CITY OF PORTLAND
2011 CITYWIDE ASSETS REPORT

MARCH 2012

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City of Portland

2011 Citywide Assets Report

Executive Summary

The City of Portland owns, manages and maintains a significant set of assets worth nearly $30 billion. Portland City Council and managers are responsible to the public to be good stewards of these valuable assets, and are incorporating internationally accepted asset management practices to make sound business decisions. The City Asset Managers Group provides a forum to enhance asset management practices.

This report, coordinated by the Bureau of Planning and Sustainability, provides an overview of the status and condition of the City's physical infrastructure: roads, pipes, treatment facilities, parks, buildings and more. Understanding the value and condition of assets and current asset management practices will help City decision makers allocate scarce financial resources to deliver public services.

To develop this report, the City's infrastructure bureaus collect and analyze data on all City-owned buildings and infrastructure. The bureaus strive to follow internationally recognized asset management principles. They use best practices to develop a coordinated approach to citywide asset management. This approach includes determining key measures, such as the value and condition of infrastructure assets. Each bureau identifies confidence levels for the information presented and acknowledges when information is not available.

Key Findings

The current replacement value of the City's physical infrastructure is estimated at $30 billion. Current replacement value is an estimate of what it would cost to construct these assets today. It represents substantial investments by several generations of Portlanders.

1. At current funding levels, some of Portland's infrastructure will continue to deteriorate and bureaus may have to decrease their service levels. Two bureaus, Parks and Recreation and the Bureau of Transportation, lack a reliable rate base to adequately invest in maintaining their assets, which means levels of service will decline by default.

2. Conservatively, infrastructure bureaus estimate a combined annual funding gap of $207 million per year to maintain existing facilities, address regulatory requirements, and/or meet service levels. This gap excludes pavement needs, and will likely grow for each of the next ten years.

3. New assets often add to ongoing operations and maintenance needs, potentially adding to the funding gap. Some new assets may also replace existing asset functions and add new functionality.

Directors' Recommendations

The Planning and Development Directors have reviewed the citywide infrastructure data contained in this report and recommend the City Asset Managers Group implement its updated work plan (as outlined in Section 5). The Planning and Development Directors also propose a series of discussions with City Council (Fall of 2012) to further explore specific infrastructure challenges and opportunities. As is documented in this report, most bureaus currently face an imbalance between three key asset management factors: levels of service, risk mitigation and funding. The challenges and opportunities vary by bureau, particularly with respect to the bureau's primary funding source (e.g. rate-based or other). Each bureau will be prepared to identify opportunities to create a better balance in these three factors. Tentatively, the discussions would include these 65

- **Parks and Recreation**: Develop strategies to balance maintenance and fill service gaps in parks.
- **Transportation:** Identify a stable funding source that will be used to meet levels of service and mitigate risk of failure of the system.
- **Water and Environmental Services:** Discuss processes to establish a sustainable level of funding to meet agreed-upon levels of service and maintain acceptable levels of risk for operating and maintaining the water, wastewater and stormwater utilities.
- **Management and Finance:** For civic assets, discuss the funding gap in annual major maintenance and asset preservation.

The City of Portland is responsible to the public to be good stewards of City assets by making sound business decisions. On-going discussions among bureau directors, elected officials and the public are essential for the City to develop a policy and decision making framework that better balances levels of service, risk mitigation and funding options.

1. Introduction

This report provides integrated, fact-based information about the City of Portland's physical assets. The ninth report on the status and condition of the City's physical infrastructure provides a summary of the number of assets, replacement value, condition, and unmet funding needs. Information in the report will assist the City's efforts to ensure infrastructure is in adequate condition and that operation, maintenance, rehabilitation, and development programs are as efficient and effective as possible.

This year's report updates the work plan (Section 5) for improvements in citywide asset management. This work plan is based on an internal assessment of bureaus' current and potential capacities to adopt best practices as well as research on the practices of peer communities.

To reflect the current state of City asset management, this report includes:

1. Citywide asset status and conditions (see Section 2):
2. Current replacement values of city assets (see Appendix 1);
3. Assessment of the current condition of each asset group, based on a five-tier rating system and associated confidence levels (see Appendix 2);
4. Annual estimated funding gap (see Appendix 3);
5. Calculation methodologies (see Appendix 4);
6. Unmet funding needs (see Section 3);
7. Related planning efforts (see Section 4);
8. Citywide asset management practice (see Section 5);
9. Bureau observations on their AM activities (see Section 6); and
10. Basic information and common definitions for AM (see Appendix 5); and
11. Service level examples from City of Portland bureaus.

Five of Portland's infrastructure bureaus apply asset management principles to some of their practices. Those bureaus are Transportation (PBOT), Water (PWB), Environmental Services (BES), Parks and Recreation (PP&R), and Management and Finance (OMF). For this report, BES provides information on both wastewater and stormwater services. OMF reports on two categories of civic assets: facilities (government offices, police and fire facilities, parking garages, and spectator facilities) and technology services.

In the 2006, 2007 and 2008 reports, the Portland Development Commission (PDC) also reported on affordable housing. Affordable housing has since transferred to the Portland Housing Bureau, which tracks those assets (mostly owned by others) outside of this annual report.

2. Citywide Asset Status and Condition

A prerequisite for sound AM is relevant, reliable, and timely information about asset resources. This report includes summary data for three key measures: current replacement value, current and projected physical condition, and annual funding gap. The confidence level in the data is included. In some cases, data is not available or is pending more detailed data collection and analysis.

As much as possible, information provided in this report is comparable across bureaus and asset groups. Confidence levels for the information were assigned using a common scale.

Key Findings

1. Asset management is an industry standard that provides a risk mitigation approach to decision making. It is commonly defined as meeting agreed upon customer and environmental service levels, while minimizing life cycle costs at an acceptable level of risk.

2. The City's physical infrastructure has a current replacement value of $29.6 billion. By bureau, the infrastructure value is: PBOT ($8.4 billion); BES ($12.2 billion); Water ($7.0 billion); Management and Finance ($1.1 billion) and Parks ($0.9 billion).

3. A gap exists between: a) the funding required to maintain the City's infrastructure for the long-term, and b) existing funding. For 2011 alone, there is an investment gap of $207 million for these assets, excluding street pavement.

4. Unfunded federal mandates and external funding of capital projects add to the number and type of physical assets. Although primarily built with leveraged funds, these assets become a long-term City obligation to maintain and operate. Typically, there is little or no set-aside funding for ongoing operating or maintenance of these assets prior to their construction.

5. At current funding levels, some of Portland's infrastructure will continue to deteriorate. In 10 years, street lights and Union Station are projected to remain or shift into poor or mostly poor condition. The majority of terminal storage facilities (PWB) are currently in poor condition but are expected to shift into very good condition as the bureau makes improvements.

Focused data is provided within this report, including:

- Bureau observations—approach to asset management, bureau experiences and improvement priorities (see Section 6).

- Summary data—asset condition, replacement value, and unmet need (see Appendices 1 through 3).

3. Unmet Funding Needs

The consistent finding of the City's citywide asset reports (for years 2002 through 2011) is that a substantial annual funding gap persists. The gap is defined as the difference between the funding needed to address infrastructure needs at a defined condition or level of service and the funding that is currently available. This report presents funding gaps in three categories:

Repair, Rehabilitation, Replacement: Additional funding necessary to repair, rehabilitate and replace existing assets to bring them up to current service levels. , or replace assets considered obsolete.

Capacity: Additional funding necessary to meet the demands of existing customers, based on current levels of service.

Mandate: Additional funding necessary to improve existing assets to meet regulatory requirements, exclusive of improvements that fall under Repair, Rehabilitation, Replacement or Capacity.

The sum of these three types is listed as the Total Funding Gap. In the Bureau Observations section, bureaus have described if or how their methodology accounts for these three types of funding gaps.

Sustainable Funding Levels

This year, the combined annual funding gap for Transportation, Environmental Services, Water, Parks and Civic assets is $207 million, excluding street pavement. A constant funding gap is the result of under-investing in capital maintenance. This is not a sustainable business practice. With this trend, we can expect lower levels of service and more frequent system failures.

Past Responses

In 1996, City Council increased the General Fund capital set-aside, from a base of $3 million, with the intent to add $1 million to it each year until the Office of Management and Finance found the amount to be sufficient. That fund rose to $7 million in FY 2002-03, and then declined after a series of annual budget cuts to an amount insufficient to meet ongoing needs. The General Fund capital set-aside funded a variety of maintenance, replacement, and improvement projects. Major funded projects included ongoing replacements of fire apparatus, ongoing street lighting improvements, renovation of the Hillside Community Center, major maintenance of the 800 MHz system, purchase of a bomb robot, funding of debt service for the Gateway Child Receiving Center and Streetcar #7, and funding of several Parks maintenance projects and acquisitions. In FY 2008-09, City Council redirected the capital set-aside to fund the Public Safety Systems Revitalization Project.

The Auditor's 2002 report *Managing for Results* identified "the deteriorating physical infrastructure" as a priority. That report recommended that City Council consider a Major Maintenance Fund to increase the investment in capital maintenance. City Council did not act on that recommendation.

In January 2007, the Directors' group reviewed key findings of this report, and asked staff to prepare ideas to 1) start closing the annual funding gap, and 2) more fully maintain existing infrastructure. The City Council must balance many competing demands. This effort will take a number of years. The concept is to build a funding gap finance plan, with a planning horizon of 10 to 15 years.

In 2007, the City Asset Managers Group worked with Financial Planning to improve the General Fund Capital Set-Aside allocation process. The revised process used a new set of criteria based on the risk management process (see

Appendix 5 of the *City of Portland Asset Status and Conditions Report, December 2007*). The risk rating process allows ranking of projects based on how effectively they reduce the risk of the high and extreme risk assets. Use of the citywide risk management process is on hold, pending more feedback and direction.

City Council adopted revised Financial Policies effective July 1, 2008. A new provision stated that at least 25 percent of General Fund discretionary revenue that exceeds the budgeted beginning balance (adjusted) will be allocated to infrastructure maintenance or replacement in the fall budget monitoring process (BMP). The percentage calculation will be based on any discretionary funds in excess of the budgeted beginning balance, adjusted for the difference in encumbrances carried over from the prior year. Infrastructure maintenance projects to be considered for funding will be projects requested but not funded in the prior year's budget and projects that are underway but still require funding.

There have been mixed results since this provision was enacted. There was no surplus in beginning balance (FY 2009-10) resulting in no additional General Fund capital allocations. In FY 2010-11, City Council allocated $2.4 in Capital Set-aside funding for infrastructure maintenance or repair. The funded projects, by bureau, were:

- OMF: Kelly Building property purchase at $955,369
- PBOT: Street lighting infrastructure at $400,000
- Parks: East Delta Park Sewer repair at $135,000
- Parks: Pittock Mansion masonry repair at $420,000
- Parks: Rocky Butte Masonry Rock Repair at $166,000
- Parks: Waterfront Park Turf renovation at $166,000
- Police: Training Center Facility pre-development at $200,000.

4. Portland Plan and Comprehensive Plan

Basic services, community health and livability, and economic development all depend on a well-functioning infrastructure system. Asset management, as a tool, allows bureaus to make strategic planning decisions and achieve community goals at the bureau, city, regional and state levels.

The City of Portland and 20 additional public agency partners have developed the Portland Plan, an inclusive, citywide effort to guide how Portland develops over the next 25 years. In outreach and community involvement for this effort, Portlanders have identified maintaining existing infrastructure and reducing service disparities as key priorities for their communities.

The Portland Plan provides a framework for updates to the City's 1980 Comprehensive Plan and the 1989 Public Facilities Plan. These efforts will continue discussions and make decisions regarding future growth, investments, equity and financial sustainability. Asset management can inform this decision-making by identifying life-cycle costs, trade-offs between capital and operating expenditures, and priorities based on risk and consequence of failure, to achieve long-term system sustainability and acceptable levels of service.

5. Citywide Asset Management Practice

History

For over 20 years, individual City bureaus have initiated components of Asset Management. Five of Portland's infrastructure bureaus—Transportation (PBOT), Water (PWB), Environmental Services (BES), Parks and Recreation (PP&R), and Management and Finance (OMF)—apply AM principles to some of their practices. Separately, the Office of Housing Policy and Portland Development Commission (PDC) track affordable housing units. Unlike the five infrastructure bureaus, the City does not own most affordable housing units in the city.

Nine years ago, the AM focus began to broaden to a citywide focus. At that point, infrastructure bureaus began to prepare an annual citywide report on assets. These reports are presented annually to the Planning and Development Directors' group, which represents infrastructure, development permitting, financial and planning bureaus. The Directors' group oversees policies and resource allocation, coordinates long-range planning, and manages certain cross-bureau planning and development initiatives. After reviewing findings of the annual report, the Directors' group provides recommendations to City Council. Each AM report is presented to the City Council at the start of annual budget work sessions.

Although the City's infrastructure bureaus started with, and continue to use, different AM strategies, bureaus collaborate actively with the long-term goal of improving AM practice citywide. As such, bureaus use common definitions and terminology but apply techniques consistent with their bureau's structure and the unique needs of their assets.

The following timeline identifies major milestones in the development of citywide asset management within the city.

2002

The Auditor, City Commissioners and bureau directors completed a strategic exercise, *Managing for Results.* They identified seven priority issues and flagged five of them for "immediate action." One of the priority issues was aging physical infrastructure.

2003 - 2004

Asset managers from the City's infrastructure bureaus formed a City Capital Maintenance Committee to collaborate on AM issues and prepare an annual report on the City's physical assets. Their reports to City Council in 2003 and 2004 focused on the current and projected condition of infrastructure, not on the strategies needed to manage assets over their whole life. Efforts to describe assets and needs varied from bureau to bureau as did confidence in the information. This made it difficult for City Council to make decisions using that information.

2005

The committee became the City Asset Managers Group (CAM group), adopting a more holistic approach to AM and looking for ways to collaborate on common AM issues. While Transportation had an existing program of AM, other bureaus were just beginning to adopt AM principles and techniques. By joining forces, Tthe CAM group identified common long-term AM needs and helped frame AM throughout the City using a consistent approach.

In the FY 2005-06 budget process, City Commissioners asked for better data on the funding gap in capital maintenance. There were questions about the quality and completeness of the data, and doubts about bureaus' stated funding needs. To address Council's concerns and to reflect the current state of City asset management, the 2005 report added three features: common definitions for basic asset management terms, data confidence levels, and bureau observations on their asset management activities.

2006

The 2006 report added affordable housing as an asset category. For purposes of this report, affordable housing was defined as multi-family rental housing units with direct City investment (leveraged financing) and a regulatory agreement with the Portland Development Commission.

2007

The 2007 report included a pilot of risk analysis and a framework for the inclusion of green infrastructure. BES reported on some green infrastructure.

2008

To assess current capacity and interest in improving AM best practices, Transportation, Water, Environmental Services, and Parks completed a survey, prepared by the Bureau of Planning. Generally, the survey found that the participating infrastructure bureaus have initiated elements of AM best practice, with each bureau taking a different approach. The survey identified five priority AM best practice areas for further exploration: data collection and management, service levels, asset management plans, risk management, and business case. The 2008 report introduced these AM best practices and reported on bureaus' current and potential capacities to adopt them.

2009

In 2008, the CAM group retained an outside consultant to assess the use of asset management best practices to optimize City investments in infrastructure. The assessment included research on high-performing peer communities in North America and established recommendations for a sequence of AM best practices. These recommended best practices were used as a basis for development of a citywide asset management work plan for 2010-2014, included in the 2009 report.

2010

The CAM group updated its work plan (see below) and edited definitions for annual funding need. Both actions respond to recommendations of the Planning and Development Directors in the 2010 City Assets Report.

Current Practice

At present, bureaus apply elements of AM best practices customized to meet each bureau's unique needs. The CAM group continues to prepare the annual Citywide Asset Report and works to identify key measures, define terms, and collect and display each year's data.

Progress Report: Work Plan for Citywide Asset Management

In 2009, the City Asset Managers Group developed a Citywide Asset Management Work Plan to guide asset management improvements between 2010 and 2014. The work plan was informed by the internal survey (completed in 2008-2009) and a review of peer communities (completed in 2009). This work laid a foundation for identifying the steps necessary to move the City towards more comprehensive asset management practice.

Four City bureaus participate in the work plan: Environmental Services, Water, Transportation and Parks & Recreation. This year, the CAM group realized that some tasks will take longer than the initial five years, and affirmed the importance of making continuous improvements. For the 2012 report, the CAM group will outline milestones for the tasks through the year 2019 (a second five-year interval).

This work plan lays out general approaches and timelines for cross-bureau work to apply seven advanced asset management best practices:

- Service levels
- Risk management
- Report cards, business case
- Reliability-centered maintenance
- Long-term investment profiles
- Community information and consultation

The CAM group anticipates that the work of individual bureaus will progress on varying timelines based on the status of current practice, resources, and relative priorities. As many of these best practices are interdependent, the CAM group recognizes that achieving the goals outlined in the work plan will require continuous and iterative improvements.

Each bureau director is tasked to implement the bureau's core mission, goals and values, along with the City Charter, state and federal mandates, and community priorities. AM offers a framework and tools to examine and address infrastructure needs to help meet this charge. As asset management improves across the bureaus, so will the ability of City Council, bureau managers, and citizens to make informed decisions about asset-related services.

However, advances in AM practice are not accomplished overnight. Each bureau encounters a unique set of challenges and barriers to implementing AM best practice. Bureaus are constrained by budget and resources, limitations in data and data management systems, and other commitments and priorities.

To meet these challenges, the work plan relies on the CAM group to continue to share information and mentor each other to build AM capacity and expertise citywide. The work plan assumes a phased implementation of AM improvements, with flexibility to meet the needs and capacities of each bureau. The CAM group will report to the Planning and Development Directors.

The CAM group plans to apply these best practices to all assets in the future. However, due to limited resources and breadth of this work plan, many tasks focus initially on highest risk assets. The CAM group will report on progress in each of these tasks annually through the Citywide Assets Report and through updates to the Planning and Development Directors.

A summary chart follows a profile of each work plan task. Service levels (task #1) and risk mitigation (task #2) interact directly with funding levels. Several approaches to service levels are posted in Appendix 6 of this report.

Task #1: Service Levels

Definition	Service levels establish measurable standards against which actual achievement can be compared. Service levels set expectations for what service to provide, in what quantities, and how often. Service levels are most useful in a long term perspective ("sustainable"). There are internal and external service level targets. Service levels may address reliability, quality, quantity, and safety. AM planning allows bureaus to set service levels and cost of service. Both can be evaluated with customers and regulators to set the optimum service level they are prepared to support.
Goal	To develop meaningful and measurable service levels based on system needs that match the expectations of customers to guide funding and investment decisions.
Desired Outcomes	The four participating CAM group bureaus will have established tangible service levels or performance measures, with targets consistent with industry peers. Each bureau will use service levels to bridge its organizational strategies to its tactical assets. Progress in service level work is reported in the annual city asset reports.
Approach	For CAM group bureaus without refined service levels, research and information-sharing will help identify what service level changes they need. Bureau service levels will be developed or refined, in combination with appropriate community consultation. Any established service levels will be adopted as a component of the Citywide Systems Plan. Further refinement of service levels will occur over time, as needed.
Interrelationships	Defining service levels for assets sets a foundation for all of the remaining work plan tasks.
2011 Status	Currently, bureaus have limited capacity to measure and track actual levels of service.
Environmental Services	BES has developed a draft Level of Service document, and will test and adjust service levels as needed. Benchmarks and performance measures are in progress. BES has 44 service levels (a mix of system and maintenance). There is no formal process to adopt the service levels.
Water	The PWB has created two tiers of service levels: 27 key service levels and more than 40 programmatic service levels. The bureau also has workload measures in each budget program that supports specific service levels. In FY 2010-2011, the PWB met 22 of the 27 key service levels. The PWB Management Team has approved key service levels.
Transportation	PBOT has developed service levels for infrastructure maintenance.
Parks & Recreation	Parks 2020 Vision establishes broad levels of service for parks, trails, and recreation programs. Established performance measures report on progress toward Strategic Plan outcomes. These provide additional management level of service targets. Linkages between broad levels of service to operational levels of service are in process.

Task #2: Risk Management

Definition	Risk management provides a structure to assess and act on risk of assets failing to provide needed service. It navigates degrees of uncertainty by identifying possible events, understanding their likely consequences and determining an appropriate response. Effective risk management relates asset failure to decisions to acquire, maintain and renew assets.
Goal	To identify assets most critical to achieving sustained performance of agreed service levels. In more advanced stages, bureaus will use risk data to prioritize resources and collaborate with other bureaus to identify collateral risks to other public assets.
Desired Outcomes	The four participating CAM group bureaus have identified high-risk assets and have begun to prioritize monitoring and data collection within available resources.
Approach	The CAM group has discussed risk management methodologies. Some bureaus are identifying their high risk assets. The CAM group will look for opportunities to collaborate, such for interdependent assets. As appropriate, bureaus will identify high risk assets, improve data collection for these assets and apply mitigation strategies based on asset risk classification.
Interrelationships	Data collected will inform Task #3: Report Card, Task #5: Reliability Centered Maintenance, and Task #6: Long Term Investment Profiles. Data will also inform the Citywide Systems Plan (part of the Comprehensive Plan Update).
2011 Status	Bureaus collect a variety of data on their assets, though the extent of and confidence in this data varies by bureau. Bureaus are making progress in identifying high risk assets, at least on some of their asset groups. Bureaus continue to encounter limited capacity to predict likely failure modes for assets and have not estimated the likelihood and consequences of asset failure.
Environmental Services	The combined and sanitary sewer elements of the BES Systems Plan estimates the likelihood and consequence of failure and identifies projects with positive benefit/cost ratios for near term investment. The stormwater system plan is in progress. Building on watershed work, BES is in the process of identifying high risk assets of the stormwater system.
Water	One of the Water Bureau's service levels is for risk. PWB has identified high risk assets through a process, Consequence Likelihood Evaluation Matrix. CLEM identifies assets/failure modes that may pose substantial risk to the bureau and a process to evaluate the risk and guidelines for action. By 2012, PWB will have asset management plans for the majority of asset groups which will include a risk analysis of all assets. Those high risk assets at the asset class level will be evaluated through the CLEM process as well.
Transportation	PBOT has begun to identify high risk assets within asset groups. PBOT continues to expand the risk assessment to asset groups. This is a priority for PBOT's short term internal work plan. The risk assessment will allow

	for improved prioritization of resources and management of risks. Criteria for consequence and likelihood have been created. A workgroup is in the process of assessing risk of failure of assets using the established criteria.
Parks & Recreation	PP&R is developing an asset register by asset class. High risk assets are regularly inspected. Each year, the bureau will add new assets to the inspection program.

Task #3: Report Card

Definition	Report cards are a clear and uniform metric (e.g., a letter grade) to indicate the health of the City's infrastructure and bureau's business practices. The metric could combine various measures, including the condition of assets; the degree to which customer requirements (i.e., service levels) are being met; the quality of the information and practices in place for maintaining the assets over their lifecycle; and the degree to which funding is available for lifecycle management of the assets.
Goal	To develop a "report card" product that displays the current and projected status of assets, identify trends and issues, and track the City's path to sustainability.
Desired Outcomes	A citywide infrastructure report card will appear in the annual Citywide Assets Report. The report card will serve to educate the public, inform City decisions (operations, budget, etc.) and track progress over time. For content, the report card could address asset condition, achievement of levels of service, AM business practices, and/or levels of unmet need.
Approach	The four participating CAM Group bureaus will develop a template, recognizing the diversity of bureau approaches to AM and most relevant data for that year. The report card will be highly graphic, and may take the form of a dashboard of selected data. The CAM group will test and refine several formats. The template could include status of assets, levels of service, business practices, and unmet need. Bureaus can provide additional information for their own reporting needs. Once complete, the report card should be included in the annual Citywide Assets Report. Over time, the group will make continuous improvements to the report card and the quality of data presented.
Interrelationships	Reporting on service levels would require the completion of Task 1: Service Levels. It is anticipated that the report card will become a component of the Citywide Assets Report. The report card could also be used as a component of Task 7: Community Consultation.
2011 Status	All CAM group bureaus currently provide information on assets and AM practice in the annual Citywide Assets Report. In addition, the Water Bureau and PP&R have developed some form of an infrastructure report card.
Environmental Services	As discussed in Task #1, above, BES has drafted a Level of Service and organization performance report, and will test and modify the service

	levels over time. BES suggests a concise report card that spotlights hot button topics, with selected data.
Water	PWB issued two "report cards"--a Service Level Progress Report and a budget report.
Transportation	PBOT has created a transportation maintenance report card. Using 2010 data as the base year the report card starts an annual tracking process for the condition of 13 transportation asset classes. Each asset class compares actual and target conditions levels. For many years, PBOT has also produced an annual Status and Condition Report.
Parks & Recreation	PP&R needs to complete service levels (Task #1) before it can fully participate in an infrastructure report card. PP&R suggests that the CAM group use the report card to track selected measures over time, and consider a dashboard format displaying a composite of measures in order inform decision-making. PP&R's 2011 Performance Report displays historical outcome measures (condition, perception and intervention) for four key result areas. Some measures also project targets into the future.

Task #4: Business Case Template

Definition	A business case is an economic analysis tool used to evaluate investment decisions in a systematic and logical manner. At the project level, a business case compares project alternatives—such as "do-nothing" or status quo—and uses the costs and benefits to help the bureau make decisions on the best use of financial resources. Business cases are also used at the program level to determine the best level/type of maintenance and operational strategies.
Goal	To develop a framework or template to justify infrastructure improvements based on lifecycle costs, benefits, and impacts to the triple bottom line (economic, social and environmental factors).
Desired Outcomes	The four participating CAM group bureaus will have developed a methodology and template for business case and piloted application of the template within their bureau, as appropriate.
Approach	The CAM group will share information and research to build a foundational understanding of business case among bureaus. Bureaus will evaluate the applicability for their assets and practices and develop templates and application processes, as needed. Application of business case templates will be completed as appropriate for each bureau.
Interrelationships	Application of business cases could impact project priorities in the annual budget process.
2011 Status	Most bureaus evaluate multiple alternatives for significant asset investment decisions. Most bureaus consider life cycle costs to maintain and operate, and triple bottom line impacts (economic, social, and environmental).
Environmental Services	BES has applied business case analysis to the collection system (sanitary and combined). All BES CIP projects must have a business case analysis. Formats vary by project. BES expects to create a business case template and application process within two years. BES has modified its project

	request form for capital projects (CIP) to better reflect business case criteria. The CIP project evaluation criteria have also been modified. One of the next steps will be to use the revised criteria to re-evaluate CIP projects in the 10-year plan.
Water	The PWB used available tools from the water utility industry to create a business case approach. The purpose of the business case is to evaluate issues, including options that involve capital assets. Some business cases are about processes like the ones on maintenance or for purchasing new equipment or services. Many are about assets, their risks and affected service levels, and the options that include specific assets. The PWB has created a Business Case Development Guidebook. Business cases, mainly cost-benefit analysis, are used in all Basis of Design report (CIP Planning). Many business cases are done separately and are used to identify projects for the PWB CIP and for maintenance activities. The PWB has developed a template and application process. Asset management plans include identifying potential business cases and/or project concept report or basis of design report by asset group for the higher risk assets.
Transportation	PBOT finds this a useful analytical tool, and has applied it to certain projects and proposals. Business case development is a long-term priority.
Parks & Recreation	PP&R uses established criteria for capital investment decision-making. In the future, the bureau will develop business case analysis for specific project alternatives

Task #5: Reliability-Centered Maintenance

Definition	Reliability-centered maintenance is an approach to identify the optimal or safe minimum level of maintenance for assets. RCM includes identifying failure modes and maintenance tasks to address those failures before they occur, including preventative and predictive maintenance. An RCM investment strategy can form the basis for calculating a long-term investment profile for an asset type.
Goal	To develop cost-effective maintenance programs for assets to address the main causes of failure and ensure assets continue to perform important functions.
Desired Outcomes	The four participating CAM group bureaus will have identified appropriate maintenance strategies and schedules for high risk assets, based on RCM principles. Bureaus have begun to align maintenance practices as appropriate.
Approach	Application of the reliability-centered approach will occur on a bureau determined basis.
Interrelationships	RCM program should be based on performance measures and risk assessments. These steps should be completed for targeted assets before a full RCM program is developed. RCM should inform a bureau's long-term investment strategy.

2011 Status

Environmental Services	BES will document RCM in response to CMOM (Capacity, Management, Operations, and Maintenance) regulations of the federal Clean Water Act. CMOM products are due by 2013. RCM is already utilized for the treatment system.
Water	The PWB has started a pilot for RCM. Workshop and training for staff have been developed. PWB is working towards reliability-centered maintenance (RCM) for some asset groups. There is an RCM key service level goal in place for the bureau.
Transportation	With budget cuts looming, PBOT expects to be more reactive than proactive with maintenance. PBOT may be able to track a few assets, such as pavement.
Parks & Recreation	PP&R's approach is asset-specific, focused on optimal operations and maintenance for each asset group.

Task #6: Long-Term Investment Profile

Definition	Long-term investment profiles are projections of major maintenance, repair, and replacement needs by asset group based on set service levels over a long-term forecast. By developing long-term investment profiles, bureaus will be better equipped to define funding gaps and identify future needs to maintain a sustainable system.
Goal	To project revenue needs for major maintenance, repair and replacement, by asset group, over a long-term forecast.
Desired Outcomes	The four participating CAM group bureaus will have collected necessary data, developed tools and methodologies to project investment needs. As possible, bureaus will have identified long-term investment profiles for high risk assets.
Approach	The CAM group will share information and research regarding long-term investment profiles. Bureaus will develop tools and methodologies to prepare investment profiles for their assets, as appropriate. Investment profiles will help bureaus determine the optimal mix of operations, maintenance and capital acquisition to achieve lowest long-term system costs.
Interrelationships	Development of long-term investment profiles is dependent on setting service levels (Task 1: Service Levels) and on identifying maintenance needs (Task 5: Reliability Centered Maintenance). Work on long-term investment profiles may also inform the 20-year capital project list under development for the Citywide Systems Plan.

2011 Status

Environmental Services	BES' work plan does not currently include development of 50-year investment profiles. BES has created remaining life models for pipes. This is complete for collection systems; it is in progress for the treatment plant.

Water	The PWB has developed a model to project long-term investment needs. Each Asset Management Plan will include long-term replacement, maintenance and operation cost projections. Currently, data is in a program called Team Plan that needs some data improvements that are being addressed in the AMPs.
Transportation	PBOT is very interested, but currently lacks budget and AM staff to perform profiles. The bureau does project 10-year needs.
Parks & Recreation	PP&R is creating long-term investment profiles by asset group and will then create a PP&R composite profile. PP&R has completed 75-year investment profiles for community and arts centers and pools.

Task #7: Community Information & Consultation

Definition	Community information and consultation is a key component of a successful AM program. It is necessary to identify appropriate service levels, based on community needs, costs, and ability to pay. In addition, outreach and information can help broaden the base of support for revenues needed to adequately maintain the City's infrastructure systems.
Goal	To inform the public about the state of the City's assets and to improve the public's understanding of the City's asset management program and needs. To involve the public at key decision points, including establishing service levels.
Desired Outcomes	The four participating CAM group bureaus will have had informed community conversations regarding the costs of providing desired levels of service. Primarily, this will take place in bureau budget advisory committees.
Approach	All four bureaus will continue to consult with public members on their budget advisory committees, to help identify investment priorities. The CAM group anticipates that improvements in reporting and information to the public will improve as the tasks of this work plan are completed. However, the CAM group believes that it is particularly critical to have informed community conversations regarding desired levels of service, the cost of providing such service, and resulting investment priorities.
Interrelationships	In particular, development of tangible performance measures (Task 1); a report card (Task 3); and long-term investment profiles (Task #6) can help the City better describe asset needs to the community.

2011 Status

Environmental Services	BES is scoping public involvement options to discuss asset management of its systems. BES expects to start public engagement by 2014. Also, BES intends to develop a customer service report based on customer service feedback.

Water	The PWB convenes a budget committee on an annual basis to help identify investment priorities. It has no current plans to discuss service levels with the general public.
Transportation	PBOT will continue to use its budget advisory committee, which includes citizen members.
Parks & Recreation	PP&R will continue to use its Parks Board and budget advisory committee, with citizen members. The bureau conducts regular outreach to the community and periodic community surveys to identify priorities and establish service levels.

Citywide Asset Managers Group
Work Plan Tasks by Year--updated for 2011 City Assets Report

	Best Practice	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1	**Service Levels (SL's)**	Scoping.	Developing bureau service levels.		Adopt some SL's in Citywide Systems Plan (CSP).	Refine service levels, as needed.					
2	**Risk Management**	Discuss method-ology and information needed.	Identify high risk assets, by asset group.	Start to collect condition data on high risk assets.	Improve data collection for high risk assets, and apply mitigation strategies based on asset risk classification.			Refine risk assessment methods (by bureau). Identify potential opportunities to collaborate, including assessment and mitigation strategies for collateral (cross-bureau) asset risk.			
3	**Infrastructure Report Card**	Identify reporting needs (could include status of assets, service levels, business practices, and unmet need). Examples from Water and Parks (2011).			Relate to Comprehensive Plan Update process.		Include a report card in 2015 Citywide Assets Report.	Refine report card format.			
4	**Business Case**	Research and share information. Evaluate appropriateness for each bureau. Each bureau experiments with business cases.					Develop bureau and asset-specific templates and application processes.		Share business case examples, and identify key questions in analysis.		
5	**Reliability-Centered Maintenance**	Apply reliability-centered approach on a bureau-determined basis.									
6	**Long Term Investment Profile**	Research and share information on long-term investment profiles.					Develop tools and methodologies.		Develop investment profiles for high-risk assets.		
7	**Community Consultation or Information**	Each bureau consults with public members on its budget advisory committee.			Monitor CSP.	Continue public consultation in budget advisory committees. Discuss lessons from Citywide Systems Plan and pilots from any bureaus.					

Progress on Previous Recommendations

In previous years, the Directors' group endorsed the following major recommendations for citywide AM practices. Progress on these recommendations is also noted below.

Recommendation	Progress Update	Status
1. Improve asset management practice.		
a. Continue with Whole-of-City Approach.	CAM group continues to implement	Ongoing
b. Review service levels and pursue community consultation.	As part of Portland Plan and Comprehensive Plan update, bureaus are encouraged to set or amend service levels. Each bureau determines its scope, pace and community consultation.	Varies by bureau
2. Report on asset status and condition.		
a. Continue annual reports and improvements.	This remains a CAM group priority.	Ongoing
b. Include and distinguish between repair/rehabilitation/replacement, capacity, and mandate-related needs in the annual funding gap.	Starting in 2009, the annual report distinguishes between funding gaps for these various types of needs.	Ongoing
3. Prioritize infrastructure spending.		
a. Prepare strategies related to service levels, funding allocations, and management practices to align revenues with service levels.	This activity is detailed in the work plan, see Task #1 Service Levels, Task #6 Long Term Investment Profile, and Task #7 Community Consultation.	Future
b. Track local and regional discussions related to infrastructure financing.	Metro has evaluated infrastructure needs to accommodate projected growth of the region. PDC and the Water Bureau served on the project advisory committee. BPS collected and assembled data from City bureaus, for use in the Metro analysis. The City of Portland is also developing the Portland Plan, which will guide long-term growth and development in Portland. The CAM group is tracking and involved with this process.	Ongoing
c. Develop a funding strategy to shrink the unmet budget needs for infrastructure maintenance.	Bureaus are individually addressing infrastructure maintenance in the context of available budgets.	Varies by bureau
4. Integrate with related planning efforts.		
a. Integrate Asset Management into other planning efforts, including community visioning, strategic planning, and long	Asset management will be a key component of the Citywide Systems Plan	Ongoing

term capital planning.	(part of the Comprehensive Plan).	
b. Track local and regional discussions related to infrastructure.	City staff is tracking local and Metro discussions.	Ongoing
5. Prepare a plan to guide continued improvement in citywide asset management best practices.		
a. Complete an evaluation of current citywide asset management practice.	The CAM group completed an internal survey of AM practice in 2008-2009.	Complete
b. Identify key gaps based on research into best practices and each bureau's unique needs.	The CAM group, with the support of an outside consultant, completed research on best practices within peer communities.	Complete
c. Prioritize improvements necessary to achieve best practices in asset management.	The work plan identifies and prioritizes AM best practice improvements.	Complete
d. Establish implementation steps and schedule.	The work plan identifies key implementation steps and timelines for each best practice.	Complete
e. Report on progress annually.	The 2010 report included the first annual progress report.	Ongoing
6. Build capacity to implement asset management best practices within capital bureaus and citywide.		
a. Enable bureaus to make continuous improvements to asset management practice based on their respective needs.	The work plan is based on cross-bureau collaboration but allows flexibility for bureaus to proceed on their own schedule.	Ongoing
7. Use asset management as a tool to improve decision making.		
a. Define and revise service levels to align service provision with system requirements, community needs, and sustainable funding levels	This activity is detailed in the work plan; see Task #1 Service Levels.	Future
b. Determine appropriate asset management strategies to reduce maintenance liabilities	This activity is detailed in the work plan, see Task #5 Reliability Centered Maintenance and Task #2 Data Collection for High Risk Assets.	Future
c. Set infrastructure investment priorities.	This activity is related to Task #4 Business Case and Task #6 Long Term Investment Profile.	Future
d. Identify sustainable funding levels.	This activity is detailed in the work plan; see Task #6 Long Term Investment Profile.	Future

6. Bureau Observations

The bureau 0bservations, below, discuss each bureau's approach to asset management, followed by the bureau's experiences and improvement priorities. Bureau observations from prior years are found in previous annual Citywide Assets Reports.

Transportation

The Portland Bureau of Transportation (PBOT) manages transportation assets with a replacement value of over $8 billion. Improved streets, the sidewalk system, bridges, traffic signals (signal hardware), and streetlights make up 93 percent of the dollar value ($7.8 billion). In addition to these key assets, the City of Portland owns other assets that ensure the safety and movement of people and goods: streetcars; an aerial tram; various support facilities; traffic calming devices; signs; parking meters; parking garages; pavement markings; bikeways; guardrails; retaining walls; the Harbor Wall; stairways; and traffic signal computer controllers. These assets are worth $610 million.

Asset Management Approach

Transportation utilizes asset management as a way to effectively and efficiently allocate resources, measure performance, and track infrastructure needs. PBOT's Asset Management Advisory Committee (which includes engineers and operations staff as well as maintenance, finance, and information technology managers) sets the priorities for asset management within the bureau and helps implement those priorities into business practices.

Asset Management Achievements

- Condition Monitoring. Transportation currently conducts condition monitoring on pavement, bridges, structures, street lights and traffic signal infrastructure. PBOT is working with engineers and technology staff to expand condition monitoring to guardrail and warning and regulatory signs. Condition monitoring will allow PBOT to plan for appropriate preventive maintenance, rehabilitation or replacement needs and budget accordingly.

- Risk Assessment. PBOT is in the process of conducting a risk assessment for failure of assets. Criteria for assessing consequences and likelihood of failure have been created and are being applied to transportation assets. They will create a risk registry, identify failure modes and assign risk of failure.

- Asset Levels of Service. The purpose of this project was to develop and implement levels of service for each infrastructure asset class to track and monitor performance and outcomes achieved. Performance measurement is a way of monitoring progress toward a result or goal. It is also a process of gathering information to make well-informed decisions. An Infrastructure Asset Report Card (see Appendix 6 of this report) was created to summarize achievement of the levels of service.

Asset Management Priorities

Transportation will also begin to explore mobile technology for maintenance of infrastructure. Assessing risk and condition monitoring will continue to be a focus of the asset management program.

Asset Value and Condition

Maintaining and operating the transportation infrastructure are key activities of PBOT. Emerging needs include:

Street Lighting: Street lights are important for the safety of our neighborhoods and for those who use the transportation system. Many of the city's 55,000 street lighting luminaires were replaced in the early 1980's when mercury vapor lights were converted to high pressure sodium lamps. These luminaires are now reaching the end of their useful life and will need to be replaced. Approximately 38 percent of street lights are in poor or very poor condition and can stop working at any time. These lights, in addition to the ones that are reaching the end of their life, will need capital replacement funds to replace them with more efficient induction or LED lighting. Evaluations are continuing to determine the cost-effectiveness of converting to more efficient street lighting technologies. PBOT will consider an initial study about adaptive lighting , which will reduce energy consumption and carbon emissions.

Signals: Traffic signals are made up of several components (i.e., hardware, software, mast arms, controllers, cabinets and signals). Approximately 45 percent of the traffic signals are in poor or very poor condition. Traffic signals in poor condition are prone to increased trouble calls, causing safety and congestion problems. Traffic signals in optimal condition provide efficient movement of people and goods and, when synchronized, reduce greenhouse gases.

Pavement: Approximately 28 percent of the collector and arterial system is in poor or very poor condition, 42 percent is fair and 30 percent is in good or better condition. In 2009, City Council passed a policy to eliminate paving work on local streets. This means that approximately 60 percent of the pavement system will not receive preventive maintenance or rehabilitation.

Bridges: In the last year, one new bridge has been added to Transportation's inventory. Of the 160 bridges the city owns, 30 percent are either structurally deficient or functionally obsolete; 27 of these are in poor or very poor condition including 25 that are weight restricted. Weight restrictions on bridges impact the ability to move freight and goods, affects economic activity. Additionally, freight has to find alternate routes, adding to travel time and cost.

Sidewalk Network: The Americans with Disabilities Act requires that the City's public facilities be designed and constructed so that they are accessible to all people, including those with disabilities. Eight percent of the sidewalk system in Portland has corners with ramps that meet current ADA-accessible standards. In total, 44 percent of corners have accessible corner ramps, which met both current and past ADA standards. PBOT's goal is to construct at least 600-700 new corners per year. In the last year, the goal was to increase the number of corner ramps by 5 percent and that target was met.

Parking Meters: Starting in FY 2010-11, PBOT allocated revenues for capital replacement of the parking paystations. At the end of FY 2010-11, all but 119 machines had been replaced with new technology. The remaining machines were replaced at the start of FY 2011-12.

Maintenance Facilities: Kerby and Albina Yards need upgrading to modern standards. Many work areas are cramped; meeting spaces are small and prone to outside interference. Most vehicles are parked under the I-5 bridge structures at the Kerby Building, which puts them at risk of damage should the bridge fail. Additionally, the parking is undersized and not arranged well for the function it serves. Identifying funding and a location where PBOT can safely park the vehicles needs to be addressed. However, the total need is not defined at this time.

Annual Funding Gap

The funding gap is defined as the amount of additional funding and resources needed to bring or restore an existing asset class to a fair or better condition and to maintain it at that condition. This includes preventive maintenance, rehabilitation and replacement needs.

Transportation's maintenance liability continues to increase as the infrastructure ages. As a result of declining revenue, Transportation is making major reductions to discretionary revenue, which is the primary source of funds for infrastructure operations and maintenance. This will have a severe impact on the future condition and continued decline of Transportation's infrastructure.

PBOT's annual $69.5 million funding gap breaks out as follows:

- **Streets:** Ratings of collector and arterial streets have been completed. Calculations of need are based upon assigned treatment rules, which are based upon pavement condition, road type and road usage. Transportation is in the process of defining these elements and once completed, the unmet need can be estimated with a higher degree of confidence.

- **Sidewalks:** $13.9 million is needed annually to repair, restore or replace curbs to bring them to a fair or better condition and $9.6 million is needed annually to build ADA accessible corners, where there are currently none, and maintain the corners in a fair or better condition. While the sidewalks are owned by the City, it is the adjacent property owner's responsibility to repair, restore or replace sidewalks. This means that the stated unmet need for sidewalks is not the sole responsibility of PBOT to address.

- **Bridges:** The total cost to replace City-owned bridges in poor condition and address bridge deficiencies is $15.3 million annually.

- **Signal Hardware:** A total increase of $20 million per year is needed in capital funding. $1.1 million is for a new federal mandate to update pedestrian signal timing.

- **Street Lights:** $5.4 million per year is needed to improve the lights to a fair or better condition.

- **Other:** Unmet need for pavement markings, street signs, streetcar, traffic signal controllers, other equipment, and retaining walls and stairways totals $4.8 million.

Environmental Services

The Bureau of Environmental Services (BES) provides sewer and stormwater collection and treatment services to 580,000 people, numerous commercial and industrial facilities, and six wholesale customers. The existing system consists of 1,445 miles of separated storm and sanitary sewers, 883 miles of combined sewer that carry both stormwater and sanitary waste, 1,530 stormwater pollution reduction facilities (90 percent of which are "green" surface facilities), 97 pump stations, and two wastewater treatment plants. These assets are valued at approximately $12.2 billion. The estimated value of the bureau's assets has increased significantly over the past year with better data from the recently completed combined and sanitary sewer Systems Plan.

Asset Management Approach

Asset Management has been part of the business practices at BES for more than 20 years beginning with the implementation of the Hansen Maintenance Management Database and condition assessment scoring in 1990. Recent accomplishments include the establishment of an Asset Management Framework, the integration of asset

management principles into existing infrastructure planning efforts, and the creation of a Level of Service table that links customer core values to bureau work activities. This work helped to inform the recently updated Strategic Plan. The BES Level of Service Table is found in Appendix 6 of this report.

Uses of Asset Management

BES recently completed an update of the Systems Plan for the combined and sanitary collection systems. The proposed 2013–2017 Capital Improvement Plan has been partially reprioritized as a result of the recommendations from the System Plan. The System Plan incorporates system inventory, condition, GIS data, and failure records into an asset management context including a risk register (likelihood of failure times consequence of failure). Recommended projects are based on life-cycle cost with consideration given to financial, social, and environmental benefits. The goal is cost effective expenditures that result in optimal asset value and customer service. A similar effort is now underway for the stormwater collection system.

The companion Capacity, Management, Operation & Maintenance (CMOM) project is identifying the appropriate sewer maintenance routines and repairs to enable the individual infrastructure components to reach an optimal useful service life at an overall least cost.

Asset Management Practice

BES currently applies AM practices of asset inventory, condition assessment, and computerized maintenance management systems for its system components: treatment, pump stations, and collection systems. The bureau has completed its three-year infrastructure planning effort which has resulted in an upgraded System Plan for the sanitary and combined collection system. The plan incorporates system inventory, condition, GIS data, and failure records in an AM context to develop a risk register consisting of likelihood of failure times consequence of failure. This work has been incorporated into the proposed FY 2013–17 CIP. The plan identifies the appropriate sewer maintenance routines (and repairs) to enable individual infrastructure components to reach an optimal useful service life at an overall least cost. BES has initiated a similar multi-year effort focused on the stormwater system. Pressure on the operating budget has delayed progress on this effort.

Asset Value and Condition

The overall reported replacement value of BES assets increased from $6.26 billion in 2010 to $12.2 billion in 2011. This is primarily due to better valuation data for the collection system from the recently completed Systems Plan. An updated factor was also applied to the stormwater pipe system, although the Systems Plan does not address these pipes. In addition, considerably more pollution reduction facilities (90 percent of which are green street facilities) were added to the stormwater inventory. The value and condition of the treatment system were recently updated through a staff assessment.

Unfortunately, better data has resulted in downgrading the reported condition of BES assets. The percentage of all assets reported in very good to good condition declined by more than 5 percent. No change is reported for the stormwater system as no new information is available. Some improvement is expected in the next ten years as capital resources shift from the large combined sewer overflow program to a greater focus on rehabilitation of aged pipes and pumping systems.

Annual Funding Gap

The current financial plan includes an ambitious pipe rehabilitation program focused on pipes with the highest risk, primarily in the combined system. The financial plan also includes many, but not all, of the recommended capacity-related projects from the Systems Plan.

Asset Management Improvement Priorities

Over the next year, the primary focus of the BES asset management team is to align its service levels with bureau performance indicators.

Water

The Portland Water Bureau (PWB) delivers potable drinking water for consumption and fire protection. The City is the largest supplier of domestic water in Oregon, serving more than 800,000 people and providing about 100 million gallons of water per day, or about 36 billion gallons per year. About 60 percent of the water is delivered to customers within Portland city limits. The remaining 40 percent is sold to customers in 19 surrounding cites and special water districts. Water is supplied from the Bull Run watershed and the Columbia South Shore wellfield through more than 2,000 miles of pipes. The water system is valued at $6.9 billion.

Asset Management Approach

The Water Bureau has an Asset Management Group (AMG), located within the Engineering Department, which coordinates asset management activities within the organization. An Asset Management Steering Committee makes policy decisions related to asset management and approves major work items. In addition to division managers, a number of key mid-managers have been added to the Steering Committee in the last year.

Uses of Asset Management

The approach to Asset Management in the Bureau has been to focus on key asset management concepts. To achieve progress in Asset Management, the Water Bureau has taken the following actions:

- Incorporated key service levels into the Strategic Plan. Those service levels have been tracked for the last three years. In FY 2010-11, the Bureau met 22 of its 27 service levels.
- Asset Risk Management. There is a risk service level. The bureau identifies key assets, assessing the potential risk of asset failure, and then is committed to either better understanding the risks or taking steps to mitigate those risks. There are currently 10 extreme risk assets and 47 high risk assets.
- Conducting condition assessments of potential high risk assets. Among the on-going condition assessment activities that have been completed are spot excavations of several pipes that cross under major highways, visual inspections of more than 20 pipes on bridges, and leak detection of 23 miles of large diameter pipe.
- Performing dozens of business cases and using the results to support project planning, design, construction and operation decisions.
- Creating Asset Management Plans (AMPs) that define maintenance, repair and replacement strategies for the assets. There are budget program strategies in place from three existing AMPs and currently another 15 AMPs are in development or revision.

Asset Management Practice

As noted above, the bureau has continued with its tracking of service levels, identification and mitigation of risks, condition assessments, business case development and creation of Asset Management Plans.

Asset Value and Condition

The overall replacement value of the Portland Water Bureau's assets increased from $6.7 billion in 2010 to $6.9 billion in 2011 due to estimated inflation of the costs for replacement of assets.

There has been little change in the overall condition of the water system since 2007. The vast majority (84 percent) of supply, transmission, and distribution systems are in fair to very good condition. Seventy-four percent of terminal storage is in poor to very poor condition and 47 percent of buildings and support facilities are in poor to very poor condition.

Annual Funding Gap

A funding gap exists in the need to replace assets in poor condition, to maintain the overall condition of other groups of assets, and to meet bureau service level goals with improved technology (enhancement of current technology used by the Water Bureau that is becoming obsolete).

Baseline unmet needs amount to $172 million over 10 years. This includes $65 million in one-time investments and $107 million in investments that can be allocated over the 10 years, or just over $10 million a year on annual recurring costs. The following list reflects the Water Bureau's anticipated system needs beyond the current level of funding.

Distribution:

- Replacement of hydrants: Replacement of all hydrants in poor condition not being met by current funding levels
- Replacement of services: Replacing all plastic and galvanized services not expected to be replaced under the current funding levels
- Replacement of valves: Replacement of all large valves in poor condition
- Facility valves: Install drainage valves at 58 active tanks and 38 pump stations
- Replacement of high risk pipe segments in poor condition: Replacement of all poor condition pipe segment crossings of bridges, major arterials, freeways and railroad lines and funding a pipe condition assessment
- Replacement of pump mains: Replacing the sections of two major pump mains that are currently in poor condition but not funded for replacement
- Installation of an Advanced Metering Infrastructure system to facilitate monthly billing, demand management and pressure and leakage management
- Pipe relocations and replacements in response to bike boulevards, green improvements, or inadequate cover on road reconstruction. This gap would increase if PBOT gets funding for the Streetcar Master Plan.
- Expanded predictive/preventive maintenance program for site valves and pipes, tanks and fountains
- Tank cathodic protection and seismic upgrading

Transmission – Conduits: There is a need to further assess condition and to replace/upgrade sections of the oldest conduits. A dechlorination facility at Sandy River crossing is also needed to mitigate any impact on fish in the event of an overflow.

Supply: A significant portion of the Bull Run watershed road system is in need of maintenance.

Asset Management Improvement Priorities

The Water Bureau continues to expand its efforts to implement Asset Management. An Asset Management work plan for the organization was created in 2010. A stakeholder group reached consensus on the focus of the next steps of the organization in Asset Management. The decision was made to create work groups to complete Asset Management Plans (AMPs) for all major asset groups (15 separate AMPs), to conduct facility valve condition assessments over a five-year period, and to continue with the current efforts on service levels, risk and business cases.

Parks & Recreation

Bureau Highlights

Portland Parks & Recreation (PP&R) has continued to refine and implement its asset management practices.

- **Technology**: PP&R upgraded the MS2000 work order system to the current version of MicroMain. This transition will help PP&R more accurately track and maintain assets over their useful lives. PP&R is also refining terminology and definitions to ensure more accurate and consistent reporting.
- **Assessments**: PP&R continues to conduct inspections and assessments of the asset system, with regular inspections of all buildings, pools, and play equipment. The bureau continues to add new assets to its inspection and condition assessment program.
- **Performance Measures**: PP&R's 2008-2011 Strategic Plan identified performance measures based on its 2020 Vision and other management documents. Several relate directly to asset management. PP&R is continuing to track and report on these performance measures.
- **Bureau Structure**: PP&R added a new "Asset Manager" position to oversee Planning & Strategy, Design and Construction, and Central Services & Asset Management functions for the bureau.

Asset Management Approach

- All PP&R assets, both built and natural, that are owned and managed by PP&R are accounted for in six asset class groups: Amenities, Buildings/Pools, Recreation Features, Utilities, Circulation, and Green Infrastructure. All assets are identified in PP&R's Geographic Information System (GIS).
- Asset Management practices and principles are used to coordinate asset data, develop accurate asset inventories and produce up-to-date reports. Accurate AM data coupled with statistically valid information on customer needs and desires allows PP&R to make informed decisions about the assets needed to provide specific services.
- PP&R's AM program continues to help implement Parks 2020 Vision by ensuring the provision of high-quality facilities, providing for long-range capital needs and developing best management practices. It allows Parks to fulfill a major part of its mission of "...developing and maintaining excellent facilities and places for public recreation."

- Initial work has focused on the more heavily used facilities and on the basic elements that provide good visitor experiences.

Uses of Asset Management

AM information is utilized in preparing PP&R's capital plans and budgets, developing consistent maintenance and operations regimes, fulfilling City and federal reporting requirements, informing system planning, and supporting financial forecasting. Applying asset management principles and practices helps prioritize capital projects and allocate scarce resources.

As asset management continues to be integrated into PP&R management practices, PP&R is better able to determine acquisition and capital improvement needs, provide appropriate levels of maintenance, and determine which assets to acquire and which to dispose of in order to develop a stable asset portfolio that meets service needs.

Asset Management Practice

- Currently PP&R is completing inventories and assessments for its marine dock facilities. Buildings and playgrounds have been inventoried and are assessed regularly. A new green infrastructure, natural area condition methodology has been developed, and PP&R hopes to keep updating the condition using the new methodology. PP&R has developed an inspection and condition assessment workplan, currently extending through 2015, intended to bring new assets into the condition assessment rotation.

- For many assets, PP&R has completed the initial inventory and condition assessments and is in the process of inspecting 20 percent of all assets each year. By 2015, all remaining assets will be included in this annual rotating schedule, with most assets being inspected at least once every five years and more often in many cases.

- PP&R's core team, made up of the Central Services Asset Manager, the Planner for Asset Management and the Principal Management Analyst for Corporate Strategy, guides and coordinates the asset management program, with direction from the Asset Manager and Bureau Director.

- Coordination between asset management, GIS and MicroMain, the work order system, continues to evolve and improve.

- AM practices play an increasingly important role in the bureau's capital planning and budget preparation.

Asset Value and Condition

The overall replacement value of PP&R's assets increased from $895 million in 2010 to $931 million in 2011 due to inflation and the addition of new assets.

There has been little change in the overall condition of the parks and recreation system since 2010, although that may change as more assets are included in the inspection and assessment program.

Annual Funding Gap

PP&R has an expected total capital annual funding need of $87.1 million for each of the next 10 years. This includes $52.5 million for expanding the system to provide standard levels of service for all residents, in addition

to $34.6 million in funding needed to maintain existing assets. The funding need calculations are based on the 1- to 5-year, 10-year, and 20-year total list of all identified potential PP&R projects. This is an increase from last year, primarily due to the addition of new projects to the capital list and a reduction in anticipated revenues due to the economic climate.

PP&R receives an average of $5 million annually in System Development Charge funds, grants, and donations. Additionally, City Council has been able to provide about $1 million annually to address some of the most urgent needs for repair, rehab and replacement and mandated work. This totals an average of $6 million annually available for capital, leaving a funding gap of $81.1 million annually.

Maintaining existing assets in good condition depends on regular repair and replacement, which depends on sufficient regular funding, which has not kept up with need. The industry standard for reinvestment needed to maintain building assets in good condition is from 2 percent to 4 percent of the asset's current replacement value (CRV). With an average of around 2 percent of CRV in funds to reinvest in past years, PP&R has consistent shortfalls and a widening gap. In 2011, PP&R had 1.5 percent to reinvest (based on calculation of major building and pool reinvestment only).

In the current economy, many sources of funds are being reduced. Since park facilities are an affordable and desirable source of recreation, especially in a down economy, they get heavy use, adding to the need to invest in them and keep them in good condition.

Asset Management Improvement Priorities

PP&R has identified the following priorities for improving its asset management system:

- Begin pilot testing the process of taking assets through an entire asset management cycle, including inventory/condition, level of service, risk assessment, operations and maintenance and replacement forecasting, and fiscal planning.
- Improve the accuracy, completeness and consistency of data (particularly condition).
- Develop asset-specific level of service standards.
- Ensure that relevant asset management information is provided to other PP&R departments and divisions.
- Introduce AM to a larger group of bureau staff.
- Improve AM links to the MicroMain system.
- Explore AM program staff, technology, and management structure.
- Expand the use of business cases for capital planning and budgeting.
- Use preliminary risk assessments to determine capital improvement priorities.
- Integrate AM into bureau practices and procedures.

Civic Assets

Asset Management Approach

The Civic Asset's AM program includes two asset groups: Facilities and Technology. The Facilities group includes facilities managed by the Office of Management and Finance (Police facilities, office buildings, other buildings, Union Station, and spectator facilities) and facilities other organizations manage (Fire facilities and Portland Center for the Performing Arts). The Technology group includes the technology assets that OMF owns and manages through its Bureau of Technology Services and the Enterprise Business System owned and managed by Enterprise Business Solution.

OMF takes the lead for the Civic Assets group. In FY 2009 management of the City's parking garage assets was transferred to PBOT.

Asset Management serves as the basis for documenting the physical and financial status of these assets, coordinating asset data, developing accurate asset inventories and producing up-to-date reports and maintenance plans. Accurate AM data allows OMF and other organizations to make informed decisions about assets. The annual and one-time funding gaps are the main indicators of financial status of these assets.

Uses of Asset Management

OMF uses AM information to prepare its capital planning and budgets; develop consistent maintenance, operations, and replacement programs; fulfill City and other reporting requirements, and support financial forecasting. Applying asset management principles and practices helps to prioritize projects and allocate scarce resources.

Annual Update

A key component of the OMF Asset Management program for Facilities is the preparation of five-year maintenance plans. These plans are developed with input from internal and external customers, as well as staff who maintain the infrastructure, and are influenced by City Council's established goals, objectives, and policies. A final step is balancing needs with resources. OMF works closely with its customers to understand their businesses and how their facilities support and serve their work objectives.

A key component of the OMF Asset Management program for Technology Services is the preparation of five-year maintenance and replacement plans. These plans are produced by BTS staff responsible for AM and are reviewed and refined by a management review group. Priority is given to items that support public safety, improve reliability and availability of critical data systems and improve efficiency and reduce costs through the consolidation of infrastructure.

Over the last several years the City has invested in the replacement of large Civic assets. These investments include the replacement of the IBIS financial system with the SAP enterprise business solution, the replacement of the Police property warehouse, and the replacement of the Auditor's archives center. Additionally, a combination of General Fund resources approved by the Council and General Obligation (GO) bonds approved by voters in November 2010 fully funds the Public Safety Systems Revitalization Project that replaced Computer Aided Dispatch in April 2011 and will replace the Portland Police Data System and the 800 MHz radio system.

However, other Civic Assets continue to have large annual and one-time funding gaps for major maintenance.

Fire Facilities: Voters approved a GO bond measure in November of 1998 to rehabilitate, relocate, and construct new City fire stations. The program addresses deferred maintenance in addition to addressing seismic requirements and program changes within the Fire Bureau. The program is almost complete and will run through FY 2012.

Fire has no ongoing budget authority for major maintenance projects for these new facilities. Fire does have regular operations and maintenance budgets for these facilities. Over the 10-year period of FY 2012 to FY 2022, overall condition will not decrease. However, without identifying major maintenance funding up for the future when the large needs come due in 20-30 years, no money will be available. The City will find itself in the same position as in 1998 when there was too much deferred maintenance to fund and the buildings had not been modified for the changing needs of the bureau. Funding for major maintenance of Fire facilities should be set aside each budget year, as is done for Police facilities and office buildings.

OMF has high confidence in this assessment. It is based on very recent completed projects to rehabilitate and construct new, or projects in progress for which we have gained considerable experience.

Facilities Services: Through its rental rates Facilities Services collects major maintenance money for office buildings (Portland Building, City Hall, and 1900 Building), Police facilities, maintenance facilities, the Portland Communications Center, and the new Archives and Records Center. Major maintenance money is also carved out from net income of Union Station to fund major maintenance projects at that facility.

A GO bond measure approved by voters in November 2010 provides for funding of the replacement of a fire station in inner SE on the Willamette River.

While the industry standard, and OMF's goal, for facility maintenance is to reinvest three percent of a building's current replacement value each year, OMF is currently only able to reinvest about 1.5 percent. This level of reinvestment has declined in recent years. Reasons for the decrease are rapidly escalating costs to replace buildings (over regular inflation), the increase in the number of new facilities, and only increasing the major maintenance component of rental rates at the level of regular inflation.

This 1.5 percent reinvestment level allows OMF to cover immediate needs on the five-year horizon. This is also enough so that over the 10-year period of FY 2012 to FY 2022 overall conditions are not expected to decrease from the very broad categories of good, fair, and poor. Contributing to this is the relative low age of these facilities and the recent renovation of some facilities. However, when large major maintenance needs come due in 20 to 30 years, asset conditions will decline.

Since the likelihood of rental rate increases is low, funding for major maintenance should be increased by directing savings from efficiencies identified to major maintenance until the 3 percent goal is achieved.

The City has recently addressed one of its poorest rated facilities by replacing it. The City's archives center moved from an old building in Chimney Park to a newly constructed building on the PSU campus.

For all facilities, except spectator facilities and Union Station, the funding gap is the annual difference between what is collected in rental rates, or set aside from net income, for major maintenance and the industry standard of 3 percent of replacement value. For spectator facilities, the gap is the one-time difference between actual fund reserves for capital maintenance and a target level of $30 million based on the costs to upgrade Memorial Coliseum. Union Station's one-time funding gap is $45 million based on unfunded deferred maintenance, in addition to the $1 million annual gap. The annual gap assumes the $45 million one-time gap is funded to catch up on deferred maintenance and bring the building up to current standards. In other words, the $1 million does not stand on its own.

Recently Union Station has received grants to assist in maintaining the asset. These monies have been used mainly for the roof, which is the most pressing need. Grants are this facility's best resource for addressing maintenance needs.

OMF has confidence in this assessment. It is based on a complete inventory of buildings. The conditions are assessed based on visual inspection by qualified personnel on a regular schedule.

Portland Center for the Performing Arts: This complex includes the Keller Auditorium, Arlene Schnitzer Concert Hall, and the Antoinette Hatfield Hall. The City owns these assets and through an intergovernmental agreement Metro/MERC manages, operates and maintains them. The replacement values of these three assets are included, but the City has limited information on their status. OMF is in the process of working with Metro/MERC to provide more City oversight to these assets.

Technology Services: Establishing replacement values, current conditions, projected conditions, and funding gaps for technology infrastructure requires a different approach than for facilities infrastructure. Unlike buildings, technology infrastructure can quickly become unusable. This is primarily due to the short lives/quick obsolescence and the critical need to stay current with technologies that may not be supported by vendors in the future and render the technology unusable. Below is a discussion of the unique nature of BTS infrastructure replacement values, conditions and funding gaps.

OMF has high confidence in these assessments, except in the FY 2022 assessment where confidence is moderate.

OMF has established a multi-bureau committee to address the replacement of major Public Safety technology systems including the 800 MHz radio system, BOEC CAD, and Portland Police Data System. This work, called the Public Safety Systems Revitalization Project (PSSRP), will address funding, governance, coordination, timing, and other issues related to the replacement of these major systems. The replacement values of these systems vary depending on the approach planned and so should only be considered orders of magnitude.

As part of prior budget processes the Council authorized a mix of debt and cash financing for the PSSRP. This and GO bonds approved by voters in November 2010 fully fund the program.

800 MHz Radio System – Core System

The 800 MHz system will be replaced prior to FY 2022 because its condition deteriorates to less than poor by then. The system has to be replaced prior to FY 2022 because prior to then Motorola, the system's vendor, will not provide support to it, as technology is becoming obsolete. The underlying component chips are old, it is an analog system, and Motorola is focusing on digital systems.

800 MHz Radio System-Devices

Just as the core system has to be replaced prior to FY 2022 because the condition falls below poor, the system's devices which use the system have to be replaced. The one-time funding gap is the cost of replacement less money that has been collected for replacement so far.

CAD and PPDS

A replacement for the CAD system was completed in April 2011.The PPDS system will be replaced prior to FY 2022. The replacement of this system is in the planning stage.

Communications – Integrated Regional Networking Enterprise (IRNE)

The annual major maintenance funding gap for this new system is 10 percent of replacement value less $318,000 currently included in the rates for major maintenance. Ten percent of replacement reflects the ten-year life of the infrastructure. The original IRNE financial plan assumed that efficiencies as achieved would be retained in the rate base to provide replacement and major maintenance funding; however, the budget reduction requirements over the last few years have required those efficiencies being converted into rate relief as opposed to replacement/major maintenance funding. The replacement value listed does not include the fiber provided to the City as part of franchise agreements and partnerships.

Production Services

The assets in Production Services (formerly, IT Operations) include storage area networks (SAN), data networks, email system, and core servers. This infrastructure has a life of five to eight years. OMF's assumption about condition in FY 2022 then is based on the infrastructure needing to be replaced twice in the 10-year period. BTS should be collecting one-eighth to one-fifth the replacement value of the hardware per year. However, the fund is collecting below this level and having to supplement these collections with money from its reserves to avoid conditions moving to a poor rating. The fund has been able to redirect some savings from efficiencies and rates into this replacement fund.

Strategic Technologies - Corporate Applications

Corporate applications include GIS, TRACS, CAD, PPDS, and CIS. CAD and PPDS are discussed above as part of the PSSRP. CIS is relatively new and GIS has money in its rates for on-going improvements. TRACS is in the process of being replaced.

EBS Services: This asset grouping includes the City's new enterprise business system implemented to replace IBIS and numerous other information systems. It is operated and managed by a new division within OMF. Plans call for the asset to be continually improved and expanded in functionality.

Asset Management Improvement Priorities

OMF has identified the following asset management improvement priorities:

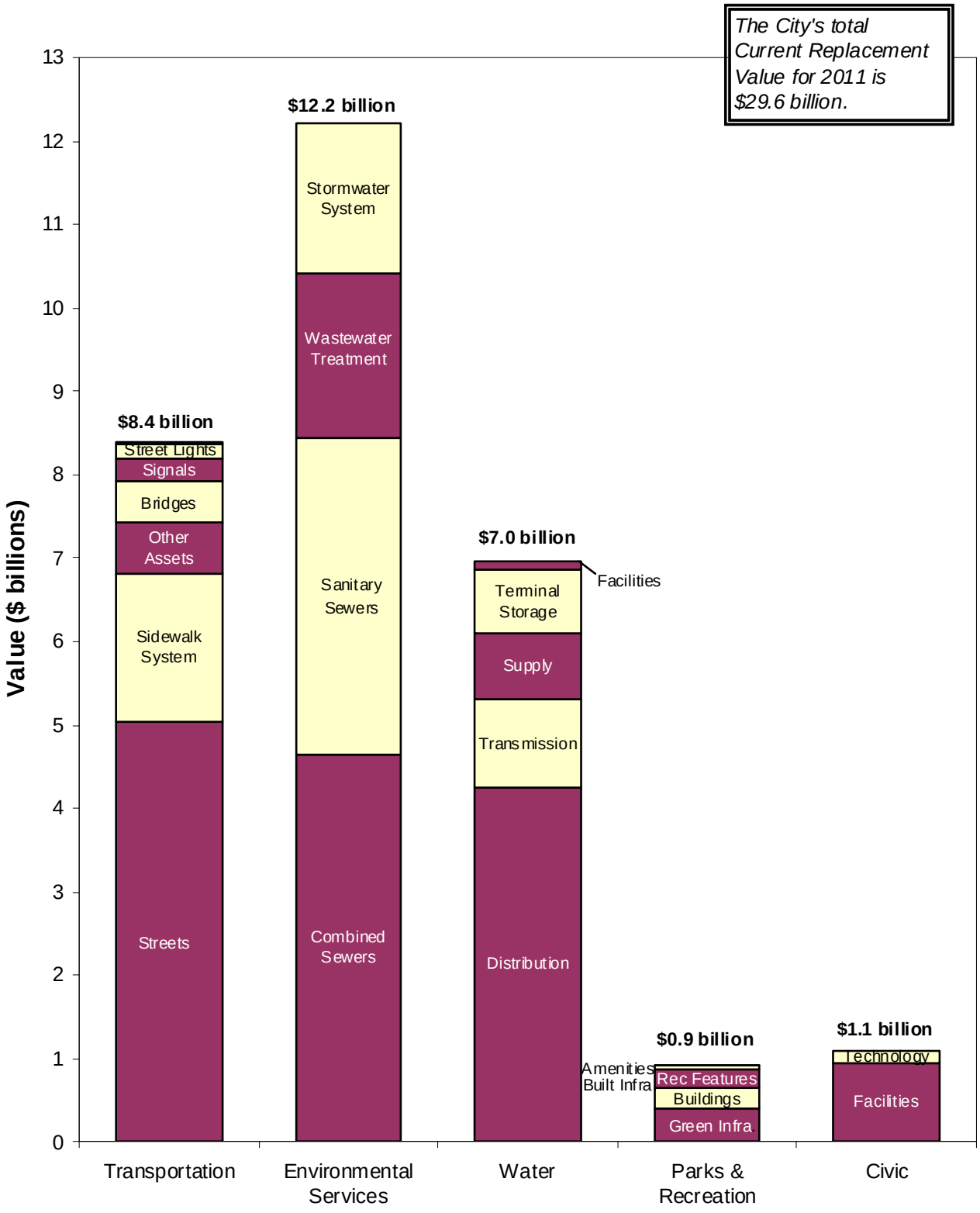
- Improving data (particularly condition and tracking of maintenance activities).
- Improving data integration.
- Completing system-wide asset management plans.
- Evaluating service delivery.
- Improving coordination of AM activities.
- Improving staff AM knowledge.

7. Appendices

1. **Current Replacement Values of City Assets**
    a. Current Replacement Value
    b. Current Replacement Value Data Sheet
2. **Current Condition of Bureau Assets, by Confidence Level**
    a. Summary of All Bureaus
    b. Transportation
    c. Environmental Services
    d. Water
    e. Parks
    f. Civic
    g. Confidence Level Summary
    h. Current Condition Data Sheet
    i. Projected Condition Data Sheet
3. **Annual Funding Gap**
    a. Annual Funding Gap
    b. Annual Funding Gap in Relation to Bureau Budgets
    c. Annual Funding Gap Data Sheet
4. **Calculation Methodologies**
5. **Asset Management Information and Definitions**
6. **Service Level Examples—City of Portland**

Appendix 1a: Current Replacement Values of City Assets

December 2011



Appendix 1b: Current Replacement Value of Capital Assets

Data Sheet, December 2011

Capital Asset Class	Description	Value *(in millions)*	Confidence level	Notes
Transportation				
arterial & collector streets	4,907 lane miles	$5,043.5	2 - Low	by lane mile, improved
local streets				
sidewalks	8,812,387 sq yds	$1,119.2	4 - High	
curbs	3,258 centerline miles	$533.3	4 - High	
corners	37,782 corners	$121.7	4 - High	
structures (bridges only)	160 bridges	$493.3	5 - Optimal	
traffic signals (hardware only)	1,070 traffic signals	$274.8	3 - Moderate	
street lights	55,754 street lights	$190.9	2 - Low	
support facilities	various buildings	$6.8	None to Low	
other transportation assets		$600.9	Low to Optimal	
Total Transportation		**$8,384.4**		
Environmental Services				
combined sewers	883 mi. of pipe & access	$4,637.7	4 - High	Based on analysis in the recently completed Systems Plan.
sanitary sewers	991 mi. of pipe & access	$3,792.8	4 - High	
stormwater system	454 mi. of pipe; 1530 pollution reduction facilities	$1,798.9	3 - Moderate	Updated inventory data plus pipe value assumptions from Systems Plan.
wastewater treatment systems	2 treatment plants & 97 pump stations	$1,976.0	3 - Moderate	Updated staff assessment of value
Total Environmental Services		**$12,205.4**		
Water				
supply	123 miles of roads, 1500 culverts, 11 bridges, 1 200-ft high concrete dam, 1 110-ft high earth dam, ASR wells, 33 well sites with drilled wells, pumps and motors, monitoring wells, 1 groundwater pump station, treatment facility, tank, and collectoon mains to bring water from wells to pump station	$802.4	3 - Moderate	inflated 3.4% from 2010 estimate
transmission	75 miles of large diameter conduits, with various supports, 9 conduit trestles 7 river crossings, 49 miles of large diameter transmission mains	$1,045.3	3 - Moderate	
terminal storage	220 million gallons finished water storage, interconnecting piping, post-storage treatment facilities, and microhydro facility.	$757.3	3 - Moderate	
distribution	2100 miles of distribution pipes, 182,000 service lines, 44,000 system valves, 6800 large meters, 178,000 small meters, 14,000 hydrants, 24,000 backflow devices, 39 pump stations, 70 storage tanks	$4,250.5	4 - High	
facilities (buildings and support facilities)	13 support buildings, SCADA, vehicles, construction equipment, lab equipment, computers, and infrastructure components in inventory	$103.0	4 - High	
Total Water		**$6,958.5**		

Continued on next page.

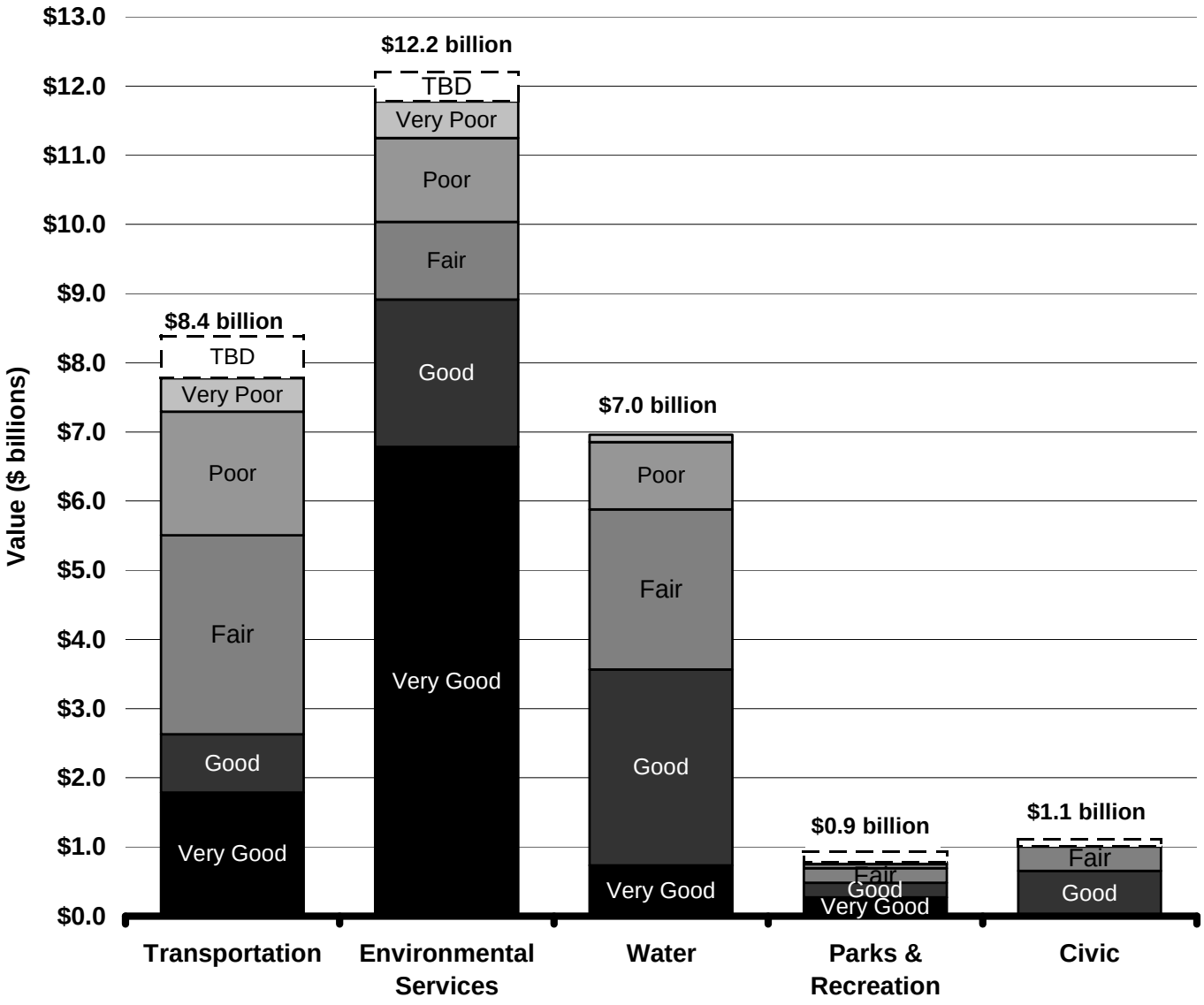
Appendix 1b: Current Replacement Value of Capital Assets

Data Sheet, December 2011

Capital Asset Class	Description	Value *(in millions)*	Confidence level	Notes
Parks and Recreation				
amenities		$17.1		Additional assets added to the PP&R system in FY 10-11 added to total, not sub-category.
decorative elements	memorials, plaques, decorative fountains	$5.3	2 - Low	
furnishings- developed parks	benches, tables, drinking fountains, etc.	$6.9	4 - High	
furnishings in natural areas	benches, tables, drinking fountains, etc.	$4.3	2 - Low	
buildings and pools		$249.6		Additional assets added to the PP&R system in FY 10-11 added to
community, arts, pools	major public buildings	$153.8	4 - High	<-- includes MAC, Pittock, CM2, Community Centers, St. Johns Racquet Center, Pools
remaining buildings	minor buildings	$95.4	3 - Moderate	
recreation features		$216.4	3 - Moderate	total of all rec features escalated by 3.4% from 2010 to 2011.
gathering places	amphitheaters, plazas			
marine	docks, boat ramps			
off-leash areas	designated off-leash areas			
play areas	playgrounds			
sports	courts and fields			
water play	spray features, splash pads			
built infrastructure		$55.9	2 - Low	<-- incomplete data, escalated by 3.4% from 2010 to 2011. Additional assets added to the PP&R system in FY 10-11 added to total, not sub-category.
circulation	trails, walks, roads, parking lots			
utilities	gas, electric, water, sewer, irrigation			
green infrastructure		$391.9		
natural areas	natural ecological systems (7,523 acres)	$165.1	4 - High	escalated by 3.4% from 2010 to 2011
developed areas	managed gardens, grass, trees, shrubs: developed (196 parks, 3,417 acres), undeveloped (207 acres)	$226.4	2 - Low	escalated by 3.4% from 2010 to 2011
Total Parks		**$930.9**		
Civic				
Facilities (buildings, structures)				
Police facilities	Four precincts, Justice Center, property warehouse, equestrian division, and vehicle storage lot	$76.7	4 - High	
Office buildings	Portland Building, 1900 Building, City Hall	$147.9	4 - High	
Other buildings	Archives and Records Center, Kerby Garage, and Portland Communications Center	$46.0	4 - High	
Union Station	Train station and related buildings	$33.3	3 - Moderate	
Spectator facilities	Memorial Coliseum, Rose Quarter parking garages, and PGE Park	$454.0	4 - High	
Portland Center for the Performing Arts	Portland Center for the Performing Arts	$95.4	3 - Moderate	
Fire facilities	30 stations, administration building and support facility	$82.1	4 - High	
Technology				
Communications	Data networks, WiFi network, 800 MHz radio system	$66.4	3 - Moderate	
Production Services	Storage area network, core servers, and email system	$4.0	3 - Moderate	
Strategic technology	Large corporate appplications such as TRACS, CAD, PPDS, CIS and GIS	$50.5	3 - Moderate	
Bureau equipment and software	Video systems, electronic equipment, Office Suite software, bureaus' PC's and laptops	$9.6	3 - Moderate	
EBS	The City's enterprise business system that replaced IBIS and other info systems	$50.0	4 - High	
Total Civic		**$1,115.9**		
Total Capital Assets		**$29,595.1**		

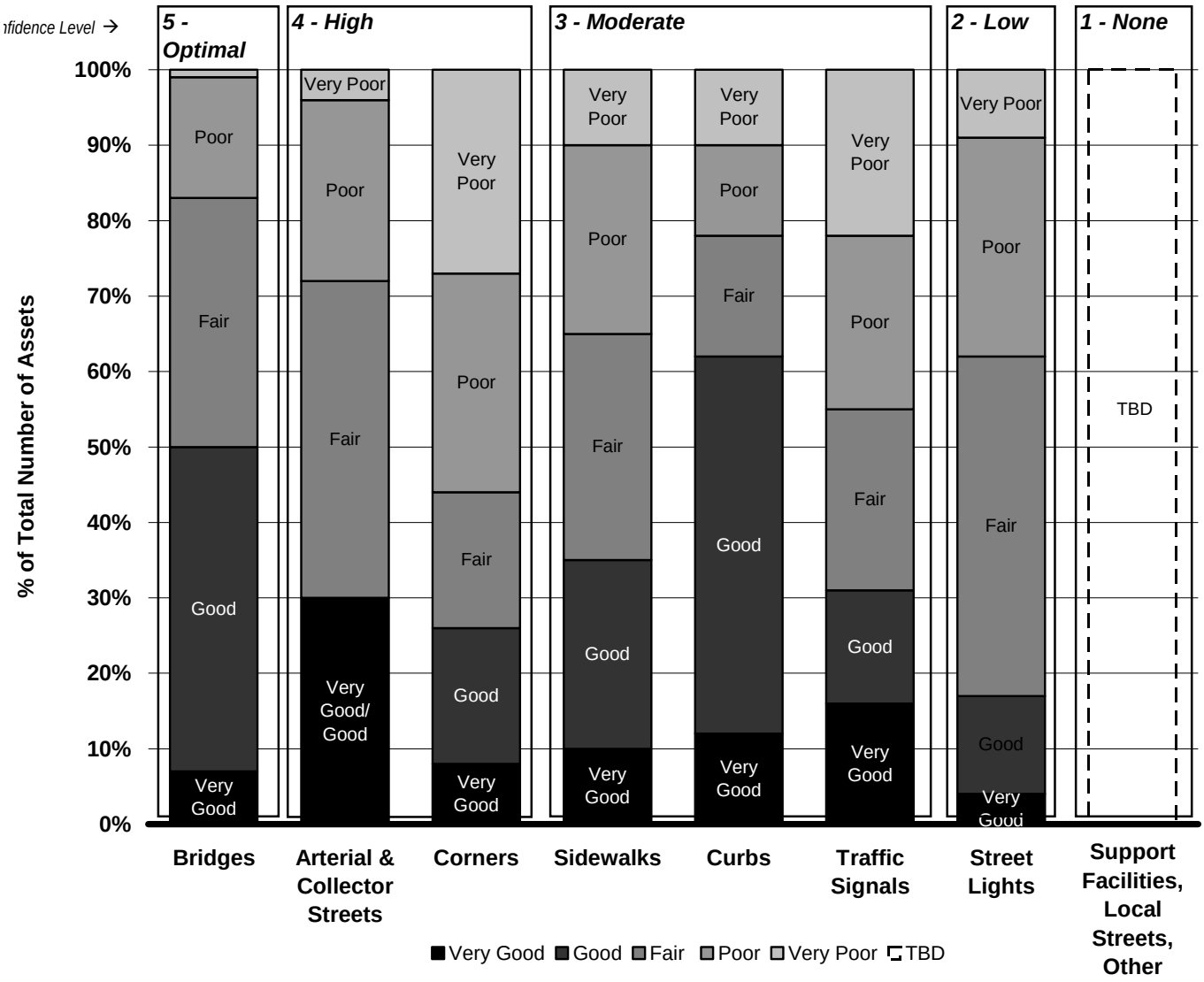
Appendix 2a: Current Condition of Capital Assets

All Assets, December 2011



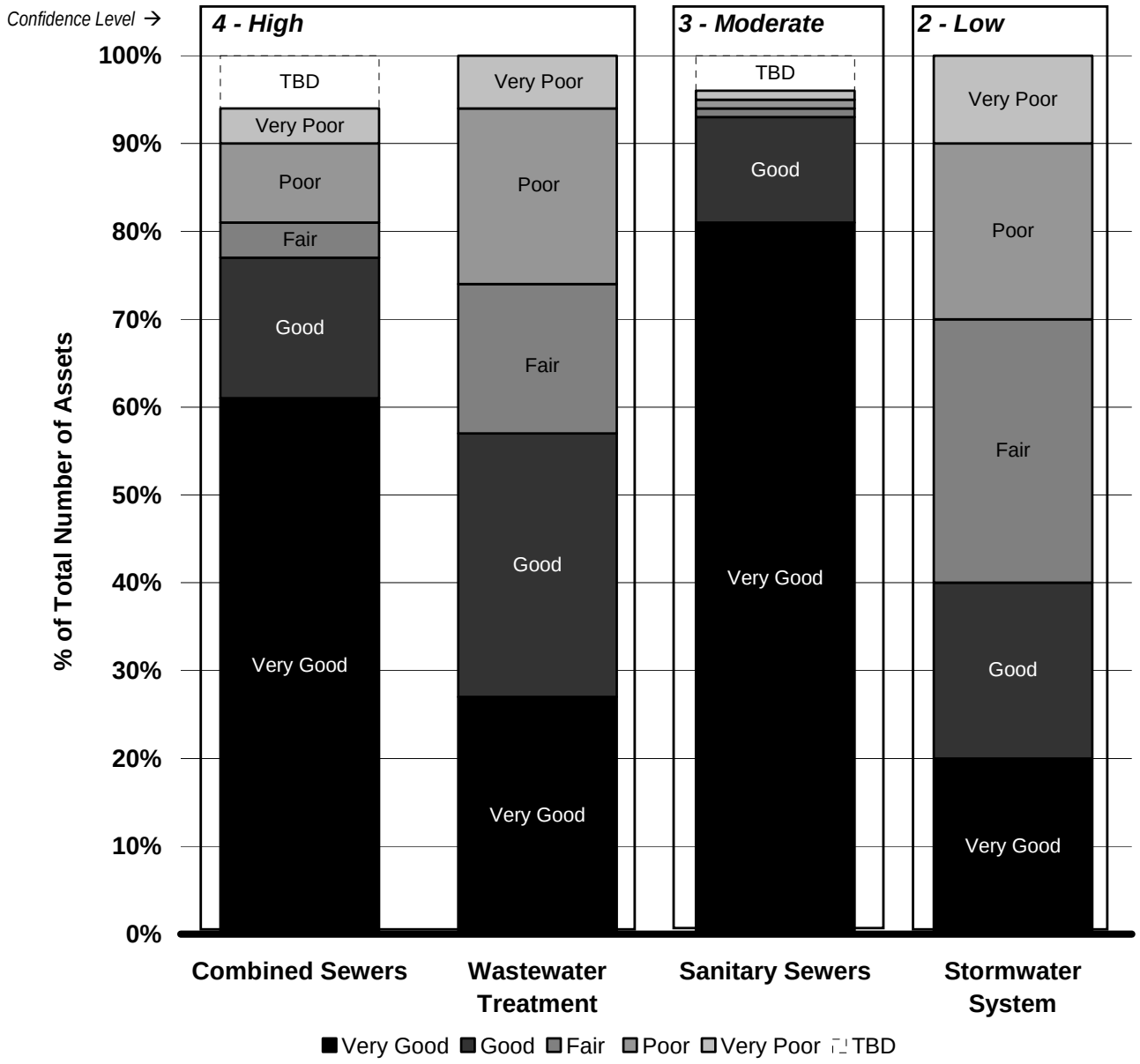
Appendix 2b: Current Condition of Capital Assets

Office of Transportation, December 2011



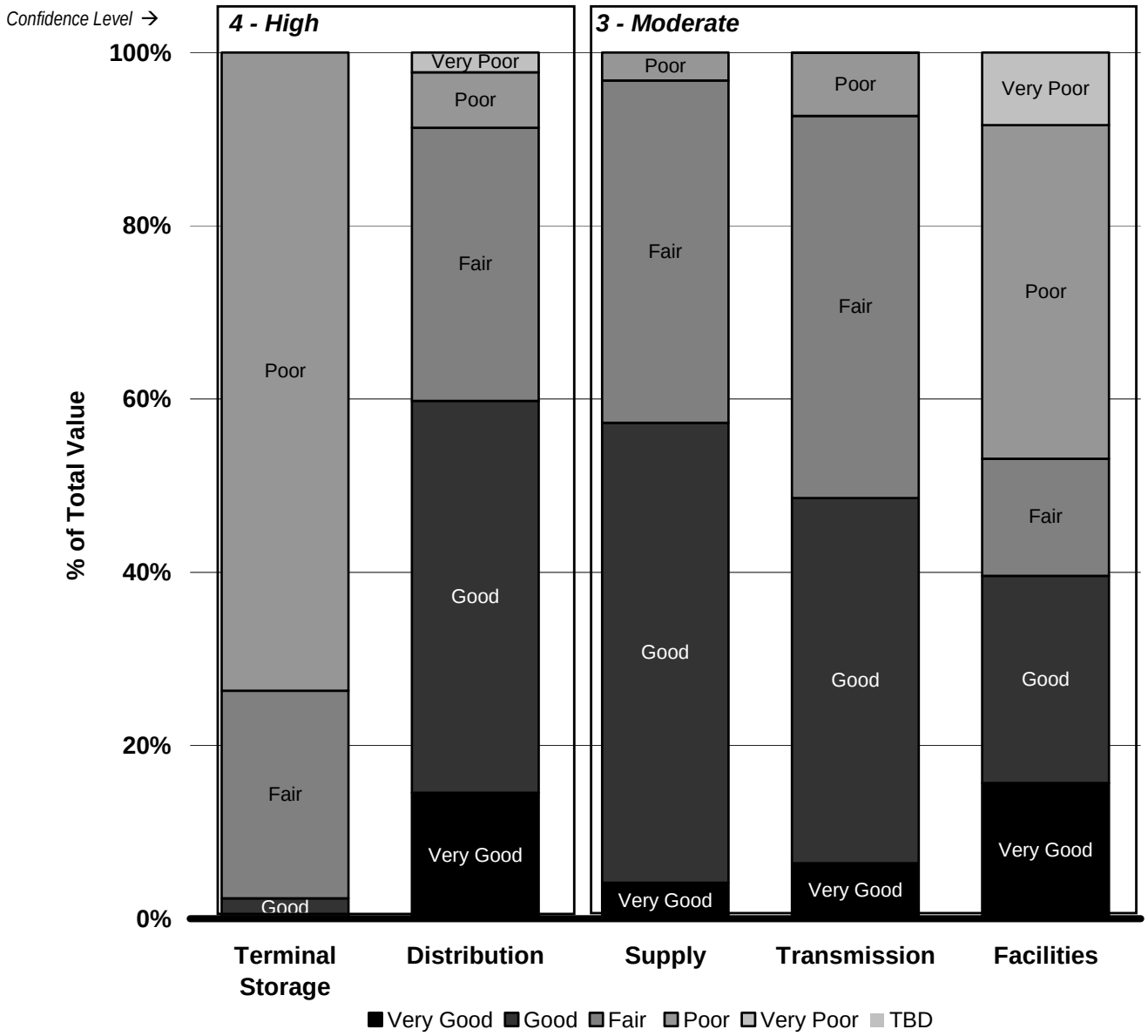
Appendix 2c: Current Condition of Capital Assets

Environmental Services, December 2011



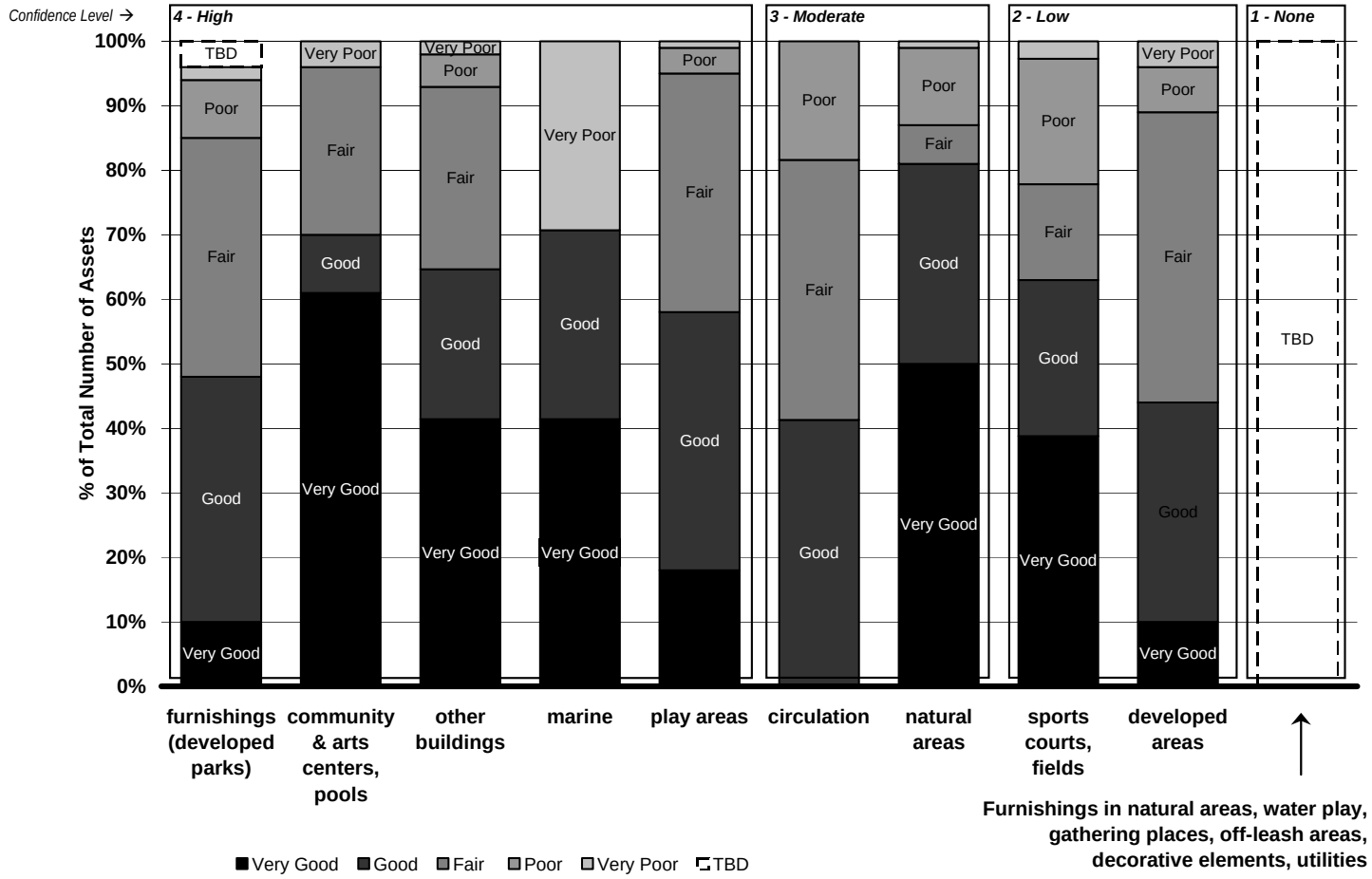
Appendix 2d: Current Condition of Capital Assets

Water Bureau, December 2011



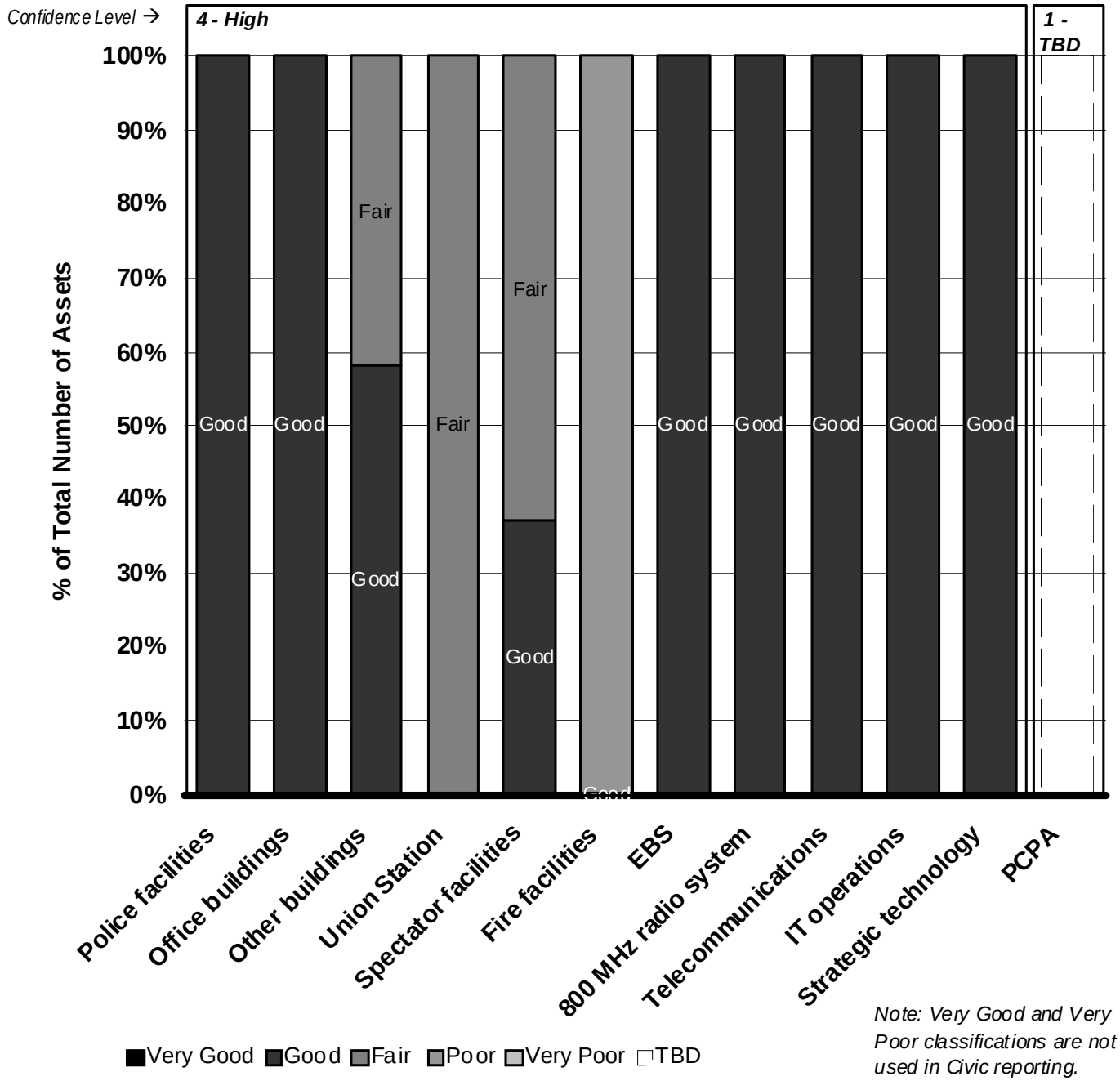
Appendix 2e: Current Condition of Capital Assets

Parks Bureau, December 2011



Appendix 2f: Current Condition of Capital Assets

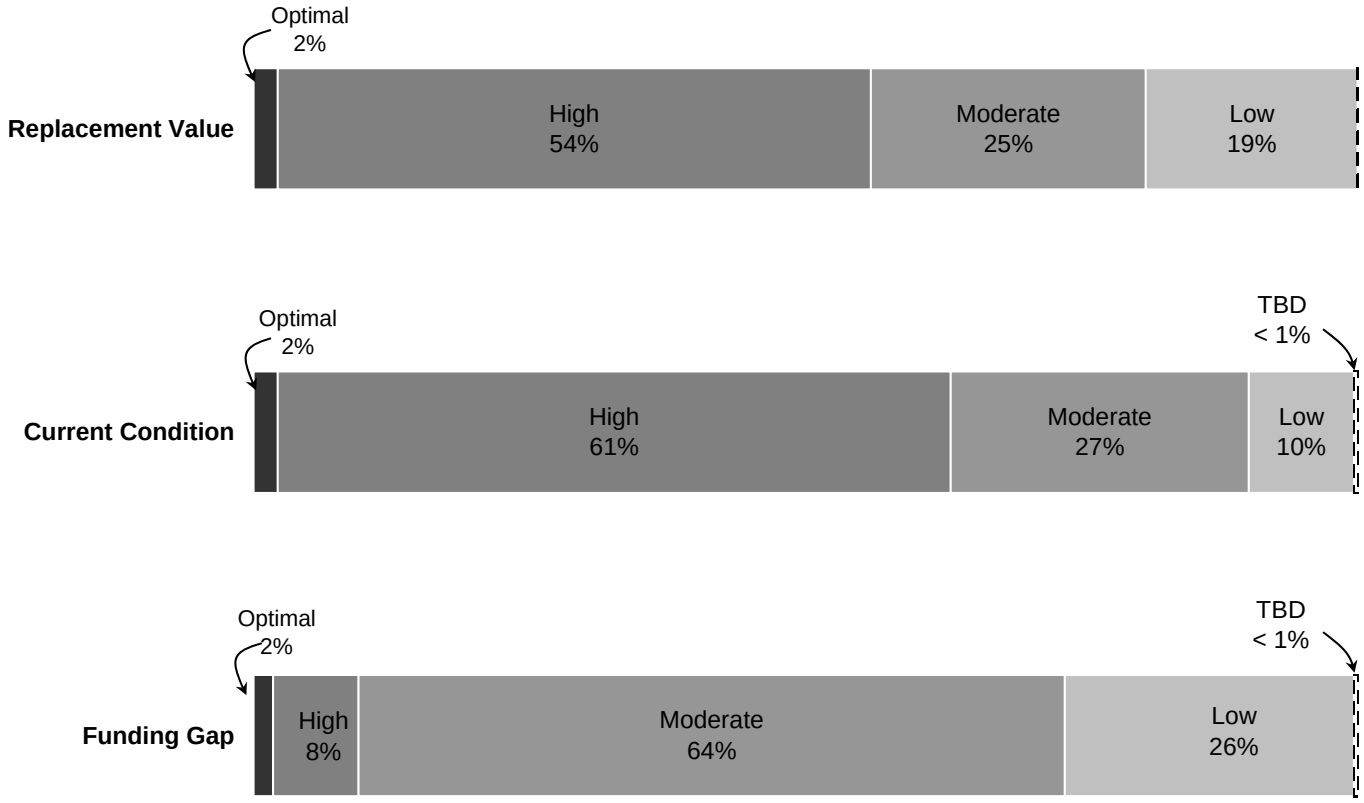
Civic (OMF, Police, Fire), December 2011



Note: Very Good and Very Poor classifications are not used in Civic reporting.

Appendix 2g: Data Confidence Level Summary

December 2011



Appendix 2h: Current Condition of Capital Assets

Data Sheet, December 2011

Bureau and capital asset type	Current Condition *(in %)*						Confidence level	Notes
	Very Good	Good	Fair	Poor	Very Poor	TBD		
Transportation								
arterial & collector streets	30		42	24	4	0	4 - High	
local streets	0	0	0	0	0	100	1 - TBD	
sidewalks	10	25	30	25	10	0	3 - Moderate	
curbs	12	50	16	12	10	0	3 - Moderate	
corners	8	18	18	29	27	0	4 - High	
structures (bridges only)	7	43	33	16	1	0	5 - Optimal	
traffic signals (hardware only)	16	15	24	23	22	0	3 - Moderate	
street lights	4	13	45	29	9	0	2 - Low	<-- Weighted average of Option B & C lights
support facilities (for PDOT & BES)	condition ranges from poor to very good						None - Mod.	
other transportation assets	condition range from poor to very good or tbd						Low to Optimal	
Environmental Services								
combined sewers	61	16	4	9	4	6	4 - High	Based on regular ongoing assessments.
sanitary sewers	81	12	1	1	1	4	3 - Moderate	
wastewater treatment systems	27	30	17	20	6	0	4 - High	Based on recent condition assessment by staff.
stormwater system	20	20	30	20	10	0	2 - Low	
Water								
supply	4	53	39	3	0	0	3 - Moderate	
transmission	6	42	44	7	0	0	3 - Moderate	
terminal storage	0	2	24	74	0	0	4 - High	
distribution	15	45	32	6	2	0	4 - High	
facilities (buildings and support facilities)	16	24	14	38	8	0	3 - Moderate	
Parks and Recreation								
amenities								
furnishings in developed parks	10	38	37	9	2	4	4 - High	4% not rated, inspected in 2007
furnishings in natural areas	0	0	0	0	0	100	1 - TBD	In process of inspection.
decorative elements	0	0	0	0	0	100	1 - TBD	Low priority for assessments
buildings and pools								
Major buildings	61	9	26	0	4	0	4 - High	Inspections done 2005-2006. 20% re-inspected in FY 2010-2011.
Minor buildings	41	23	28	5	2	0	4 - High	In process of inspection.
recreation features								
gathering places	0	0	0	0	0	100	1 - TBD	Structures included in buildings; Other features TBD
marine	41	29	0	0	29	0	4 - High	Condition based on % deficiency; excludes Ankeny, Oaks Bottom, or Willamette Moorage docks.
off-leash areas	0	0	0	0	0	100	1 - TBD	
play areas	18	40	37	4	1	0	4 - High	Changes due to renovations and new methodology (condition/ replacement of whole structures).
sports courts and fields	39	24	15	19	3	0	2 - Low	Basketball/tennis courts only, based on 2008 report. Fields in process.
water play	0	0	0	0	0	100	1 - TBD	Wading pools closed per regulations. Spray play and other water features TBD.
built infrastructure								
circulation	0	41	40	18	0	0	3-Moderate	Includes paved vehicular circulation (2009 assessment). "Very Good"/"Very Poor" categories not used. Other circulation (pathways, etc.) TBD
utilities	0	0	0	0	0	100	1 - TBD	
green infrastructure								
natural areas	50	31	6	12	1	0	3 - Med	Based on new methodology from Natural Areas Restoration Plan (October 2010)
developed areas	10	34	45	7	4	0	2 - Low	To be re-inspected in future.

Appendix 2h: Current Condition of Capital Assets

Data Sheet, continued; December 2011

Bureau and capital asset type	Current Condition *(in %)*						Confidence level	Notes
	Very Good	Good	Fair	Poor	Very Poor	TBD		
Civic								
facilities (buildings, structures)								
police facilities	0	100	0	0	0	0	4 - High	
office buildings	0	100	0	0	0	0	4 - High	
other buildings	0	58	42	0	0	0	4 - High	
Union Station	0	0	100	0	0	0	4 - High	
spectator facilities	0	37	63	0	0	0	4 - High	
Portland Center for the Performing Arts	0	0	0	0	0	100	1 - TBD	<-- Working with Metro/MERC on oversight.
fire facilities	0	98	0	2	0	0	4 - High	
technology								
800 MHz radio system	0	100	0	0	0	0	4 - High	
telecommunications	0	100	0	0	0	0	4 - High	
IT operations	0	100	0	0	0	0	4 - High	
strategic technology	0	100	0	0	0	0	4 - High	
EBS	0	100	0	0	0	0	4 - High	

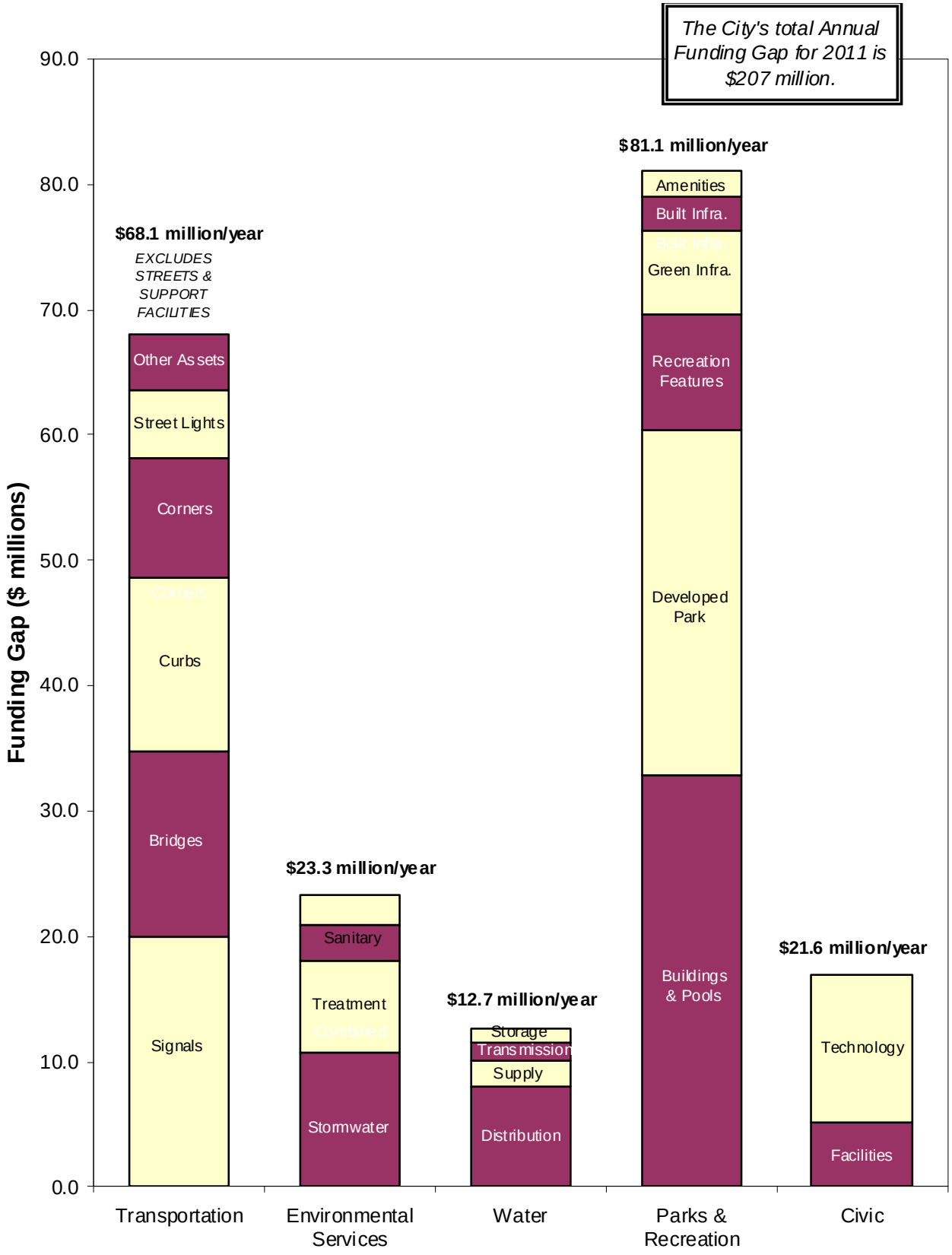
Appendix 2i: Projected Condition of Capital Assets - 2021

Data Sheet, December 2011

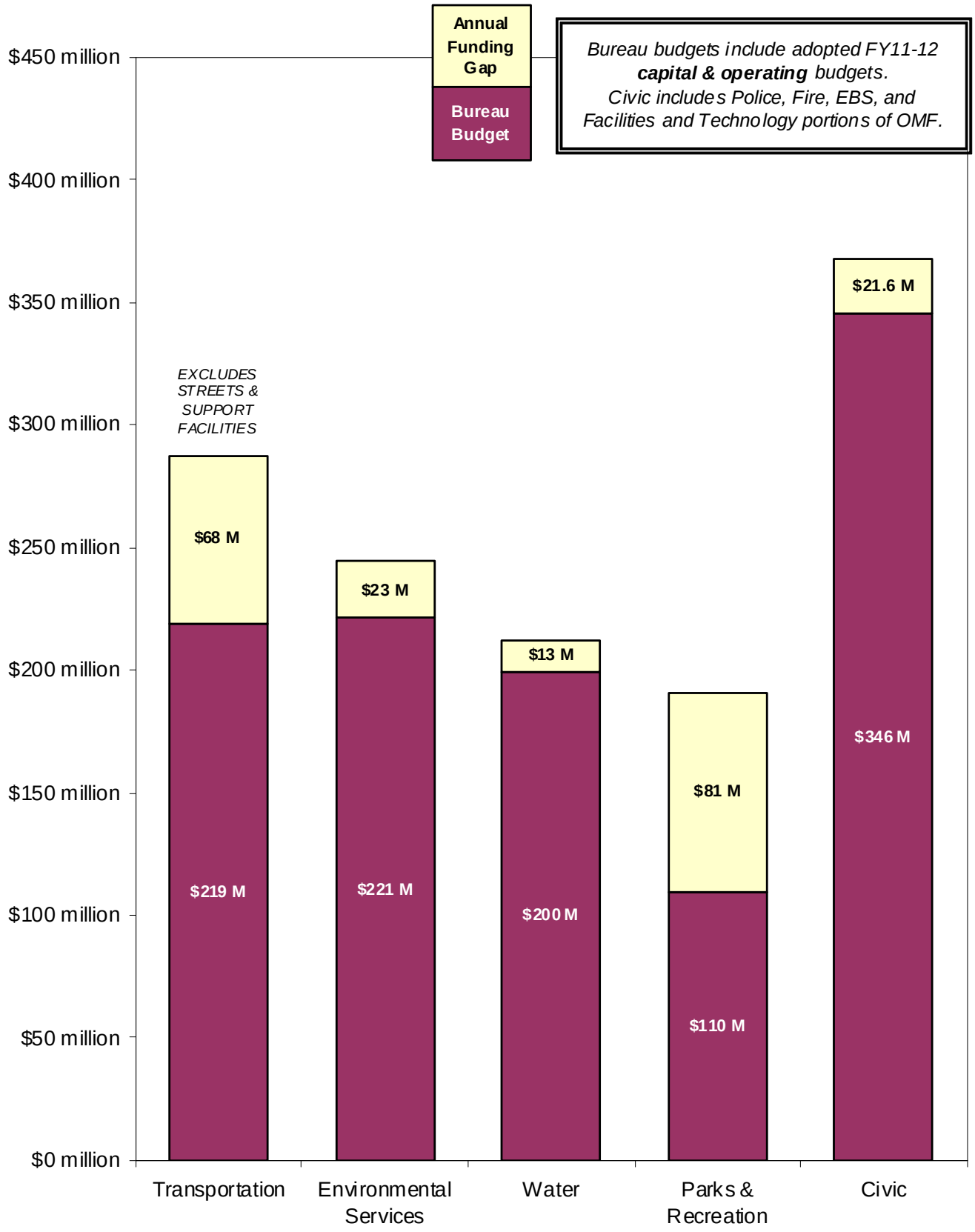
Bureau and capital asset type	Projected Condition *(in %)*						Confidence level	Notes
	Very Good	Good	Fair	Poor	Very Poor	TBD		
Transportation								
arterial & collector streets	0	0	0	0	0	100	tbd	
local streets	0	0	0	0	0	100	tbd	
sidewalks	10	20	25	30	15	0	2 - Low	
curbs	10	40	15	20	15	0	2 - Low	
corners	15	20	15	25	25	0	2 - Low	
structures (bridges only)	7	49	31	12	1	0	2 - Low	
traffic signals (hardware only)	11	28	13	12	36	0	2 - Low	
street lights	9	4	13	45	28	0	2 - Low	<-- Weighted average of Option B & C lights
support facilities (for PDOT & BES)	0	0	0	0	0	100	0 - TBD	
other transportation assets	0	0	0	0	0	100	0 - TBD	
Environmental Services								
combined sewers	62	16	6	6	4	6	4 - High	Assumes shift of resources to pipe rehab and treatment system improvements after 2012 (CSO program completion).
sanitary sewers	81	12	1	1	1	4	3 - Moderate	
stormwater system	20	20	30	20	10	0	2 - Low	
wastewater treatment systems	30	30	18	18	4	0	3 - Moderate	
Water								
supply	8	50	39	1	2	0	4 - High	UV treatment not included - awaiting final LT2 treatment decision. Assumes road maintenance funding $500K/year.
transmission	11	40	42	7	1	0	3 - Moderate	Assumes Willamette River Crossing and West Side header completed and 10% of conduit declines to next condition category.
terminal storage	69	42	33	8	2	0	4 - High	Assumes Mt. Tabor and Washington Park reservoirs taken offline; Powell Butte 2 and Kelly Butte storage built.
distribution	37	25	14	15	8	0	3 - Moderate	Condition assessments on mains ongoing. Assumes Linnton, Greenleaf, Fulton pump stations completed, 10% of tanks/valves decline to next condition category.
facilities (buildings and support facilities)	17	40	35	6	2	0	4 - High	Assumes new Interstate facility built. Used square footage cost from other city building construction projects.
Parks and Recreation								
amenities	0	0	0	0	0	100	tbd	Information is not available at this time.
buildings and pools	0	0	0	0	0	100	tbd	
recreation features	0	0	0	0	0	100	tbd	
built infrastructure	0	0	0	0	0	100	tbd	
green infrastructure	0	0	0	0	0	100	tbd	
Civic								
Facilities (buildings, structures)								
Police facilities	0	100	0	0	0	0	4 - High	
Office buildings	0	100	0	0	0	0	4 - High	
Other buildings	0	58	42	0	0	0	4 - High	
Union Station	0	0	0	100	0	0	4 - High	Condition decreases from fair to poor if funding gap is not addressed
Spectator facilities	0	37	63	0	0	0	4 - High	
Portland Center for the Performing Arts								Working with Metro/Merc on oversight.
Fire facilities	0	98	0	2	0	0	4 - High	
Technology								
Communications	0	100	0	0	0	0	4 - High	
Production Services	0	100	0	0	0	0	4 - High	
Strategic technology	0	100	0	0	0	0	4 - High	
Bureau equipment and software	0	100	0	0	0	0	4 - High	
EBS	0	100	0	0	0	0	4 - High	

Appendix 3a: Annual Funding Gap

in millions per year, December 2011



Appendix 3b: Annual Funding Gap in Relation to Bureau Overall Budgets | (in millions per year) December 2011



Appendix 3c: Annual Funding Gap

Data Sheet, December 2011

Bureau and capital asset type	Value* *(in millions)*				Confidence level	Notes
	R/R/R	Capacity	Mandate	Total		
Transportation						
arterial & collector streets	tbd	tbd	tbd	tbd	tbd	
local streets	tbd	tbd	tbd	tbd	tbd	
sidewalks	n/a	n/a	n/a	n/a	n/a	<--- adjacent property owners are financially responsible for repairing sidewalks
curbs	$13.9	$0.0	$0.0	$13.9	4 - High	
corners	$9.6	$0.0	$0.0	$9.6	4 - High	
structures (bridges only)	$14.7	$0.0	$0.0	$14.7	5 - Optimal	
traffic signals (hardware only)	$18.9	$0.0	$1.1	$20.0	4 - High	
street lights	$5.4	$0.0	$0.0	$5.4	2 - Low	
support facilities (for PDOT & BES)	tbd	tbd	tbd	tbd	tbd	
other transportation assets	$4.5	$0.0	$0.0	$4.5	Low to Moderate	
Total Transportation	**$67.0**	**$0.0**	**$1.1**	**$68.1**		
Environmental Services						
combined sewers	$0.0	$2.4	$0.0	$2.4	3 - Moderate	
sanitary sewers	$2.8	$0.0	$0.0	$2.8	3 - Moderate	
stormwater system	$10.8	$0.0	$0.0	$10.8	2 - Low	
wastewater treatment systems	$7.3	$0.0	$0.0	$7.3	3 - Moderate	
Total Environmental Services	**$20.9**	**$2.4**	**$0.0**	**$23.3**		
Water						
supply	$2.0	$0.0	$0.0	$2.0	4 - High	
transmission	$1.4	$0.0	$0.0	$1.4	3 - Moderate	
terminal storage	$1.2	$0.0	$0.0	$1.2	3 - Moderate	
distribution	$5.5	$0.0	$2.6	$8.1	3 - Moderate	
Total Water	**$10.1**	**$0.0**	**$2.6**	**$12.7**		
Parks and Recreation						
amenities	$0.7	$1.2	$0.1	$2.1	3 - Moderate	
buildings and pools	$11.2	$19.2	$2.4	$32.8	3 - Moderate	
recreation features	$3.1	$5.4	$0.7	$9.2	3 - Moderate	
developed park	$9.4	$16.1	$2.0	$27.6	3 - Moderate	<-- This asset type is only used in funding gap calculations. It includes projects such as general park upgrades or construction of master planned parks.
built infrastructure	$0.9	$1.6	$0.2	$2.7	3 - Moderate	
green infrastructure	$2.3	$3.9	$0.5	$6.7	3 - Moderate	
Total Parks	**$27.7**	**$47.5**	**$5.9**	**$81.1**		
Civic						
Facilities (buildings, structures)						
Police facilities	$1.6	$0.0	$0.0	$1.6	4 - High	
Office buildings	$1.7	$0.0	$0.0	$1.7	4 - High	
Other buildings	$0.8	$0.0	$0.0	$0.8	4 - High	
Union Station	$1.0	$0.0	$0.0	$1.0	4 - High	In addition to annual ongoing funding gap, OMF reports one-time needs of $45M for Union Station renovation; $30M for Spectator facilities reserves.
Spectator facilities	n/a	n/a	n/a	n/a		
Portland Center for the Performing Arts	tbd	tbd	tbd	tbd	1- TBD	<-- OMF is beginning to work with Metro/MERC on the status of PCPA facilities.
Fire facilities	$2.5	$0.0	$0.0	$2.5	4 - High	
Technology						
Communications	$3.7	$0.0	$0.0	$3.7	3 - Moderate	
Production Services	$0.5	$0.0	$0.0	$0.5	3 - Moderate	
Strategic technology	$5.2	$0.0	$0.0	$5.2	3 - Moderate	
Bureau equipment and software	$0.4	$0.0	$0.0	$0.4	3 - Moderate	
EBS	$4.2	$0.0	$0.0	$4.2	4 - High	
Total for Civic Assets	**$21.6**	**$0.0**	**$0.0**	**$21.6**		
Total Capital Assets	**$147.3**	**$49.9**	**$9.6**	**$206.8**		

R/R/R (Repair, Rehabilitation, Replacement): Additional funding necessary to repair, rehabilitate and replace existing assets to bring them up to established service levels. Also includes replacement of assets considered functionally obsolete (not meeting established service levels).
Capacity: Additional funding necessary to meet the demands of existing customers, based on established levels of service.
Mandate: Additional funding necessary to improve existing assets to meet regulatory requirements, exclusive of improvements that fall under R/R/R or Capacity.

Appendix 4: Calculation Methodologies

City bureaus vary in methods used to calculate current replacement value, current and projected condition, and annual funding gap. This appendix describes the methods of five infrastructure systems: transportation, environmental services, water, parks and civic facilities. Civic systems include government offices, police and fire facilities, parking garages, technology services, and spectator facilities. In future years, the City Asset Managers Group will discuss opportunities to more closely align methods across bureaus.

Transportation

Replacement Value

By using the average unit cost at a network level, the Portland Bureau of Transportation (PBOT) uses a simple approach in calculating the replacement value for its assets. For an asset, the replacement value includes the costs of removal and installation. Overhead is included in the replacement value. This is consistent with how PBOT capitalizes overhead at year-end on infrastructures for two accounts, improvements (closed projects) and work-in-progress (open projects). Transportation uses the overhead methodology based on labor for most of the assets, except for bridges and other structures that were based on the total costs overhead methodology, since additional work is needed. Efforts continue to improve the information on the inventory count and replacement values on some of the transportation assets. Please note that actual replacement costs would vary by location.

Current Condition

Condition methodology is reported as a percentage of the total number of assets. The methodology for determining asset condition varies by asset group, see below.

Method of Asset Condition Assessment

Asset Group	Method
Pavement	Visual inspection of pavement using the Metropolitan Transportation Commission rating methodology.
Sidewalk System	Sidewalks: Visual inspection; Guidelines in the Operating Policy and Sidewalk Repair Program Curbs: Functional purpose, that is, if they protect the street edge and direct runoff and if they present a traffic hazard Corners: Same guidelines as sidewalks
Bicycle Network	To be determined
Structures	Bridges: Inspection rating system based on Oregon Department of Transportation and National Bridge Inspection Retaining Walls, Harbor Wall: Visual inspection Stairways: Visual inspection

	Guardrails: To be determined
Traffic Signals	Hardware & Controllers: Age ITS and Other Equipment: To be determined
Streetcar	All Components: Age; Visual inspection
Aerial Tram	Age; Visual inspection; Structural inspection for stations and towers (every 2 years), cables (annually)
Traffic Calming Devices	Visual inspection
Street Lights	Field inspections; Age of the components; Type of luminaire; Type of system (underground vs. above ground)
Pavement Markings	Painted Markings: Currently no condition assessment Durable Markings: Type of material; regular maintenance; visual inspection
Parking Meters	Single and Double Meters: Age; Visual inspection SmartMeters: Preventive maintenance schedule; Visual inspection

Annual Funding Gap

Total unmet need is defined as the amount of additional funding and resources needed to bring a given asset class to an acceptable condition and to maintain it at that condition. Reported unmet need does not include sidewalks or unimproved streets. Adjacent property owners are financially responsible for repairing sidewalks; therefore, the City does not have an unmet sidewalk repair need. Figures do not include unimproved streets as the City is not financially responsible for upgrading and maintaining unimproved streets.

Environmental Services

Replacement Value

The replacement value of the combined and sanitary sewers was recalculated in the recent combined and sanitary sewer elements of the BES System Plan. The stormwater system was recalculated based on factors in the above-referenced document. The treatments were adjusted based on recent staff assessments.

Current Condition

BES uses a variety of methods to measure current condition. Methods include visual TV inspection, age, material, and history of failure of adjacent pipes (to indicate remaining useful life).

Condition for combined sewers and sanitary sewers are based on regular ongoing assessments. Analysis of the data has been updated as part of the System Plan. A similar multi-year review of the stormwater system is underway. Condition for wastewater treatment systems are based on estimate of repairs for each process area. Assets at the Columbia Boulevard Wastewater Treatment Plant are experiencing degradation due to the high

capacity of flow relative to the capacity of the facilities. A number of upgrades, currently in construction, will result in significant improvement to this situation.

Annual Funding Gap

The funding gap is based upon the following:

- R/R/R: The difference between the replacement value of assets in very poor condition and the amount of funding in the financial plan for rehabilitation of those assets.
- Capacity – Combined: Projects recommended in the Systems Plan with positive benefit/cost ratios (primarily those that address conveyance of the 2-year storm in combination with deteriorated pipes) that are not included in the financial plan. Note that the gap does not include projects required to meet stated LOS for conveying the 25-year storm.
- The value of the stormwater system reflects only the piped system and other constructed facilities (such as sumps, green streets, water quality facilities). It does not include natural systems – either the value of them or the funding gap to address watershed health/habitat or anticipated regulatory changes related to the MS4 permit.

Water

Replacement Value

In most cases, the replacement value is based on the current costs to install assets and includes all overhead costs (assumed at 1.135 times total personnel costs). Replacement costs were last estimated in 2010 and are inflated by 3.4 percent to reflect current replacement values. As the Water Bureau finalizes their asset management plans (AMP), the costs will be updated in future City reports.

Current Condition

Condition can be based on age, visual inspection, deterioration or failure curves. The Water Bureau matches one of these methods to each asset type.

The Water Bureau uses available information to assess physical condition of its assets. The least specific is a rating based on asset age relative to useful life. The most specific form of rating is based on an actual field condition assessment of individual assets. Intermediate forms of estimating condition involve ratings based on the judgment of Bureau personnel most knowledgeable about a particular asset or group of assets or partial inspection data, extrapolated to an entire asset class. For pipes, the Water Bureau uses Weibull curves of the failure rate by age of the asset class. Deterioration curves are used for pump, tank, and several other assets.

All reported condition information values are based on the percentage of value of assets. All notable asset groups are included.

Annual Funding Gap

The Water Bureau calculated its annual funding gap in two ways. For some assets, poor physical condition triggers the gap. For other water assets, the gap is measured by the need to mitigate the high risk of asset failure (relocate

pipes due to other infrastructure projects), or the desire to make a sound investment decisions (install advanced metering infrastructure system).

The reported funding gap includes costs to:

- replace screw-type hydrants, pump main segments, high risk pipe segments, and large valves in poor condition;
- replace meters at a sustainable rate;
- replace / upgrade sections of the oldest conduits; and
- improve maintenance of valves, tanks, fountains, and the Bull Run watershed road system

Parks

Replacement Value

PP&R calculates the replacement value for its assets by estimating the installed cost to replace the asset in kind, without increasing its size or changing its functionality, but bringing it up to current code. As PP&R expands and improves its asset management program, more specific valuations are being gathered for all assets. Where specific information is not available, general estimates of the value of all assets are provided, albeit with varying levels of confidence.

Method of Asset Replacement Value Calculation

Asset Group	Method
Amenities	Per each for assets such as benches, tables, drinking fountains, etc.
Buildings and Pools	Square foot costs.
Recreation Features	Square foot costs or per each.
Built Infrastructure	Lineal feet.
Green Infrastructure	Per acre or square foot.

Current Condition

Condition is primarily determined by visual inspections and tests unless the asset is hidden from view. In those cases, previous experience or manufacturer's recommended replacement dates are used to estimate condition and remaining life. Additional testing may be required in some cases.

Method of Asset Condition Assessment

Asset Group	Method	Status
Amenities	Visual inspection	Furnishings in developed parks are complete; furnishings in natural areas are in process.
Buildings and Pools	Visual inspection and/or remaining life	Major and minor building assessments complete.
Recreation Features	Visual inspection	Courts, playgrounds, and marine docks are complete; other features are inventoried but remain to be inspected.
Built Infrastructure	Visual inspection and remaining life	Roads and parking lots have been inventoried and assessed; many regional trails have been assessed; paths and walks in developed parks need to be assessed; utilities have been inventoried but few have been assessed.
Green Infrastructure	Visual inspection	Natural Area green infrastructure were inventoried and assessed in 2010.

PP&R is updating its annual asset inspection program to determine the condition of all assets and will inspect 20 percent of all assets each year. All assets will be inspected at least once every five years and more often in the cases of pools and play equipment or other items that require more oversight and maintenance. PP&R is working to add asset classes to the Asset Management Program each year.

Annual Funding Gap

PP&R has identified capital needs for the next 20 years on its Capital Improvement Project (CIP) list. The PP&R funding gap represents the difference between the anticipated annual revenue PP&R receives for CIP projects and the cost it would take to complete all the projects on its 20 year CIP list, annualized over ten years.

PP&R tracks four categories of projects on its CIP list. Preserve (repair, rehabilitate, and replace) and Efficiency (projects that improve the cost effectiveness of maintaining and operating our assets) are combined into the R/R/R category for the citywide report. Safety (projects needed to bring existing assets up to current codes and meet mandates such as ADA) is reported as Mandate. Growth (projects that expand the system and are needed to meet current service levels for all customers) is reported as Capacity. Examples of Capacity projects include developing new parks, new community centers, and new trails, or building new features in parks, like new spray play features or skateparks.

Civic

Methods for civic assets fit into two categories: Facilities and Technology.

Facilities

Replacement Value

Replacement values are based on the size of facilities, the type of facility, and costs per square foot to construct that type of facility. To this are added percentage mark ups for indirect costs, including overheads.

Condition

Condition assessment is based on an inventory of buildings. Conditions are assessed based on visual inspection by qualified personnel on a regular schedule and are expressed as a percentage of assets in each rating category. Condition ratings for the Portland Center for the Performing Arts have not been determined at this time.

Annual Funding Gap

For all facilities, except spectator facilities and Union Station, the funding gap is the annual difference between what is collected in rental rates, or set aside from net income, for major maintenance and the industry standard of 3 percent of replacement value. Current funding at 1 percent of replacement value ensures relative condition (percentage in good, fair, and poor condition) remains relatively constant over the next ten years.

For spectator facilities the gap is the one-time difference between actual fund reserves for capital maintenance and a target level of $30 million based on the costs to upgrade Memorial Coliseum. Union Station's one-time funding gap is $45 million based on unfunded deferred maintenance, in addition to the annual gap. The annual gap assumes the $45 million one-time gap is funded to catch up on deferred maintenance and bring the building up to current standards. Unmet need for the Portland Center for the Performing Arts is not included in the total.

Technology

Establishing replacement values, current conditions, projected conditions, and funding gaps for technology infrastructure requires a different approach than for facilities infrastructure. Unlike buildings, technology infrastructure can quickly become unusable. This is primarily due to the short lives/quick obsolescence and the critical need to stay current with technologies that may not be supported by vendors in the future and render the technology unusable.

Replacement Value

The replacement value assessment is based on recently completed projects and the experience of other governments, but we have not had an opportunity to analyze their experiences to assess the degree of similarity. These values include indirect costs for engineering and other professional services, but do not include indirect costs for City overheads.

Condition

Condition ratings for Technology assets are based on current age and expected useful life. Condition is expressed as a percentage of assets. Systems considered to be obsolete are included in the poor condition rating.

Annual Funding Gap

The funding gap includes annual funding necessary to meet industry standards for major maintenance (Communications); and annual needs to ensure replacement and upgrades of technology on accepted schedules (Production Services).

Appendix 5: Asset Management Information and Definitions

Goals

The goal of strategic asset management is to develop a sustainable asset base that provides appropriate levels of service and responds to social, economic, and environmental needs. Asset management addresses the maintenance, repair, rehabilitation, replacement, acquisition and disposal of assets.

Asset management is an industry standard that provides a risk mitigation approach to decision making. It is commonly defined as meeting agreed upon customer and environmental service levels, while minimizing life cycle costs at an acceptable level of risk.

Asset management activities are driven by asset deterioration, regulations, and community needs (based on service levels). They will differ for each asset type based on maintenance management techniques, scheduling and priorities of activities, failure modes, treatment options, renewal strategies, equipment and practices, and renewal techniques. However, a whole-of-city approach ensures that the most innovative and cost-effective techniques are employed as each bureau's practice improves. Using this cross-bureau effort will continually improve performance-based information that is available to citizens, bureaus, and city leaders as they make choices in the types and levels of service desired.

Asset Management informs:

- asset acquisition;
- maintenance and operations;
- renewal and adaptation; and
- asset disposal.

Applying AM principles and practices will:

- support the efficient delivery of services with assets that are cost-effective, well maintained, accessible, energy efficient and safe;
- improve the ability to make sound business and planning decisions at all levels;
- promote effective use of resources;
- improve bureau support and accountability; and
- improve and coordinate City AM planning across bureaus.

Common elements for managing assets include:

- information systems that provide data on asset inventories and their condition;
- good documentation of life-cycle costs, and optimum renewal strategies that ensure the lowest life-cycle cost;
- a needs assessment to evaluate current practices, asset risks, and opportunities;
- links between service outcomes, bureau programs, AM plans, and performance measures;
- community engagement to better define desired and affordable levels of service; and
- clear assignment of roles and responsibilities to guide AM efforts.

Policy Drivers

In FY 2001–02, City Council set strategic priorities as part of the Managing for Results exercise. The Council identified the City's deteriorating physical infrastructure as an immediate strategic priority. It remains a top Council strategic priority.

Other policy drivers (federal, state and local) underscore the importance of the condition of municipal infrastructure in supporting a community's economic health, active neighborhoods, and environmental stewardship, including:

- State and federal regulations;
- Public Facilities Plan, a long-range, citywide plan which requires a major projects list for use in annual capital budgets;
- Portland Comprehensive Plan;
- Climate Action Plan;
- Municipal bonded debt covenants;
- City CIP budget manual, which requires bureaus to analyze operations and maintenance costs and savings in new projects;
- U.S. Governmental Accounting Standards Board statements (GASB 34, 42, 48, 49 and 51); and
- Other Council Priorities.

Regulatory Compliance

Regulatory compliance requirements can have major impacts on the management of infrastructure systems and on the resources available for repair and expansion projects. Currently a number of federal, state, and local regulations require additional compliance measures by the City. These mandates vary in compliance requirements, timeline, and level of funding through current City revenues.

Regulatory mandates impact all of the City's infrastructure systems, including sewer and stormwater, transportation, water, parks and civic facility investments. The following regulations represent some of the major regulations currently impacting capital systems:

- Clean Water Act, such as the Long Term Enhancement Rule (LT2) and CSO Amended Stipulation and Final Order;
- Environmental Protection Act, including Superfund cleanup requirements;
- Safe Drinking Water Act, including Underground Injection Control requirements;
- Endangered Species Act, such as Habitat Conservation Planning;
- Americans with Disabilities Act;
- Uniform Building Code, including minimum seismic standards; and
- Green Building and Energy Efficiency Policies.

Many of these regulations do not have dedicated funds set aside for compliance measures. Compliance often requires significant capital investment, which may require diverting financial resources from capital repair and rehabilitation projects. In addition to existing mandates, future regulations may further impact management of the City's infrastructure systems.

Bureau funding gaps presented in this report include varying degrees of regulatory compliance. Certain requirements, such as ADA accessibility and building code improvements may occur as part of capital repair or rehabilitation projects.

Asset Management Definitions

The following definitions definitions and confidence levels draw on several AM sources, include GHD Consultants (used by the Water Bureau and PBOT), trained bureau staff, and literature searches.

Asset: A physical component of infrastructure or a facility which has value and has an expected useful life of more than one year, that would be replaced if destroyed, and is not surplus to needs.

Asset Management: The continuous cycle of asset inventory, condition, and performance assessment that has as its goal the cost-effective provision of a desired level of service for physical assets. Investment decisions consider planning, design, construction, maintenance, operation, rehabilitation, and replacing assets on a sustainable basis that considers social, economic, and environmental impacts.

Backlog: The sum of deferred activities, such as maintenance, operations, and rehabilitation, needed to achieve the lowest life-cycle cost for an asset. Backlog results from lack of money, materials, or staff to perform the needed work. (See Funding Gap.)

Capital Expansion: Projects or facilities that create new assets, increase the capacity of existing assets beyond their original design capacity or service potential, or increase the size and service capability of a current service area, including service to newly annexed, undeveloped, or under-served areas. Generally increases the total maintenance requirements because it is increasing the total asset base.

Civic: A collection of City-owned assets, including facilities (office, police, fire, parking garages, spectator facilities, Portland Center for the Performing Arts) and technology services (800 MHz radio system, telecommunications, IT operations, strategic technology). Bureau maintenance facilities are assets of the operating bureau.

Condition Assessment: The method used to quantify the deterioration rate and remaining useful life of an asset. Methods of condition assessment vary by asset classification and range from use of industry estimates for deterioration rates up to documented physical inspection regimens on established cycles that ensure optimum economic life of an asset.

Condition Measure /Rating: A means of classification using information from periodic inspections or measurements to indicate the ability of an asset to deliver a particular level of service.

Confidence Levels (in data/information): The expression of accuracy and reliability in the areas of information (source and reliability), process (ad hoc or repeatable) and documentation (documented or not documented).

The following chart addresses this information:

	Inventory completeness	Condition assessment method and frequency	Process and documentation	Resulting confidence level
1	No inventory	No assessment method	No process	No confidence
2	Partially complete inventory	Estimates used to assess condition	Process not well documented	Low confidence
3	Inventory complete	Subjective process to estimate condition estimated followed on a regular schedule	Some documentation in place	Moderate confidence
4	Inventory complete	Condition surveys conducted on a regular schedule by well-trained personnel	Well documented process followed	High confidence
5	Inventory complete	Condition surveyed on a regular schedule	Objective process followed; Accuracy of data verified and well documented	Optimal confidence

Consequence of Failure: The outcome of an event expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain. There may be a range of possible outcomes associated with an event.

Current Replacement Value (CRV): The CRV is the total cost to replace the entire asset to meet current accepted standards and codes.

Failure Mode: The reason why an asset failed to provide the function for which it was installed.

Funding Gap: The difference between the funding needed to address infrastructure needs of an asset at a defined condition or level of service and the funding that is currently available. The funding gap varies with the funding level and affects the level of service. The funding gap is the amount of money needed to eliminate the backlog and/or maintain the asset to achieve its useful life. Given a certain funding level, the resulting level of service can be forecast; if a certain level of service is desired, the funds needed to achieve it can be estimated.

Green Infrastructure: Infrastructure that uses natural processes, systems, or features to provide traditional infrastructure services. There are two types of green infrastructure:

1. Natural networks of streams, rivers, and open spaces that naturally manage stormwater, provide habitat, improve air and water quality, reduce flooding risk, and provide areas for human recreation and respite; and

2. Engineered facilities, such as green street treatments or eco-roofs, which use natural processes in an infrastructure setting.

Infrastructure: Consists of assets in two general networks that serve whole communities—transportation modalities (roads, rail, etc.) and utilities. These are necessary municipal or public services, provided by the government or by private companies and defined as long-lived capital assets that normally are stationary in nature and can be preserved for a significant number of years. Examples are streets, bridges, tunnels, drainage systems, water and sewer lines, pump stations and treatment plants, dams, and lighting systems. Beyond transportation and utility networks, Portland includes buildings, green infrastructure, communications, and information technology as necessary infrastructure investments that serve the community.

Inventory: A list of assets and their principal components.

Level of Service: A defined standard against which the quality and quantity of service can be measured. A level of service can include reliability, responsiveness, environmental acceptability, customer values and cost.

Life-Cycle Cost: The sum of all costs throughout the life of an asset, including planning, design, acquisition, construction, operation, maintenance, rehabilitation/renewal and disposal costs.

Likelihood of Failure: The probability or possibility of an event that will cause the asset to fail.

Maintenance: Activities that keep an asset operating as designed or prevent it from deteriorating prematurely, excluding rehabilitation or renewal which may extend asset life. Maintenance can be planned or unplanned.

Planned maintenance is:

- Preventive – maintenance conducted at regular scheduled intervals based on average statistical/anticipated lifetime.
- Condition-based – maintenance based on objective evidence of need from tests, measurements and observations.
- Deferred – the shortfall created by postponing prudent but nonessential repairs to save money or materials. Generally, a policy of continuing deferred maintenance results in higher costs when repairs are eventually made, or failure that occurs sooner than if normal maintenance had been performed.

Unplanned maintenance is:

- Reactive or Emergency-rective actions taken upon failure or obvious threat of failure, usually at a higher cost than planned or preventive maintenance.

Operations: The ongoing activities that allow the use of an asset for its intended function.

Performance Indicator: A qualitative or quantitative measure used to compare actual performance against a defined standard. Indicators are commonly used to measure cost, performance, or customer satisfaction.

Performance Monitoring: The periodic assessments of actual performance compared to specific objectives, targets, or standards.

Rehabilitation / Renewal: Maintenance performed on an asset to restore it to its original level of service or capacity and achieve its useful life, which may result in an extension of the asset's service life.

Retirement/Removal: Decommissioning or removal of an asset through disposal, abandonment, demolition, or sale that may involve retiring deteriorated assets and recovering salvage value.

Risk: The chance of something happening that will have an impact upon objectives. Risk is measured in terms of likelihood and consequences.

Risk Analysis: A systematic use of available information to determine how often specified events may occur and the magnitude of their consequences.

Risk Management Strategy: The systematic application of management policies, procedures and practices to the tasks of establishing the context, identifying, analyzing, evaluating, treating, monitoring and communicating risk.

Triple Bottom Line: A method to categorize the benefits and impacts an organization can expect from investing in its assets. The benefits are categorized into Social, Economic, and Environmental benefits to ensure a comprehensive evaluation in the decision-making process (measure, manage and report).

Useful Life: The period of time over which an asset is expected to deliver efficient service with normal or appropriate maintenance (defined as accepted industry standard or documented local experience).

Appendix 6: Service Level Examples—City of Portland

Overview

The CAM group seeks to develop meaningful and measurable service levels, based on system needs that match the expectations of customers to guide funding and investment decisions. This is Task #1 of the CAM group's 10-year work plan (see pages 9 - 20 of this report). Each service level serves the bureau's specific needs, and will evolve over time.

Four bureaus have submitted service level examples:

- Portland Water Bureau
- Bureau of Environmental Services
- Portland Bureau of Transportation
- Portland Parks and Recreation

Water

Following is the Water Bureau's FY 2010 – 2011 Progress Toward Meeting Infrastructure Service Level Indicators, prepared by the Water Bureau Asset Management Program, October 2011. The table depicts some, but not all, of the Water Bureau's existing service levels.

The Water Bureau established service levels within its Strategic Plan with four purposes in mind:

1. to pledge a level of service to its customers, for whom they will track progress and report results
2. to help maintain focus on delivering results on the strategic objectives and tactics
3. as a management tool to help allocate resources and to enable course corrections
4. to measure its service in comparison to other similar utilities recognized for achieving "best practice"

Service levels focus the Water Bureau's efforts in categories that include water quality, customer service, construction, financial health, infrastructure management, workforce and workplace excellence, and conservation and sustainability. The Water Bureau completed its third annual "progress towards meeting service level indicators" report. Twenty-two of 27 key service levels were met in FY 2010 – 2011.

The Portland Water Bureau Strategic Plan 2008 – 2011 is available here: www.portlandonoline.com/water/index.cfm?a=328185&c=55152.

FY 10-11 Progress Toward Meeting Infrastructure Service Level Indicators

Portland Water Bureau – Strategic Plan Implementation

October 2011

Service Level Indicator	Status as of October 2011	Related Strategic Plan Tactics
A. WATER QUALITY		
A.1. 100% compliance with state and federal water quality regulations	**Current Status: Service Level Met** The bureau is currently in compliance with all federal and state drinking water quality regulations. For further details on water quality results/compliance, see: http://www.portlandonline.com/water/index.cfm?c=29551	1.A. Reorganize and update water quality functions and staffing, including appointment of a Water Quality Manager 1. B. Improve distribution system water quality using proactive monitoring and unidirectional flushing 4.A. Pursue an administrative

Service Level Indicator	Status as of October 2011	Related Strategic Plan Tactics
A.2. Maintain minimum service pressure of 20 pounds per square inch (psi) during normal demands 99% of the time	**Current Status: Service Level Not Met** (service area not yet fully monitored) 59 "below minimum pressure" incidents were detected. 286 individual services dropped below 20 psi for at least five minutes one or more times. 0.004% of service-minutes were below 20psi. 33 (11%) of 288 SCADA points available for pressure-dip screening have identified threshold values. These 33 locations monitor approximately 44% of Portland's retail services.	variance and/or legislative alternatives to LT2 requirements for Bull Run treatment and open finished water reservoirs. 8.D. Enhance security throughout the water system. Modernize security practices and infrastructure.
A.3. Fewer than 7 complaints per 1000 customers per year *Definition currently limited to water quality/pressure complaints received via Water Line.*	**Current Status: Service Level Met** 6 complaints per thousand connections (based on 1136 complaints received via the Water Line).	
A.4. Chlorine residual between 0.5 and 4.0 mg/L total chlorine at 95% of key sample sites (NEW)	**Current Status: Service Level Met** Chlorine residual was between 0.5 mg/L and 4.0 mg/L in 99% (3377 out of 3411) of the samples taken for purposes of the Total Coliform Rule.	

C. CUSTOMER SERVICE – CONSTRUCTION		
C.1. No more than 5% of customers out of water for more than 8 hours a year	**Current Status: Service Level Met** 503 connections (0.28%) had total outages of 8 hours or more (includes planned and unplanned events)	2.D. Increase number of maintenance districts to provide better customer service and improved accountability
C.2. No customer out of water more than 3 times per year	**Current Status: Service Level Not Met** WOTA data did not indicate that any customers were out of water more than 3 times in the last 12 months. SCADA data, however, indicated four pressure drops at Saltzman tank. Each incident would have left six customers out of water.	3.B. "Right-size" the construction crews to better match size and skill composition of the crew to the project need 3.C. Improve availability and accuracy of key system data, including deployment of the first phase of mobile technology and completion of GIS mapping
C.3. Complete 90% of service installs within 15 days (measured on date of actual install)	**Current Status: Service Level Not Met** Completed 226 small service installs. 76% were completed within 15 days (up from 60% in 09-10). Average time for service installs was 13.4 days.	
C.4. At least one working hydrant within 500 feet of service connection. If working hydrant is not available within 500 feet, out-of-service hydrant must be brought on-line within 5 business days.	**Current Status: Service Level Met** Weekly Out-Of-Service & Back-In Service reports do not indicate any cases where a hydrant remained out of service for more than 5 business days if there was not another working hydrant available within 500 feet.	

C.5. More than 90% of flow control valves will operate when needed	**Current Status: Service Level Met** Over 95% of small diameter distribution main valves tested were accessible and operated when tested (5,134 small valves operated; 31 were inoperable; 105 were paved over or buried) Over 95% of large diameter distribution main valves tested were accessible and operated when tested (1,336 large valves operated; 0 were inoperable; 1 was paved over).	

E. INFRASTRUCTURE MANAGEMENT		
E.2. Achieve continuous improvement in maintenance best practice, measured as average improvement in 10 best practice indicators as compared to the previous fiscal year	**Current Status: Service Level Met** Implementation of best practices improved to 55% from 41% in FY 09-10.	3.A. Continue to implement a risk-based asset management approach to assist in managing operations, construction and capital planning (including business cases and reliability-centered maintenance, RCM) and to thereby improve service effectiveness with the available resources

E.3. Meet at least 80% of standards established for inspection, testing, repair and replacement of assets that are identified as high or extreme risk. Risk scenarios rated extreme require immediate action.	**Current Status:** **Service Level Met** 100% of known extreme risk assets are meeting standards 83% of known high risk assets are meeting standards	4.B. Complete designs for treatment facilities and obtain state approval of plans for retirement of open reservoirs -- to implement if administrative and legislative LT2 efforts are not successful. 5.D. Maintain and improve partnerships with key City bureaus (Parks, PDOT and BES) to encourage upfront collaboration, especially on infrastructure planning 8.C. Estimate costs and define priorities for future infrastructure investments (based on analysis of asset status and condition, and definition of desired service levels) 8.E. Continue to improve emergency preparedness, including participation in regional and state cooperative programs

Environmental Services

The following table is BES' Levels of Service Table (90% Complete), prepared by the BES Asset Management Program, October 2011.

Since completion of its 2006 Strategic Plan (Mapping the Future: Our Clean River Guide), the bureau has reported annually on 43 Performance Measures organized by the seven action items in the 2006 Strategic Plan. Copies of the annual performance measure reports can be found at *http://www.portlandonline.com/bes/index.cfm?c=45507* .

In January 2011, the bureau published its first annual report for the Asset Management Improvement Program (*http://www.portlandonline.com/bes/index.cfm?c=31012&a=339334*) which includes a draft level of service table.

In 2011, the bureau updated its strategic plan (*http://www.portlandonline.com/bes/index.cfm?c=31319&a=364754*). The 2011 – 2016 Plan is built around five Action Areas: Accountability, Community Partnership, Environmental Leadership, Equity, and Stewardship under which there are 16 strategies. Work over the next year, will focus on aligning the Levels of Service from the Asset Management program with the strategies in the Strategic Plan and making the corresponding adjustments to the bureau's performance measures.

Other asset management related work includes the use of benefit/cost (nBCR) ratios in the Combined and Sanitary Sewer Elements of the System Plan, the ongoing validation of the risk model for pipe rehab (using real life examples to test the model assumptions), and a pilot application of nBCR in a small watershed (Stephens Creek).

Bureau of Environmental Services' Asset Management Program – October 2010

Levels of Service Table: 90% Complete

Customer Core Value	Strategic Outcome	Customer LOS	Technical LOS
Accessibility			
Fulfill BES mission for entire service area.	• Services are available to the whole community.	• All customers are provided with sewer and stormwater services.	• Provide sewage and stormwater infrastructure service to support development consistent with Portland's Comprehensive Plan.
Affordability and Cost Effectiveness			
Provide cost effective services to customers.	• Services are affordable and managed at the lowest long term cost for the required level of service.	• Customers feel sewer and stormwater connection fees are reasonable (Refer to Services, Efforts, and Accomplishments). • Ratepayers are satisfied with the fairness, equity and affordability of BES fees and charges. • Ratepayers are satisfied with the value received from BES services, programs, and investments.	• Revenue recovers cost of service. • An effective rate stabilization fund is maintained at a prudent level based on current and near-term financial requirements. • No more than 25% of households pay over 2% of their income towards sewer & stormwater rates. • Capital Improvement Program is managed on time, within scope and budget, and to the appropriate standard. • Operation, maintenance and renewal expenditures are managed within budget and to the appropriate standard.

Accountability and Transparency

Work in partnership with the community.	• The community is involved in all significant decisions. • All customers are treated in a fair, consistent, and respectful way. • Private property owners fulfill their responsibilities for sewer connections and stormwater management. • Regulatory compliance is achieved.	• Customers are satisfied that they have been adequately consulted about wastewater/stormwater and watershed issues. • Customers have easy access to the long term plans for wastewater and stormwater systems and watershed management. • BES authority vs. customer responsibility are clearly explained in brochures and/or on the website. • Property development policies are consistently applied. • Property owners are in substantial compliance with laws and regulations.	• Effective community outreach is provided for projects, programs, and the budget and rate-making processes. • Decisions are documented and accessible to the public. • Budgets are reviewed through a public process. • Customers properly connect and maintain sewer connections per City standards. • Customers are supported and enabled to manage stormwater onsite, prevent pollution from entering surface water and groundwater, and protect upland vegetation. • BES is in substantial compliance with relevant laws and regulations.

Customer Core Value	Strategic Outcome	Customer LOS	Technical LOS
Public Health and Safety			
Protect public health.	• Wastewater is managed to protect public health. • Stormwater is managed to protect people and property from the impacts of flooding. • Utilities function during disasters.	• No wastewater escapes due to faults in the public wastewater system. • No health nuisance reported from facilities or assets. • No injuries can be attributed to poorly maintained BES infrastructure. • People, property, and structures are protected from the impacts of flooding and erosion. • Water contact is safe for recreational use. • A business continuity of operations plan is in place, and has been approved by the appropriate authorities.	• Convey sewage to prevent releases to buildings or streets up to a 25-year storm frequency. • Prevent Combined Sewer Overflows to frequencies established by the NPDES permit. • Adequate safety measures for BES staff and the public are in place when we conduct our work. • Public sanitary/storm/combined conveyance and treatment facilities are operated and maintained in accordance with standards to function to design criteria. • Ditches, stormwater pipes, and public culverts (road drainage only- not streams) are managed to convey the 10-year design storm without overtopping or surcharging per the Sewer and Drainage Facilities Design Manual. • Impacts from flooding and erosion are adequately managed.

Environmental Health

Value our natural environment and watershed health to support biological communities.	• Water quality is protected and enhanced. • The natural hydrologic cycle is restored by managing stormwater as integral to the groundwater and surface water systems. • Habitat is protected and enhanced. • Biological communities are restored and protected.	• Citizens/ratepayers are satisfied with the quality of shorelines, rivers, and streams. • Citizens/ratepayers are satisfied with the quality of upland habitats, open spaces and natural areas.	• Sewage releases to surface waters are prevented for all storm events up to a 5-year frequency. • Treatment plants are in compliance with NPDES effluent limits. • The quality of receiving water is enhanced and maintained at levels required for sustainable watershed health. • Discharges to natural streams mimic or enhance natural stream flows. • Maintain or improve hydrologic connectivity, floodplain function, and nutrient cycling functions of existing wetlands, riparian, floodplain and uplands. • Natural stream corridor connectivity and conditions are improved and maintained from headwaters to mouth. • Protect or restore natural sediment delivery processes that are supportive of system appropriate stream channel conditions for biological communities. • Maintain or increase native vegetation in riparian areas and uplands. •Maintain fish passage at culverts in historically accessible stream reaches with ESA-listed species.

Customer Core Value	Strategic Outcome	Customer LOS	Technical LOS
Sustainable Practices			
Provide long term reliability.	• Facilities are managed with respect for future generations. • Resource conservation and reuse is maximized. • Environmental equity is achieved. • BES is a good neighbor. • BES procurement practices provide equitable business development opportunities and use of historically underutilized businesses.	• A system plan is in place for wastewater and stormwater and watersheds, approved by the appropriate authorities, and kept current. • Risk is managed in all social demographics and geographical areas. • No discernable noise from pump stations or treatment facilities. • No discernable sewage odor from conveyance system, pump stations, or treatment facilities. • Public contracts benefit historically underutilized businesses.	• System plans are kept current to direct reinvestment into the system. • Assets are cost effectively maintained to meet performance expectations. • CIP requests are evaluated against the current risk profile. • 100% of biosolids are beneficially reused. • 90% of methane is beneficially reused. • Projects are equitably distributed to eliminate public health risks and provide environmental benefit across all social and economic demographics. • MWESB participation goals are met, procurement audit is passed, and contract regulations and code are met. • BES work force has current training in all skill areas required to perform up to expectations. • BES work force is given opportunity to contribute at the highest level required by their classification.

Reliability and Responsiveness

Provide responsive, reliable services to customers.	• BES maintains services at levels that are acceptable to property owners and ratepayers. • Failures and service requests are responded to promptly.	• Customers are satisfied with the reliability of their wastewater/ stormwater services. • All affected customers receive at least 24 hours notice of any planned shut down. • A 24 X 7 service is available for reporting problems. • Response to system failure is appropriate to the incident. • All complaints are acknowledged within one day. • All complaints are responded to within one week. • Effective public notification of traffic impacts due to construction and maintenance projects is provided. • Response to urgent (health/safety related) service requests is provided within 2 hours.	• Unplanned service disruptions occur no more than once in 25 years for no longer than 24 hours. • All complaints are acknowledged within one day. • All complaints are responded to within one week. • The public receives effective notification of traffic impacts due to construction and maintenance projects. • BES responds to urgent (health/safety related) service requests within 2 hours. • BES provides accurate locates of its facilities.

Transportation

The following table is PBOT's Infrastructure Asset Report Card – 2010, prepared by the PBOT Asset Management Program, November 2011.

PBOT recently completed a project to develop asset-specific levels of service. These levels of service focus on the maintenance of existing transportation infrastructure. The purpose was to develop and implement levels of service for each asset class to track and monitor performance and outcomes achieved.

Transportation agencies have used levels of service (also known as performance measures) for many years to help track and forecast the impacts of transportation system investments, monitor the condition of highway features, and gauge the quality of services delivered by an agency. Tracking levels of service will allow PBOT to report, on an annual basis, progress towards achieving goals for the maintenance of existing transportation infrastructure.

There are several documented benefits to tracking performance:

1. Greater accountability to policy-makers, the agency's customers, and other stakeholders.
2. Increased organizational efficiency in keeping agency staff focused on priorities
3. Improved communication of information about the transportation system to customers, political leaders, other stakeholders, and the public
4. Ongoing improvement of business processes and associated information through feedback

The PBOT infrastructure asset report card on maintenance is found here: *www.portlandonline.com/transportation/index.cffm?c=47266&a=383155*. The City of Portland Bureau of Transportation 2011 Asset Status and Conditions Report is found here: *www.portlandonline.com/transportation/index.cfm?c=47266&a=383154*.

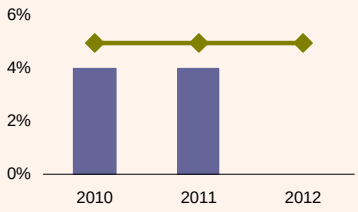
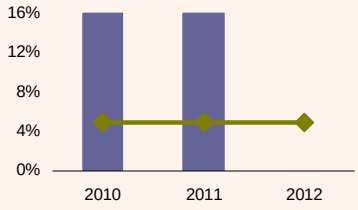
CITY OF PORTLAND BUREAU OF TRANSPORTATION

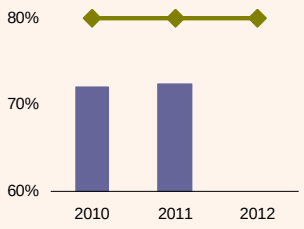
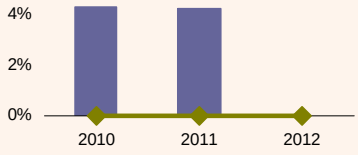
Infrastructure Asset Report Card - 2010

Met or exceeding target

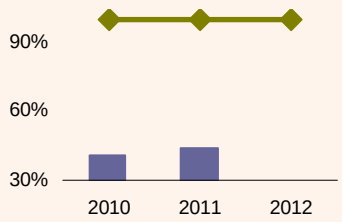
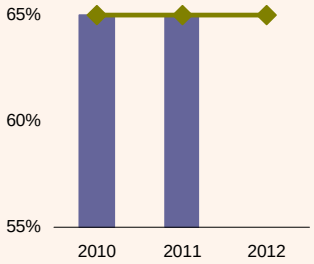
Not meeting target

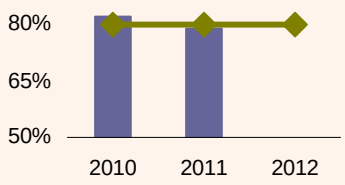
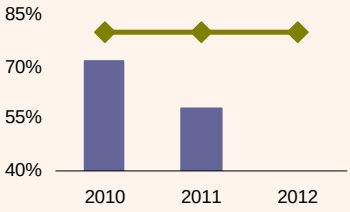
Target Results

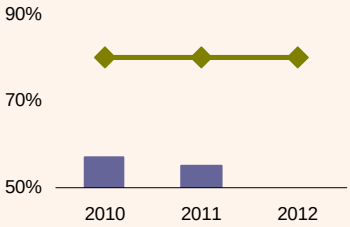
BRIDGES	Rating	Target	Result		
Bridge condition – % of bridges requiring critical maintenance		5%	4%		Addressing critical maintenance needs will prevent bridges from falling into worse condition. Inspection is done every two years, is measure is a carryover from previous year.
Bridge condition – % of bridges that are weight restricted		5%	16%		Structural integrity is key to movement of freight and transit.

PAVEMENT	Rating	Target	Result		
Pavement condition -- % of arterial/collector streets that are in fair or better condition		80%	72.3%		Streets in fair or better condition are likely to need preventive maintenance fixes to prevent them from falling into poor or very poor condition.
Pavement condition -- % of arterial/collector streets in very poor condition		0%	4.2%		Pavement that is in very poor condition most likely requires a rebuild

SIDEWALK SYSTEM	Rating	Target	Result		

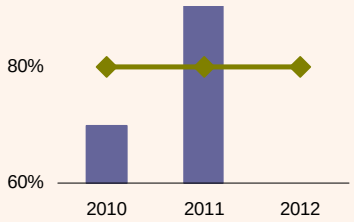
ADA Corners – % of corners in the City with corner ramps		100%	44%		Federal ADA mandates 100% of corners need ramps. Transportation aims to construct ~ 700-1,000 ADA corner ramps/year.
Sidewalk condition - % in fair or better condition		65%	65%		Measure is based upon the number of postings made Citywide.

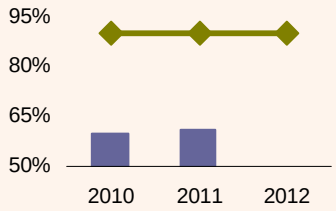
STREET LIGHTS	Rating	Target	Result		
Street Light condition - % of City maintained lights in fair or better condition		80%	82%		Currently, exceeding the target. However, with out additional funding, condition will decline as many lights are at the end of their useful life.
Street Light condition - % of PGE maintained lights in fair or better condition		80%	72%		PGE maintains these lights owned by the City. Many of these lights are at the end of their useful lives.

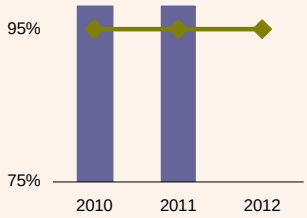
TRAFFIC SIGNAL SYSTEM	Rating	Target	Result		
System condition - % of hardware in fair or better condition		80%	57%		System condition is measured by age of signal hardware. Many signalized intersections are due for major rehabilitation.

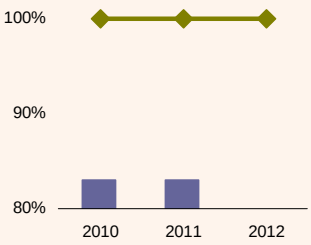
ROADSIDE BARRIERS	Rating	Target	Result

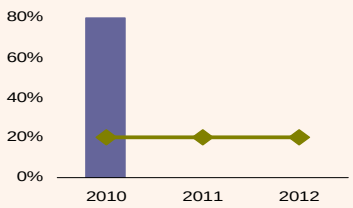
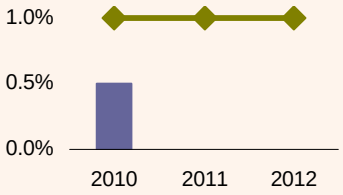
Guardrail condition - % in fair or better condition	TBD	90%	TBD	TBD	Condition assessment will begin Spring 2012

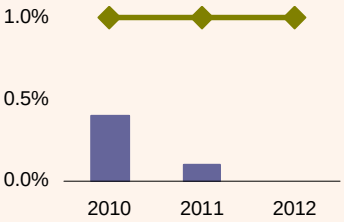
PAVEMENT MARKINGS	Rating	Target	Result		
Stripes - % lines restriped on an annual basis		80%	97%		Met level of service.

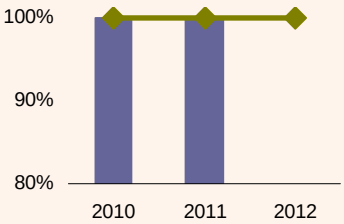
STREET SIGNS	Rating	Target	Result		
Sign condition - % in fair or better condition (warning and regulatory)		90%	61%		Based upon preliminary results from a pilot sign condition assessment program.
Sign standards - % meeting retroreflectivity standards	TBD	100%	TBD	TBD	Retroreflectivity is mandated by MUTCD

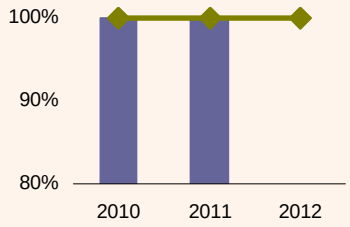
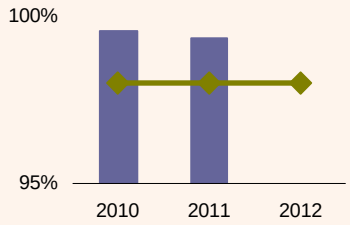
STRUCTURES	Rating	Target	Result		
Percent of retaining walls and stairways in fair or good condition		95%	98%		Condition is based upon a formalized condition assessment.

PARKING GARAGES	Rating	Target	Result		
Parking Garage structure condition - % in good or better condition		100%	83%		One garage is in poor condition. This garage is scheduled for replacement in the next few years.

PARKING METERS	Rating	Target	Result		
SmartMeter condition - % with < 2 years of remaining service life	TBD	20%	TBD		A replacement plan for SmartMeters is in place and PBOT estimates reaching the target within six years.
SmartMeter operations – % down at one time	TBD	1%	TBD		The goal is to minimize downtime so customers have reliable access for purchasing parking permits.

TRAM	Rating	Target	Result		
System condition - % of tram system in fair or better condition	●	95%	100%		Currently exceeding target for tram condition.
System operations - % of time tram inoperable due to maintenance	●	1%	0.1%		Currently exceeding inoperability target. Tram may be shut down when safety of passengers is at risk (i.e. due to wind).

STREETCAR	Rating	Target	Result		
Streetcar condition - % Streetcars in fair or better condition	●	100%	100%		Measurement for the streetcars.

Streetcar system condition - % in fair or better condition		100%	100%		Measurement of system made up of switches, overhead contact system, tracks, substations, signals, platforms.
System operations - % of time operational during scheduled hours		98%	99.4%		Exceeding target for operability.

Parks & Recreation

The following table is PP&R's 2011 Performance Measure Summary, prepared by the PP&R Strategy and Performance Team, December 2011. The primary purpose of PP&R's performance measures is to gauge progress toward organizational goals, as identified in the Strategic Plan.

Background

In 2008, PP&R formalized a performance measurement framework that links to outcomes articulated in the bureau's three year Strategic Plan (www.portlandonline.com/parks/index.cfm?a=261145&c=38306). These performance measures serves as management Levels of Service for PP&R. Assessment of progress towards outcomes is facilitated by the development of targets for each performance measure. In some cases, targets are drawn from existing planning documents, (most notably the Parks 2020 Vision) while in other cases targets have been created in consultation with program managers. For the full 2011 Performance Measures report, which includes results of how PP&R is doing in meeting the performance measure, or level of service, targets, see www.portlandonline.com/parks/index.cfm?a=380692&c=38306.

PP&R monitors performance in three categories: condition, perception and intervention measures. The interplay between the three categories of measures provides a broad context to assess progress toward achieving desired outcomes.

There are four key result areas: Manage and Protect Assets, Reach and Involve the Community, Improve Service Delivery, and Enhance Organizational Capacity. For each key result area, there are several outcomes and targets. The following tables provide a summary of the PP&R performance measures.

Portland Parks and Recreation 2011 Performance Measure Summary

Key Result Area: Manage & Protect Assets	**Target**
Outcome: Effective management of built and natural assets	
1.1a Facility Condition Index	Less than .05 is Very Good Condition (includes buildings and pools only)
1.1b Percentage of Natural Areas in very good or good condition	Updated measure and target is not currently available
1.1c Percentage of residents rating Park facilities as well maintained	67%
1.1d Percentage of residents rating Park grounds as well maintained	Maintain above 85%
1.1f Allocated funding for facility maintenance as a percentage of current replacement value	2-4% of current replacement value
1.1g Percentage of maintenance that is scheduled	52%
1.1h Acres of invasive weeds treated annually	2,000

Outcome: Adequate land and facilities are provided to meet identified recreation, open space, and biodiversity needs	
1.2a Residents living within a half mile of a developed park or natural area	100% by 2020 per the Parks 2020 Vision
1.2b Percentage of residents living within 3 miles of a full service community center	100% by 2020 per the Parks 2020 Vision
1.2c Miles of Trails	220 miles by the year 2026
1.2d Natural Areas acreage	7,614 acres by 2011
1.2e Parks Acres per Thousand Residents	Maintain 19 acres per thousand
1.2f Tree Canopy Coverage (Parks and Open Spaces)	30%
1.2g Tree Canopy Coverage (rights of way)	35%
1.2h Residents rating neighborhood closeness to Parks as good or very good	85%

Key Result Area: Reach & Involve the Community	**Target**
Outcome: The community demonstrates increased awareness and appreciation through participation in a healthy parks system	
2.1a Annual volunteer hours	Maintain above 460,000
2.1b Number of annual visits (Recreational Programs only):	New methodology implemented in 2010
Outcome: Diverse and plentiful opportunities for engagement with PP&R exist throughout the community	
2.2a The number of standing committees, boards, or advisory groups in place to advise PP&R	Measure development and data collection not complete
2.2b The percentage of constituents who feel that PP&R does a good or very good job of providing adequate opportunities for engagement	Measure development and data collection not complete
Outcome: The community feels authentically engaged and sees that their participation contributes to a better parks system	
2.3a The percentage of constituents who feel that PP&R provides high quality engagement opportunities	Measure development and data collection not complete

Percentage of residents visiting a City Parks at least once in past year	A target for this measure has not yet been defined
Percent of residents participating in a Portland Parks and Recreation activity	A target for this measure has not yet been defined

Key Result Area: Improve Service Delivery	**Target**
Outcome: High quality services that balance fiscal responsibility and affordability	
3.1a Total cost recovery rate for fee supported programs	39%
3.1b Scholarships as a percentage of total revenue	In development
3.1c Percentage of residents satisfied or very satisfied with the affordability of recreation programs	Maintain above 65%
3.1d The percentage of the residents who rate the overall quality of PP&R's recreation programs as good or very good	78%
3.1e The percentage of the public who feel the overall quality of parks is good or very good	90% per Parks 2020 Vision
3.1f The percentage of residents who rate the number and variety of recreation programs as good or very good	90% per Parks 2020 Vision
3.1g The percentage of customers rating the overall quality of their experience as excellent or good	A target for this measure has not yet been defined

Key Result Area: Enhance Organizational Capacity	**Target**
Outcome: An organization that attracts, cultivates, and develops a creative and empowered workforce	
4.1a Workers compensation claims per 100 workers	Less than 7 (City average as of 2007)
4.1b Education and training hours per FTE equivalent	Measure in development
4.1c Percentage of employees satisfied or very satisfied	Increase and maintain above 80%
4.1d Percentage of employees rating internal communication as good or very good	Increase and maintain above 50%
Outcome: An organization that reflects the customers it serves	
4.2a Minority employees as percentage of total (FTE's only)	21% - or the current minority population for the city of Portland
4.2b Female employees as a percentage of total (FTE's) only	50% - or the current female population for the city of Portland
Outcome: An organization built on continuous improvement	
4.3a The percentage of employees who agree or strongly agree that PP&R has an organizational culture built on continuous improvement	A target for this measure has not yet been defined
Outcome: An organization that integrates principles of financial, social, and environmental sustainability into decision making and work processes	
4.4a Percentage of material diverted from the waste stream at PP&R parks and facilities	25%
4.4b Annual greenhouse gas emissions (scope 1 and 2 only)	10,058 by 2020, or a 25% reduction from 2007 levels
4.4c Percentage of funding that comes from gifts, grants and donations	10% by 2020 per the 2020 Parks Vision