poll voters on the alternatives. The results indicated that a bond issue for a minimal but adequate seismic retrofit of city hall would pass but only if coupled with a substantial amount of funds for park renovations. The issue was put to the voters and it narrowly obtained the necessary two-thirds majority for a general obligation bond.

Rating Agencies. There are three national firms that rate local government debt (as well as corporate debt): Standard and Poor's Corporation (S&P), Moody's Investors Service (Moody's) and Fitch IBCA. The local government will pay a fee to one of these firms to rate its debt and the process usually takes three to four weeks. Ratings are used by potential buyers of the debt to determine the probability of a default on the loan, even though municipal bonds are relatively secure.

Determining Credit Worthiness

From the Depression when there were almost 5,000 recorded defaults on municipal bonds, through the mid-1970's, there were very few defaults. However, between 1972 through 1984, there were 21 municipal bankruptcies. From 1981 through 2000 there have been 156 filings of "Chapter 9 bankruptcy" by local governments. Those that have defaulted or filed for protection have been widely publicized: the 1983 default of the Washington Public Power Supply System on $2 billion of debt for constructing nuclear power plants; the Chapter 9 filing of the San Jose School District to void a labor agreement and the filing of Orange County because of investment losses.(The Bond Market Association 2001)

Even though default is a remote possibility, investors want to know whether they are buying bonds from a locality that will repay the loan. Rating agencies are used to establish the rating for a particular bond issue and this in turn sets the interest rate that the jurisdiction will have to pay on the funds. The factors that the rating agency uses to evaluate a particular issue are very similar to those used in debt affordability models by the local government to determine how much debt can be carried by the jurisdiction.

Bond Ratings

The rating firms use letter categories to rate long term debt. The four highest categories are called "investment grade" debt because many banks and municipal mutual funds are prohibited from investing in debt that is rated lower. These lower rated bonds are often called “junk bonds,” and are viewed as speculative. Most local governments’ issuances are investment grade. (See Table 3-5 for bond rating definitions from the three rating agencies.) The governments that cannot achieve this are usually small jurisdictions and often they use a regional or state bond pool instead or other credit enhancements.(Vogt 2004)

The jurisdictions that have triple A ratings follow the dicta, that if you don’t need to borrow money, you can always get a loan. A study done of 41 municipalities in 2001 that were rated Triple A showed that most of them were medium sized cities, from 50,000 to 250,000 in population. (See Table 3-6) They had wealth levels above national average with strong employment growth and low unemployment along with growing tax bases. They had significant fund balances with the average general fund balance at 25% percent of the general fund budget—quite a remarkable figure! Their rates of per capita rate of debt in were $2,500 or less, while net debt as percent of valuation was less than 4.0% and net debt service as percent of total budget was about 10%. (Vogt 2004)

Table 4 Bond Ratings Definitions

Credit Quality	Moody’s	Standard & Poor’s	Fitch IBCA
Investment Grade			
Prime	Aaa	AAA	AAA
Excellent	Aa	AA	AA
Upper Medium	A	A	A
Lower Medium	Baa	BBB	BBB
Non-investment Grade			
Speculative	Ba	BB	BB
Very speculative	B,Caa	B,CCC,CC	B,CCC,CC,C
Default	Ca,C	D	DDD,DD,D

Source: Reprinted from The Bond Market Association (Temel, Judy), 2001, *The Fundamentals of Municipal Bonds*, Fifth Edition. P 13.

Table 5 Debt Ratios for 41 Cities with Triple A Bond Ratings in 2001 from Standard & Poor

Size of Municipality	# of Muni's with AAA Ratings	Average Population	Net Debt Per Capita	Net debt as percent of market valuation	Net debt service as percent of budget
Small: Less than 50,000	12	25,178	$2,331	1.8%	8.2%
Medium: 50,000 to 250,000	22	116,863	$1,912	2.3%	9.3%
Large: Greater than 25,000	7	575,692	$1,773	3.7%	16.6%
For All Municipalities	41	168,365	$2,011	2.4%	10.2%

Source: Adapted by author from Vogt, 2004. *Capital Budgeting and Finance.* P. 127.

Not all municipal bonds have bond ratings. About 1/3 of newly issued debt does not have a bond rating, according to one source (Mysak 1998) while another indicates that the percent of total debt that was not rated varied between about 6% to 13% from 1989 to 1999.(The Bond Market Association 2001)

A bond rating is a significant expense--one rating agency noting in their literature that it can cost from $1,000 to $350,000 for a rating. Some issuers, however, get two ratings to make it easier for the underwriter to sell the bonds.

To obtain the rating, the issuer sends the rating agency all the bond documents, and the preliminary official statement. The rating agency assigns analysts who may make a site visit, but in any case, they usually interview local officials. They prepare the analysis and submit it to a rating committee that assigns the rating. Appeals are possible. The following outlines the factors that the agencies consider in making the rating for tax backed municipal bonds, for revenue bonds, and for capital leases.

Generally it can be said, that those who have money, can borrow it. Triple A rated jurisdictions are wealthier than their lower rated counterparts. Yet, it is worth noting that many jurisdictions that are rated lower have successful bond issues that they are able to pay back without bankrupting their tax and rate payers.

Specific Factors Looked at By Rating Agencies

General Obligation (Tax Backed) Municipals Rating Factors. The bond rating process for general obligation bonds evaluates the risk for the debt over the entire life of the issuance. The rating agency typically looks at the political mood of the jurisdiction, existing debt, the condition of the local economy, municipal financial health, and the management capacity of the jurisdiction. The rating agency may evaluate per capita income of the jurisdiction, and its ability to address its capital facility needs. Local educational levels may be looked at as an indicator of whether the economic base of the locality will be able to make the transition to a service oriented economy. In addition, the long term impact of pension requirements for local governments is be scrutinized carefully because of the increases promised for the outyears during the late 1990's when local governments were flush. (The Bond Market Association 2001)

One of the key steps is the analysis of the existing local debt supported by the same tax base, whether these tax revenues accrue to the issuing jurisdiction or a superior or subordinate jurisdiction. This debt is broken down into direct debt, and overlapping and underlying debt. Direct debt is debt that the jurisdiction is responsible for and is backed by tax revenues—minus any debt that is self supporting from an "enterprise" such as a water or sewer operation. These revenues are considered self supporting only if the enterprise has been paying all its expenditures from non-tax sources for at least three years. The indicators described previously under the decision to borrow are scrutinized by the rating agency: level of debt as a percent of the governments' budget, debt per capita or household, as well as debt as a percent of the assessed or market value of the property in the jurisdiction.

Revenue Bonds. The rating agency is primarily concerned about whether or not the enterprise will produce the revenue to repay the loan. Therefore it looks at the viability of the overall organization as well as the specific capital facility that is being financed. The rating agency will want to know that the organization, if it is fully funded by user fees, will have more than enough funds to repay the loan after considering needs for operating and maintenance. This is called "*coverage ratio.*" In the past, ratios of net available funds to the debt service of the bond were about 1.5 to 2 times the debt service. These days they are about 1.25 or lower if the project is strong, and higher if it is a weaker project. The rating agency will require, among other information, five years of audited statements, a rate study, an engineering report, lists of customers by class, along with the overall economic information for the area as above.(Vogt 2004)

Lease Financing (Certificates of Participation). Since the primary security for the repayments lies with the facility that is being leased, and the credit worthiness of the lessee, the rating agency will look at the credit worthiness of the lessee. This will include much of the information noted above for the general obligation bond. In most states, issuers of certificates of participation must insert a "non-appropriation" clause to the official documents in order to avoiding pledging taxes for repayment and in many cases thus trigger going to the voters. This means that in the event of an economic downturn, legally the government could not appropriate the funds.

Therefore, for these kinds of bonds, the rating agencies look at factors that might induce the locality to exercise its non-appropriation option. The rating agency will look at how important the facility to be financed is to the local government. For example, jails, schools and water and sewer facilities are deemed to be essential and receive higher ratings while parks and recreational facilities (unfortunately) are thought of as less essential and receive lower ratings. The rating agencies will also look at whether there was opposition to the project locally, and the local government's attitude toward debt repayment. Some local governments can pledge additional collateral or establish reserve funds for repayments to mitigate these concerns.

Geographically based bonds. Rating agencies for special assessment district bonds and redevelopment districts look at the wealth in the specific area. For special assessment districts the collection practices of the issuers are looked at. Redevelopment (urban renewal) bonds are evaluated according to the history of tax base growth in the area, the powers of the redevelopment agency, state laws, and the wealth and general credit of the jurisdiction creating the redevelopment area.(Vogt 2004)

Use of Cooperative Bond Pools and Credit Enhancement Devices. Sometimes when the issuance is a small one, or when the locality may not have a competitive bond rating, it is helpful for a locality to contact another locality in the area which is in the midst of issuing a bond in order to tag along, and take advantage of shared overhead costs. Another option is to participate in a program operated by a regional council of government for small issuances for its member jurisdictions. Several years ago, the city of Berkeley financed the $1.2 million construction of the Black Repertory Theatre through the issuance of a bond where Community Development Block Grant funds were committed over a 10 year period to pay off a bond. The actual issuance was done by the regional body which combined the Berkeley needs with others in the Bay Area into a larger issue. This reduced the overhead costs per participant and made the smaller offerings feasible from the individual cities. Sometimes states will do a large bond measure to provide low cost loans for capital facilities for local jurisdictions.

Localities can also purchase bond insurance which can enhance the credit worthiness of the bond issue. For revenue bonds, the jurisdiction can pledge tax revenues.

How will the bonds be sold?

The two most common ways of marketing and selling the municipal bond issue is through competitive bidding or the negotiated sale. For large issues, regardless of the method, underwriters band together in a syndicate to spread the sales risk and to access a wider range of investors.

By far the most common way of marketing the bond is with a negotiated agreement. In 1997, for example, local and state governments issued $167.2 billion of bonds using this form of sale, compared to only $47.8 through competitive bidding. (U.S. Census Bureau 1998) Table 3-8 shows the percentages of long term new debt issued in the United States from 1989 through 1999 that were done by competitive sales or negotiated agreements for General Obligation Bonds and Revenue Bonds. By dollar volume, negotiated sales accounted for 77% of all new issues by dollar volume with the balance being competitively bid. However, within those amounts, general obligation bonds are more likely to be competitively bid than revenue bonds which are overwhelmingly negotiated.

Table 6 Percentages of Long Term New Debt Issued from 1989 to 1999 by General Obligation or Revenue and Negotiated or Competitively Placed

	Negotiated		Competitive		Total
	Sales ($Billions)	Percent of New-Issue Market	Sales ($Billions)	Percent of New-Issue Market	Sales ($ Billions)
General Obligation	373.7	17.4%	348.0	16.2%	721.7
Revenue	1,275.4	59.3%	155.2	7.2%	1,430.6
Total	1,649.2	76.6%	503.2	23.4%	2,152.4

Source: Adapted by author from The Bond Market Association (Temel, Judy), 2001, *The Fundamentals of Municipal Bonds*, Fifth Edition. Table 4.3; p 85. Original data from Thomson Financial Securities data. Does not include private placements.

Competitive Sale

A competitive sale involves awarding bonds at an auction to the underwriting firm which provides the best bid on true interest or net interest cost of the bonds. This used to be called "the advertised sale" because the date, time and place where the bids will be opened is advertised. The bids are reviewed and bonds awarded to the underwriter. The underwriter then sells the bonds to investors. It is the easiest to sell but is more risky for the underwriters who are actually own the bonds until they are turned around. Many state statutes require general obligation bonds to be sold through a competitive bidding process. This approach is a-political, and is the best for straightforward bond issuances.

Negotiated Sale

As the municipal bond market has tilted more towards limited obligation bonds and/or revenue bonds, negotiated sales have become more common. A negotiated sale is when the underwriter is chosen before the sales date of the bonds, usually through an RFP process. The underwriter then, with his or her sales force drums up interest in the bond issue so that when the day of the sale occurs, there is more certainty that there will be buyers. Some say that in the negotiated sales, the underwriters are really acting more like brokers than underwriters—who are paid to take risks.

In recent years, issuers (governments) have asked the underwriters to indicate what their fees will be, and this has resulted in making this approach more competitive with respect to price. Underwriting spreads in terms of the amount per $1000 of issuance have steadily gone down since 1989, although they are still slightly higher for negotiated sales. Negotiated sales are useful when the issue is quite complex or unusual and needs special explaining. They are also useful when the bond market is unsettled and perhaps the date of sale needs to be changed.(Petersen and McLoughlin 1991) Corporate debt securities are usually sold through negotiated agreements.

Private Placement

One alternative to both the competitive and negotiated sale is private placement where the issuer goes directly to the investors, by passing the underwriter. If there is no competition, however, there may be higher administrative and interest costs than if a public sale were used and the locality may be open to charges of cronyism in the award. However, it is possible to approach several banks or private investors on a competitive bid process. This is common in some parts of the country. Another problem associated with private placement is that it is less liquid than publicly sold debt, where an active secondary market exists. Therefore, although private investors buy directly because they intend to hold the debt to maturity, they may demand higher interest rates.(Vogt 2004)

The Bond Documents

The Preliminary Official Statement (POS) and the Official Statement (OS)

These are different versions of the same document and they are required by the Securities and Exchange Commission for public sales of municipal bonds. The POS is used to market the debt and is prepared before the sale, while the OS prepared after the sale, includes sales results such as the interest rates and prices.

These documents for GO bond sales contain information on the general economic conditions of the jurisdiction issuing the bonds while the OS for a revenue bond also includes information about the sources of revenue and its operating information. The documents for revenue bonds or non-tax sources of revenue can sometimes run to hundreds of pages. If a capital lease is involved, the POS/OS contains information about the specific property involved.

Key Elements in the Bond Documents

The following items are usually part of the documentation:

- **Loan Amount.** The loan amount, also known as the "face amount" or "par value" or "principal" of the loan. It is the amount that the agency promises to pay when the bond becomes due.

- **Interest Rate.** The rate of interest is usually set by the market when the bond is issued. This is also called the "coupon" rate. When the bond is in effect, interest payments are usually made every six months—or the bond can be discounted, and the interest accumulated into the amount paid at the final maturity date.

- **Schedule of Payments.** Debt service payments can be level, declining or ascending. The latter is useful when improvements paid for by the bond, such as a new water treatment plant, will add customers over time.

- **Maturity Structure or Term of the Bond.** Bonds can be issued as "serial bonds" – when each individual certificate has its own maturity date, or as a "term bond" where there is a single final date for all the certificates.

- **Security for the Loan.** This element outlines the recourse the investor (lender) has if the agency defaults. In the case of a bond which is to be repaid based on revenues instead of taxes, detailed information is included on how the bonds will be disbursed, and how the facility's revenues will be applied. A covenant pledging to keep the rates high enough to run the operation and pay the debt is included. Agreement about a reserve or contingency fund is also usually part of the trust indenture.

- **Call Provisions.** Some bonds can be redeemed or "called" by the issuer before the maturity date. This is important in case interest rates decline—the bonds can be called and reissued at a lower rate, resulting in significant cost savings.

As noted earlier, the team of professionals hired by the locality will prepare these documents as well as those for the sale itself, or the RPF for the negotiated sales.

Conclusion

Bonds are one of four different sources of local government funds to pay for capital improvements (exactions and impact fees, intergovernmental grants and current operating revenues being the other major sources). Although exactions and impact fees have grown in importance over the past two decades, bonds remain an important tool for local planners. They are important as a source of funding for an individual project, or as a strategy for an entire capital improvement program area. Some local governments may be relatively inexperienced in the use of bonds, while others may have elaborate organizational and community review processes in place to help the policy makers decide how much to borrow. Although the planner usually does not take the lead in issuing the bond (that is usually left to the finance department), planners may be involved in developing local policies for using as part of a strategic, area or general plan process. Planners may also be involved with the issuance of a bond as part of a specific development process. In either case, although planners may not need to know the "nuts and bolts" of how to issue a bond, they need to be conversant with the challenges and opportunities that bonds offer.

Additional Resources

Recommended Readings

Nollenberger, K., S. F. M. Groves, et al. (2003). *Evaluating Financial Condition: A Handbook for Local Government.* Washington, D.C., International City/County Managers Association. Even though this was designed for finance staff, the appendices contain practical examples of how to do a trend analysis and other useful analytical techniques along with sample "best practices" of municipal financial policy statements.

Petersen, J. E. and T. McLoughlin (1991). Debt Policies and Procedures**.** *Local Government Finance: Concept and Practices*. J. E. Petersen and D. R. Strachota. Chicago, Illinois, Government Finance Officers Association**:** 263-290. Along with the GFOA chapter cited above, a classic in the field for finance officers.

Porter, D. R., B. C. Lin, et al. (1992). *Special Districts: A Useful Technique for Financing Infrastructure.* Washington, D.C., The Urban Land Institute.

Seidman, Karl F. 2005. *Economic Development Finance* Thousand Oaks, CA: Sage Publications. A book about capital finance from a project point of view. Covers most aspects of economic development finance that a local planner would be interested in to make a project economically feasible**.**

The Bond Market Association (2001). *The Fundamentals of Municipal Bonds*,. New York, John Wiley & Sons. A thorough explication of the bond market and processes written by the association. Geared towards municipal officials but heavy on the market forces.

Vogt, J. A. (2004). *Capital Budgeting and Finance: A Guide for Local Governments.* Washington, D.C., International City/County Management Association. Has a very good section on bonds and borrowing.

Useful Websites

American Public Works Association www.apwa.org

American Planning Association www.planning.org

American Society of Civil Engineers www.asce.org

International City/County Managers Association www.icma.org

Government Finance Officers Association www.gfoa.org

The Bond Market Association. www.bondmarkets.com

Board of Governors of the Federal Reserve System. www.bog.frb.fed.us

Government Accounting Standards Board. www.gasb.org

FitchIBCA www.fitchibca.com

Moody's Investors Service. www.moodys.com

Standard and Poor's. www.standardandpoors.com

Fairfax County VA has an excellent website on capital budgeting matters. http://www.co.fairfax.va.us. Of particular interest is the "slideshow" entitled "Bonds 101". http://www.co.fairfax.va.us/dmb/2005_Bonds_101.pdf

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