

# City of Portland Citywide Assets Report

---

December 2010

*(revised October 2011)*



**Progress Report:  
Citywide Asset Management Work Plan, 2010-2014**

# Acknowledgements

## **City Asset Managers Group**

Virgil Adderley, *Environmental Services*  
Susan Aldrich, *Environmental Services*  
Aaron Beck, *Management & Finance/Business Operations*  
Sarah Coates Huggins, *Portland Parks & Recreation*  
Bob Glascock, *Planning and Sustainability* (convener)  
Nancy Gronowski, *Parks & Recreation*  
Michelle Kunec, *Planning and Sustainability*  
Jeff Leighton, *Water*  
Bob Tomlinson, *Management & Finance/Financial Management*  
Jamie Waltz, *Transportation*  
Kezia Wanner, *Management & Finance/Financial Management*

## **Portland Planning & Development Directors**

Susan Anderson, *Bureau of Planning and Sustainability, Chair*  
Todd Wyatt, *Police Bureau*  
Ken Rust, *Office of Management and Finance*  
Sue Keil, *Portland Bureau of Transportation*  
Dean Marriott, *Bureau of Environmental Services*  
Zari Santner, *Parks & Recreation*  
Paul Scarlett, *Bureau of Development Services*  
David Shaff, *Water Bureau*  
John Klum, *Portland Fire and Rescue*  
Bruce Warner, *Portland Development Commission*  
Margaret Van Vliet, *Bureau of Housing*

For more information on this report, please contact:

Bob Glascock or Michelle Kunec  
Portland Bureau of Planning and Sustainability  
1900 SW 4<sup>th</sup> Avenue, Suite 7100  
Portland, OR 97201

Phone: 503.823.7845

Fax: 503.823.7800

TDD: 503.823.6868

E-mail: [bglascock@ci.portland.or.us](mailto:bglascock@ci.portland.or.us)

# Table of Contents

- Executive Summary** ..... 1
  - Key Findings
  - Directors’ Recommendations
- 1. Introduction** ..... 2
- 2. Citywide Asset Status and Conditions** ..... 2
- 3. Unmet Funding Needs** ..... 3
- 4. Related Planning Efforts** ..... 4
- 5. Citywide Asset Management Practice** ..... 5
  - History
  - Progress Report: Citywide Asset Management Work Plan
  - Progress on Previous Recommendations
- 6. Bureau Observations** ..... 16
 

*(By Bureau--Transportation, Environmental Services, Water, Parks and Civic)*

  - Bureau Highlights
  - Asset Management Approach
  - Uses of Asset Management
  - Annual Update
    - Asset Management Practice
    - Value & Condition
    - Funding Gap
    - Improvement Priorities
- 7. Appendices** ..... 28
  - 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 Methodology**
  - 5. Asset Management Information and Definitions**

# City of Portland

## Citywide Assets Report—December 2010

### Executive Summary

This is the eighth year of reporting on the status and condition of the City's physical infrastructure. These asset reports give a snapshot of five infrastructure systems, to enable effective resource allocation to deliver community services.

The City's infrastructure bureaus<sup>1</sup> collect and analyze data for this report. The Bureaus strive to use internationally recognized asset management (AM) principles and practices to enable informed decisions that best meet customer needs. The City Asset Managers Group (the CAM group) is developing a coordinated citywide AM program for all City assets, using a common approach, while allowing each bureau to strategically employ AM for their particular assets.

This report includes a progress report on the 5-year work plan for a cross-bureau approach to AM improvement. It also includes current replacement value, current and projected physical condition, and annual funding gaps for infrastructure assets. Each bureau identifies their confidence in the information presented. In some cases, information is not yet available. Bureaus are working to align methods to calculate key measures.

### Key Findings

1. The current replacement value of the City's physical infrastructure is estimated at \$22.9 billion. Current replacement value is a measure of physical assets used to deliver public services.
2. At current funding levels, some of Portland's infrastructure will continue to deteriorate.
3. The infrastructure Bureaus have estimated a combined annual need for \$312 million more than current funding to maintain existing facilities, address regulatory requirements, and/or meet service levels. This gap is expected to persist and probably grow for each of the next ten years.
4. New assets often add to ongoing operations and maintenance needs, potentially adding to the funding gap. Some new assets may replace existing asset functions and add new functionality.

### Directors' Recommendations

The Planning and Development Directors support ongoing citywide asset management and request City Council support for the following initiatives.

- Continue work to report and differentiate bureaus' annual funding gap between unmet repair, rehabilitation, and replacement needs; current capacity deficiencies and regulatory mandates. Three bureaus reported all three types of funding gap in this 2010 report. In 2011, the CAM group will work to report on all three types of funding gap, with data confidence levels, for all asset groups.
- Implement the five-year work plan for the CAM group to advance asset management practice. The CAM group will report to the Planning & Development Directors on its progress each year. The Planning & Development Directors will identify potential revisions to infrastructure service levels through the Comprehensive Plan update and advance risk management practices.

---

<sup>1</sup> Participating bureaus include the Bureau of Environmental Services (BES), the Office of Management & Finance (OMF) for City-owned buildings, Portland Parks and Recreation, Portland Bureau of Transportation (PBOT) and the Water Bureau. The Bureau of Planning and Sustainability organizes the group's meetings and reporting. OMF budget and finance staff attends to ensure overall coordination with City Council priorities and budgeting.

# 1. Introduction

---

This eighth report on the status and condition of the City's physical infrastructure takes a holistic approach to ensure that the City's assets are adequate to provide desired levels of service. This report seeks to provide coordinated, integrated, fact-based information about the City of Portland's physical assets that will enhance a 'whole-of-city' approach to asset management (AM). It provides an accounting 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 good condition and that operation, maintenance, rehabilitation, and development programs are as efficient and effective as possible.

This year's report provides the first progress report on the five year work plan (Section 5) for improvements in citywide asset management. This work plan is based on an internal assessment of bureau's 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);
  - current replacement values of city assets (see Appendix 1);
  - assessment of the current condition of each asset group, based on a five tiered rating system and associated confidence levels (see Appendix 2);
  - annual estimated funding gap (see Appendix 3);
  - calculation methodologies (see Appendix 4);
2. unmet funding needs (see Section 3);
3. related planning efforts (see Section 4);
4. citywide asset management practice (see Section 5);
5. bureau observations on their AM activities (see Section 6); and
6. basic information and common definitions for AM (see Appendix 5).<sup>2</sup>

Six of Portland's infrastructure bureaus apply asset management (AM) principles to some of their practices. Those bureaus are Transportation (PBOT), Water (PWB), Environmental Services (BES), Parks and Recreation (PP&R), Portland Development Commission (PDC), and Management and Finance (OMF). For this report, BES provides information on both wastewater and stormwater services and OMF reports on civic facilities, including government offices, police and fire facilities, parking garages, technology services, and spectator facilities. In previous reports, PDC has reported on affordable housing, however information is not available for this year's report.

## 2. Citywide Asset Status and Condition

---

A prerequisite for sound AM is relevant, reliable, and timely information about asset resources. This report includes data on 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, and the confidence levels for the information were assigned using a common scale.

1. Asset management practices ensure maximum use of existing assets, show tradeoffs, and optimize decision-making and investment planning.

---

<sup>2</sup> The definitions and confidence levels draw on several AM sources, including GHD Consultants (used by PBOT and Water Bureau), trained bureau staff, and literature searches.

2. The City's physical infrastructure has a current replacement value of \$22.9 billion. By bureau, the infrastructure value is: PBOT (\$8.0 billion); BES (\$6.3 billion); Water (\$6.7 billion); Civic (\$1.0 billion) and Parks (\$0.9 billion).
3. A gap exists between the funding required to maintain the City's infrastructure in a sustainable way, and existing funding. For 2010 alone, there is a sustainable level investment gap of \$312 million for these assets.
4. Unfunded federal mandates and external funding of capital projects add to the number and type of physical assets which, although primarily built with leveraged monies, become the long-term obligation of the City to maintain and operate. Typically, there is little or no set-aside for ongoing operating or maintenance funding for these assets prior to their construction.
5. At current funding levels, some of Portland's infrastructure will continue to deteriorate. In 10 years, two asset groups (corners and street lights) 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 improvements are made.

Section 6 of this report includes additional bureau specific observations regarding each bureau's asset management approach; uses of AM; AM practice; asset condition, replacement value, and funding gap; and AM improvement priorities. Full asset data, including condition, replacement value, and unmet need, can be found in Appendices 1 through 3.

### **3. Unmet Funding Needs**

---

A major finding of the annual asset reports (2002 through 2010) 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 year, the CAM group modified how the funding gap is defined and calculated. The group has presented funding gaps in three categories:

- **Repair, Rehabilitation, Replacement:** Additional funding necessary to repair, rehabilitate and replace existing asset to bring them up to current service levels. Also includes replacement of 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**

As the asset managers have refined methods and updated data, the estimates of annual funding gap have gone up, not down. This year, the combined annual funding gap for Transportation, Environmental Services, Water, Parks and Civic assets is \$312 million.

Running a constant funding gap or under-investing in capital maintenance 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, 800 MHz system major maintenance, 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 (PSSRP).

As noted earlier, *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 start closing the annual funding gap, and more fully maintain existing infrastructure. It is understood that City Council must balance many competing demands, and such an effort will take a number of years. The concept is to build a funding gap finance plan, with a trajectory 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 that took effect on July 1, 2008. A new provision stated that at least 25% of General Fund discretionary revenue that exceeds 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 in the two years since this provision was enacted. There was no surplus in beginning balance in FY 2009-10 resulting in no additional General Fund capital allocations. In FY 2010-11, Council allocated \$2.4 million in the Fall BMP for infrastructure maintenance or repair. Council will decide which capital projects will be funded with the \$2.4 million in the FY 2010-11 Winter BMP.

## **4. Related Planning Efforts**

---

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 Bureau of Planning and Sustainability and its partners are currently working to develop the Portland Plan, an inclusive, citywide effort to guide how Portland develops over the next 30 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.

When the Portland Plan is complete, it will set 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. Six of Portland's infrastructure bureaus -Transportation (PBOT), Water (PWB), Environmental Services (BES), Parks and Recreation (PP&R), Portland Development Commission (PDC), and Management and Finance (OMF) - apply AM principles to some of their practices.

Eight years ago, the AM focus began to broaden to a whole-of-city, or citywide focus. At that point, infrastructure bureaus began to prepare an annual citywide report on assets. These reports are presented annually to the Planning & 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, the City supports collaboration between bureaus 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	City Commissioners and bureau directors completed a strategic exercise, <i>Measuring for Results</i> . 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	<p>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, the CAM group identified common long-term AM needs and helped frame AM throughout the City using a consistent approach.</p> <p>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.</p>
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.
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 bureau's 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.
Current Practice	At present, bureaus apply elements of AM best practices according to their own needs. The CAM group continues to prepare the annual Citywide Asset Report and works by consensus 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.

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, and 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 can offer a framework and tools to examine and address infrastructure needs in order to 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, advancements in AM practice are not accomplished overnight. Each CAM group bureau encounters a unique set of challenges and barriers to implementing AM best practice. Individually, bureaus are constrained by budget and resources, limited internal coordination and expertise, limited high-quality 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 also allows a phased implementation of AM advancements to give greater flexibility to bureaus with limited resources. As needed, the CAM group will identify any additional resources necessary to complete the work plan and report to the Planning & Development Directors.

The CAM group plans to apply these best practices to all assets in the future, including shared assets and green infrastructure. 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.

## **Task #1: Service Levels**

<b>Definition</b>	Service levels establish measurable standards against which actual achievement can be compared. They include characteristics such as reliability, quality, quantity, and safety. AM planning allows bureaus to set service levels and cost of service. Both can be evaluated with customers to set the optimum service level they are prepared to support.
<b>Goal</b>	To develop meaningful and measurable service levels based on system needs that match the expectations of customers to guide funding and investment decisions.
<b>Desired 5-Year Outcome</b>	By 2015, each CAM group Bureau has established tangible service levels or performance measures, with targets consistent with industry peers. Status of key service levels is reported in annual report.
<b>Approach</b>	For CAM group bureaus without refined service levels, research and information-sharing will help identify what service level changes are needed. Bureau-level 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.
<b>Interrelationships</b>	Defining service levels for assets will set a foundation for all of the remaining work plan tasks.
<b>2010 Status</b>	Currently, bureaus have limited capacity to measure and track actual levels of service.
<b>Environmental Services</b>	BES has developed a draft Level of Service document. Benchmarks and performance measures will be developed over the next year.
<b>Water</b>	The PWB has established key service levels and completed its second annual “progress towards meeting service level indicators” report. Seventeen of 25 key service levels were met.
<b>Transportation</b>	PBOT has established service levels for some assets. Reviewing and establishing revised performance measures is a priority in the Bureau’s work plan. Creating Service Levels for Transportation’s assets is a priority for 2011.
<b>Parks &amp; Recreation</b>	PP&R has established performance measures for some assets but intends to evaluate existing measures and establish new measures as it develops its Service Delivery Strategy.
<b>Civic Facilities (OMF)</b>	Civic Facilities establishes service levels for its properties within service level agreements with tenants.

## Task #2: Risk Management

<b>Definition</b>	Risk management provides a structure for identifying and analyzing risk and determining appropriate responses to the possible impacts. It deals with degrees of uncertainty by identifying possible events, understanding their likely consequences and determining an appropriate response. Effective risk management allows bureaus to maximize opportunities and achieve their goals.
<b>Goal</b>	To identify assets with high risk of failure and to associate data collection efforts with risk classification. In more advanced stages, bureaus should use data to prioritize resources and risk management strategies and coordinate with other bureaus to identify collateral risks to other public assets.
<b>Desired 5-Year Outcome</b>	By 2015, CAM group bureaus have identified high-risk assets and have begun to prioritize monitoring and data collection within available resources.
<b>Approach</b>	The CAM group has discussed risk management methodologies and various bureaus are developing and applying bureau-specific methodologies for identifying high risk assets. The CAM group will continue to coordinate to identify potential opportunities for collaboration and next steps. As appropriate, bureaus will identify high risk assets, improve data collection for these assets and apply mitigation strategies based on asset risk classification.
<b>Interrelationships</b>	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.
<b>2010 Status</b>	Bureaus collect a variety of data on their assets, though the extent of and confidence in this data varies by bureau. Most bureaus currently have limited capacity to predict likely failure modes for assets and have not estimated the likelihood and consequences of asset failure.
<b>Environmental Services</b>	BES has identified high risk assets and is working towards more advanced and program-specific risk management strategies.
<b>Water</b>	PWB has created a risk ranking methodology, identified high risk assets and has begun ongoing monitoring activities for these assets. Ten of 11 extreme risks, 36 of 50 high risks, and 87 of 90 medium risks are meeting the standards for action. Condition assessment of high risk pipes on bridges was completed. 23 miles of high consequence large diameter pipes were tested for leaks.
<b>Transportation</b>	PBOT currently collects data on a number of its assets, but has identified risk assessment as a priority for the short term internal work plan. The risk assessment will allow for improved prioritization of resources and management of risks. Transportation is currently conducting a risk assessment for its assets. 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 inspects public buildings on a regular basis, and conducts detailed annual inspections on the heavily-used community and arts centers, swimming pools, playgrounds and play equipment. Other high risk assets will be identified and tied to monitoring and data collection.

**Civic Facilities (OMF)**

Civic Facilities inspects its properties on a regular basis. Investment priorities are based on the outcomes of these inspections, tenant feedback, and regulatory requirements.

**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' type product that displays the current and projected status of assets, identify trends and issues, and track city's path to sustainability.

**Desired 5-Year Outcome**

By 2015, a report card is included in the annual Citywide Assets Report. The report card could provide an overview of the status of the City's assets, achievement of levels of service, AM business practices, and/or levels of unmet need.

**Approach**

The CAM Group will develop a basic template that meets all bureaus' needs. The template could include status of assets, LOS, 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. Overtime, 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.

**2010 Status**

All CAM group bureaus currently provide information on assets and AM practice in the annual Citywide Assets Report.

**Environmental Services**

BES intends to produce a Level of Service and organization performance report. This work will follow Task 1.

**Water**

PWB issued an updated Water System Status and Condition report in 2010, as well as a Service Level Progress Report – see Task 1.

**Transportation**

PBOT currently produces an annual Status and Condition Report, but does not present information in a report card format. The Bureau's work plan does not include development of a report card for its assets.

<b>Parks &amp; Recreation</b>	The Bureau's current work plan does not include development of an assets report card beyond the citywide report.
<b>Civic Facilities (OMF)</b>	Civic Facilities currently updates its CIP and Asset Management Report annually, but does not use a report card format.

## **Task #4: Business Case Template**

<b>Definition</b>	A business case is an analysis tool to evaluate investment decisions. At the project level, a business case compares project alternatives, such as do-nothing, best technology at the best price, or best value for a certain allocation.
<b>Goal</b>	To develop a framework or template to justify infrastructure improvements based on lifecycle costs, benefits and impacts to the triple bottom line.
<b>Desired 5-Year Outcome</b>	By 2015, CAM group Bureaus have developed a methodology and template for business case and piloted application of the template within their bureau, as appropriate.
<b>Approach</b>	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 template, will be completed as appropriate for each bureau.
<b>Interrelationships</b>	Application of business cases could impact project priorities in the annual budget process.
<b>2010 Status</b>	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).
<b>Environmental Services</b>	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.
<b>Water</b>	The PWB has developed a business case template for evaluating decisions in terms of quantified costs and benefits. The Bureau is working to expand its use.
<b>Transportation</b>	Business case development is included as a long-term priority in PBOT's work plan and has not been completed.
<b>Parks &amp; Recreation</b>	PP&R uses established criteria for capital investment decision-making but will be developing more detailed business case processes in the future.
<b>Civic Facilities (OMF)</b>	Civic Facilities currently evaluates projects based on set criteria to develop budget decision packages. The Bureau does not currently use a formal business case template.

## Task #5: Reliability-Centered Maintenance

<b>Definition</b>	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.
<b>Goal</b>	To develop cost-effective maintenance programs for assets to address the main causes of failure and ensure assets continue to perform important functions.
<b>Desired 5-Year Outcome</b>	By 2015, CAM group bureaus have identified appropriate maintenance strategies and schedules for high risk assets, based on RCM principles. Bureaus have begun to align maintenance practices as appropriate.
<b>Approach</b>	Application of the reliability-centered approach will occur on a bureau determined basis.
<b>Interrelationships</b>	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.
<b>2010 Status</b>	
<b>Environmental Services</b>	BES is working towards reliability-centered maintenance for some asset groups.
<b>Water</b>	The 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.
<b>Transportation</b>	PBOT currently applies reliability-centered maintenance principles to some assets. The Bureau anticipates that its ongoing improvements in AM knowledge and activities will result in improved RCM practices in the future. Transportation is implementing new condition monitoring programs for several assets and will be able to use the data to implement RCM.
<b>Parks &amp; Recreation</b>	PP&R includes some reliability-centered maintenance practices in its asset maintenance and operations, but intends to formalize more practices in the future.
<b>Civic Facilities (OMF)</b>	Reliability-centered maintenance practices are not currently on the work plan for civic facilities.

## Task #6: Long-Term Investment Profile

<b>Definition</b>	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.
-------------------	---

<b>Goal</b>	To project major maintenance, repair and replacement needs by asset group over a long-term forecast.
<b>Desired 5-Year Outcome</b>	By 2015, CAM group bureaus have collected necessary data, developed tools and methodologies to project investment needs. As possible, bureaus have identified long term investment profiles for high risk assets.
<b>Approach</b>	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.
<b>Interrelationships</b>	Development of long-term investment profiles is dependent on establishment of service levels (Task 1: Service Levels) and on identification of 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.
<b>2010 Status</b>	
<b>Environmental Services</b>	BES' work plan does not currently include development of 50-year investment profiles.
<b>Water</b>	The PWB has developed 50-year investment profile forecasts for replacement of most assets. Further work is needed.
<b>Transportation</b>	Developing 50-year investment profiles is currently not on PBOT's work plan. The Bureau does project 10-year needs.
<b>Parks &amp; Recreation</b>	PP&R has completed 75-year investment profiles for community and arts centers and pools. Profiles for other assets will be completed as needed.
<b>Civic Facilities (OMF)</b>	Developing 50-year investment profiles is currently not on Civic Facilities' work plan. The Bureau does project 5-year needs.

## **Task #7: Community Information & Consultation**

<b>Definition</b>	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.
<b>Goal</b>	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.
<b>Desired 5-Year Outcome</b>	By 2015, CAM group bureaus have had informed community conversations regarding the costs of providing desired levels of service.
<b>Approach</b>	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.

## **2010 Status**

### **Environmental Services**

BES intends to develop a customer service report based on customer service feedback. The Bureau also utilizes a budget committee on an annual basis to help identify investment priorities.

### **Water**

The PWB convenes a budget committee on an annual basis to help identify investment priorities.

### **Transportation**

PBOT convenes a budget committee on an annual basis to help identify investment priorities. The Budget Advisory Committee underwent a process to evaluate current external influences that may impact the way transportation plans and budgets for maintenance, operations and capital projects (i.e. Climate Action Plan, recent modal plans and the Portland Plan).

### **Parks & Recreation**

PP&R works with its budget advisory committee to inform them about bureau needs and identify investment priorities. The Portland Parks Board and the Parks Foundation both advise and assist PP&R on budget issues. The Bureau conducts regular outreach to the community and periodic community surveys to identify priorities and establish service levels.

### **Civic Facilities (OMF)**

Civic Facilities has ongoing discussions with facility tenants to identify needs.

## 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
<b>1. Improve Asset Management Practice</b>		
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
<b>2. Report on Asset Status and Condition</b>		
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
<b>3. Prioritize Infrastructure Spending</b>		
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. The Bureau of Planning 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 within the City. 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
<b>4. Integrate with Related Planning Efforts</b>		
a. Integrate Asset Management into other planning efforts, including community visioning, strategic planning, and long term capital planning.	Asset management will be a key component of the Citywide Systems Plan (part of the Portland Plan).	Ongoing
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 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 includes 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 Observations, below, discuss the following five areas for each of the participating infrastructure systems:

- the bureau's asset management approach;
- uses of AM;
- annual updates on AM practice;
- asset condition, replacement value, and funding gap; and
- AM improvement priorities.

These bureau observations build on those included in previous annual reports.

### Transportation

---

The Portland Bureau of Transportation (PBOT) manages transportation assets with a replacement value of \$8 billion. Improved streets, the sidewalk system, bridges, traffic signals (signal hardware), and streetlights make up 93% of the dollar value (\$7.4 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 \$567 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.

#### Annual Update

##### Asset Management Achievements

- *Implemented a new Pavement Management System.* The new Pavement Management System (PMS) enables reporting on condition of streets based upon a new visual inspection methodology. With this new system, Transportation can determine maintenance timing and needs on all arterial, collector and local streets that Transportation owns and maintains. The new PMS will help Transportation effectively and efficiently prioritize the allocation of revenue to address pavement needs.
- *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. A risk registry, identifying failure modes and assigning risk of failure will be created.

## Asset Management Priorities

PBOT plans to create levels of service for all assets. 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 54,000 street lighting luminaries were replaced in the early 1980's when mercury vapor lights were converted to high pressure sodium lamps. These luminaries are now reaching the end of their useful life and will need to be replaced. Approximately 22% 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. Five hundred street lights in the South Auditorium District are being replaced through a \$4.3 million grant from the American Recovery and Reinvestment Act. Initial study into adaptive lighting is being considered, which will reduce energy consumption and PBOT's carbon footprint.
- **Signals:** Traffic signals are made up of several components (i.e. hardware, software, mast arms, controllers, cabinets and signals). Approximately 43% of the traffic signals are in poor or very poor condition. The federal stimulus provided a significant influx in resources to modernize traffic signals, but without additional resources, the condition will continue to decline. Traffic signals in poor condition are more 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 reduced greenhouse gases.
- **Pavement:** New Pavement Management Software has been installed. In addition, a new methodology for condition rating is being used and all arterial and collector streets have been rerated using the new methodology. The average Pavement Condition Index for all the collector and arterial roads is 73 on a scale of 1 to 100. Approximately 9% of the collector and arterial system is in poor or very poor condition, 30% is fair and 61% is in good or better condition and 30% are in fair condition. In 2009, City Council passed a policy to eliminate paving work on local streets. This means that approximately 60% of the pavement system will not receive preventive maintenance or rehabilitation.
- **Bridges:** In the last year, four new bridges have been added to Transportation's inventory. Of the 159 bridges the city owns, 31% are either structurally deficient or functionally obsolete; 28 of these are in poor or very poor condition including 25 that are weight restricted. This is an improvement from the previous year where 27 bridges were in poor condition and 27 were weight restricted. Weight restrictions on bridges impact the ability to move freight and goods, which ultimately has an impact to our economy. Additionally, freight has to find alternate routes, extending travel time requiring the use of more fuel and impacting the environment.
- **Sidewalk Network:** ADA required the City's public facilities be designed and constructed so that they are accessible to all people, including those with disabilities. Six percent of the sidewalk system in Portland has corners with ramps that meet *current* ADA-accessible standards. In total, 41% 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 FY 08-09, the sidewalk

inspection program was significantly reduced meaning it will take longer to inspect all of the City's residential and commercial sidewalks. The curb repair program was eliminated in FY 06-07 meaning that no preventive maintenance is conducted on curbs.

- **Parking Meters:** Starting in FY10-11, \$2,058,000 gas tax revenues generated by HB2001 were dedicated to parking paystation capital replacement. This fully funds capital replacement for existing parking paystations. The capital replacement costs for existing single space parking meters have not been identified.
- **Maintenance Facilities:** Kerby and Albina Yards are antiquated and in need of upgrading to modern standards. In addition, most vehicles are currently 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 laid out 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. Current transportation revenues are not sufficient enough to address these growing needs.

PBOT's annual \$176.7 million funding gap breaks out as follows:

- **Streets:** The funding gap is estimated at \$105.2 million, with a low level of confidence. 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:** \$19.6 million is needed annually to repair, restore or replace curbs to bring them to a fair or better condition and \$10.4 million is needed annually to build ADA accessible corners 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 Transportation to address.
- **Bridges:** The total cost to replace city-owned bridges in poor condition, and address bridge deficiencies is \$14.4 million annually.
- **Signal Hardware:** A total increase of \$18.6 million per year is needed in capital funding.
- **Street Lights:** In addition to fully funding the PGE contract, an increase of \$4.7 million per year is needed.
- **Other:** Unmet need for pavement markings, street signs, streetcar, traffic signal controllers, other equipment, and retaining walls and stairways totals \$3.8 million.

### **Environmental Services**

The Bureau of Environmental Services (BES) provides sewer and stormwater collection and treatment services to 575,000 people, numerous commercial and industrial facilities, and six wholesale

customers. The existing system consists of 1,441 miles of separated storm and sanitary sewers, 891 miles of combined sewer that carry both stormwater and sanitary waste, 911 green street facilities, 96 pump stations, and two wastewater treatment plants. These assets are valued at approximately \$6.26 billion.

### **Asset Management Approach**

Asset Management has been part of the business practices at BES for nearly 20 years beginning with the implementation of the Hansen Maintenance Management Database and condition assessment scoring in 1990. In 2008, BES participated in an international asset management benchmarking project. Early action items that were identified as a result of the benchmarking process have resulted in the development and approval of a work plan to further integrate asset management practices into the organizational culture. This culture change will lead to increased efficiencies and savings by directing dollars to the right activities at the right time and the right cost. Central to the work plan will be the setting of levels of service in collaboration with our rate paying customers. This document is currently in draft form.

### **Uses of Asset Management**

BES recently completed an update of the Systems Plan for the combined and sanitary collection systems. This update resulted in the identification of \$123 million in rehabilitation work (also see Annual Funding Gap below). A similar effort is now underway for the stormwater collection system. 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.

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.

### **Annual Update**

#### **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*. 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.

The Systems Plan for the sanitary and combined systems resulted in several new proposed capital projects as part of CIP development for fiscal years 2011 – 2015. The bureau used *likelihood of failure times consequence of failure* as part of a business case approach in evaluating new CIP projects for fiscal years 2012 - 2016. Several new projects from the Systems Plan were added into the CIP plan.

#### **Asset Value and Condition**

The overall replacement value of BES assets increased from \$5.88 billion in 2009 to \$6.26 billion in 2010 due to escalation, approximately \$ 155 million in new investment in the system, and the addition of approximately 185 green street facilities valued at an average of \$40,000 each.

There has been no significant change in the overall condition of the bureau's systems since 2009. In general, the vast majority of the sanitary (97%) and combined sewer (88%) systems are in good or very good condition. These numbers were validated through the System Plan effort. Approximately 40% of the stormwater system and 63% of the wastewater treatment system are in good or very good condition.

### **Annual Funding Gap**

The financial plan assumes rate increases of 6.5% for both fiscal years 2012 and 2013. After that, rate increases will be less, but are projected to exceed inflation in order to meet debt service payments and to address the maintenance backlog and system capacity. The total funding gap remains at the same level as reported in the prior year. The most significant issues are:

- \$123 million for rehabilitation of pipe that has exceeded its useful life and has both a high risk and high likelihood of failure, as identified in the Systems Plan;
- An undefined amount to address pipe capacity in the combine basins (estimated to be as high as \$1 billion including pipe upsizing and stormwater infiltration facilities); and
- \$60 million for capacity related projects at Columbia Boulevard Wastewater Treatment Plant.

### **Asset Management Improvement Priorities**

BES continues to participate in the Water Services Association of Australia (WSAA) AM benchmarking project to identify bureau strengths and weaknesses. Findings from this project have helped to shape the bureau's Asset Management Program Work Plan which was approved by bureau leadership. A draft Level of Service (LOS) document is currently being reviewed. Identifying benchmarks and performance measures for LOS is the next major work element.

Work on the stormwater system plan is proceeding slowly due to limited resources. The CIP Scoring committee used business risk in the evaluation of proposed CIP projects for the FY12-16 CIP. Asset management will also inform the bureau's effort to update its strategic plan.

## **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% of the water is delivered to customers within City limits. The remaining 40% is sold to customers in 19 surrounding cities 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 \$6.7 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 two years. In Fiscal Year 2009-2010, the Bureau met 17 of its 25 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 11 extreme risk assets, 50 high risk and 90 medium risks being addressed.

- 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.

## **Annual Update**

### **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 decreased from \$7.0 billion in 2009 to \$6.7 billion in 2010 due to reduced costs for replacement of certain assets, reflecting more favorable conditions in recent project costs.

There has been no change in the overall condition of the water system since 2007. In general, the vast majority (~ 90%) of supply, transmission, and distribution systems are in fair to very good condition. 80% of terminal storage is in poor-fair condition and 80% of buildings and support facilities are in poor – good condition.

### **Annual Funding Gap**

A funding gap exists in the need to replace assets in poor condition and to maintain the overall condition of other groups of assets.

Baseline unmet needs amount to about \$30 million a year. The following list reflects the Water Bureau's anticipated system needs beyond the current level of funding.

- **Distribution**
  - Replacement of hydrants: Replacement of all screw type and Corey style hydrants in poor condition.
  - Replacement of valves: Replacement of all large valves in poor condition
  - 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
  - Meter replacement: Replacement of meters at a sustainable rate
  - 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 light rail/streetcar development, bike boulevards, green improvements, or inadequate cover on road reconstruction
  - Expanded predictive/preventative maintenance program for site valves and pipes, tanks and fountains.
- **Transmission – Conduits:** There is a need to further assess condition and to replace / upgrade sections of the oldest conduits.

- **Supply:** There is a significant portion of the Bull Run watershed road system 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 that was made was 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**

---

### **Bureau Highlights**

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

- **Technology:** PP&R is currently working to upgrade the MS2000 work order system to MicroMain. This transition will help PP&R to more accurately track assets, and the maintenance conducted on them during their lifetime. PP&R is also refining terminology and definitions to ensure more accurate and consistent reporting.
- **Assessments:** PP&R has continued to conduct inspections and assessments of our asset system, with regular inspections of all buildings, pools, and play equipment.
- **Performance Measures:** PP&R's 2008-2011 Strategic Plan has identified performance measures based on its 2020 Vision. Several relate directly to asset management. PP&R is continuing to track and report on these performance measures.

### **Asset Management Approach**

All PP&R assets, both built and natural, that are owned and managed by PP&R are accounted for in five asset groups: Amenities, Buildings, Recreation Features, Built Infrastructure, 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.

## **Annual Update**

### **Asset Management Practice**

Currently PP&R is completing additional inventories and condition assessments for the smaller buildings, and has finished a draft report on furnishings in the developed parks. Roads and parking lots have been inventoried and assessed. Playgrounds have been inventoried and are assessed regularly. A marine dock assessment is underway. Inventories for other assets are underway or planned in the near future.

PP&R has updated its annual asset inspection program and is in the process of inspecting 20% of all assets each year. By 2012, all 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 Senior Planner for Asset Management and the Principal Management Analyst for Corporate Strategy, guides and coordinates the asset management program, with direction from PP&R's Senior Management Team.

Coordination between asset management, GIS and MS 2000, 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 \$874 million in 2009 to \$895 in 2010, 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 2009, although that may change as more assets are included in the inspection and assessment program. With the exception of natural resources, 83% percent or more of all assessed assets are estimated to be in fair to very good condition; 77% of natural resources are estimated to be in fair to very good condition.

### **Annual Funding Gap**

PP&R has an expected total annual funding need of \$70.6 million for each of the next 10 years. This includes meeting the needs of existing customers by providing standard levels of service for all residents, in addition to the funding needed to maintain existing assets. The funding need calculations are based on the 1-5 year, 10 year, and 20 year total list of all identified potential PP&R projects. This represents a significant increase from last year, primarily due to more accurate, updated, project estimating that was done in preparation for a potential park bond and the addition of several large future projects, such as the Washington High Community Center project.

With an average of only \$7 million received in SDC funds, grants and donations to meet that need, the annual funding gap is \$63.6 million.

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% to 4% of the asset's CRV. With an average of around 2% of CRV in funds to reinvest in past years, PP&R has consistent shortfalls and a widening gap. In 2010, PP&R had 1.9% to reinvest (based on calculation of major building reinvestment only). Additionally, the new assets being added to meet current demand will

increase future repair and replacement costs, increasing the shortfall. While city council has been able to provide about \$1 million annually to address some of the most urgent needs, the annual need for repair, rehab and replacement and mandated work is \$28.7 million annually, leaving a \$27.7 million annual funding gap. The annual need for mandated work alone is \$4.4 million.

In the current economy, many sources of funds such as PDC and grants are being reduced. Since park facilities are a very affordable and desirable source of recreation, especially in a down economy, they get very 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 asset management practices for improvement. Initial priorities are:

- improve the accuracy, completeness and consistency of data (particularly condition)
- refine level of service standards
- ensure that relevant asset management information is provided to other PP&R departments and divisions
- improve AM links to the current work order system
- expand the use of business cases for capital planning and budgeting
- use preliminary risk assessments to determine capital improvement priorities

Additional priorities are:

- complete AM plans (note: Acquisition plans are generally complete)
- complete risk analyses for all asset groups
- determine life cycle costs for all assets
- evaluate service delivery
- improve staff AM knowledge

## **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 EBS Services.

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 GO bonds approved by voters in November 2010 fully funds the Public Safety Systems Revitalization Project which will replace CAD, PPDS, 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 over 90% 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 O&M budgets for these facilities. Over the 10-year period of FY 2011 to FY 2021, overall condition will not decrease. However, without saving major maintenance money 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.

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 1.7%. 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 1.7% reinvestment level allows OMF to cover immediate needs on the 5-year horizon. This is also enough so that over the 10-year period of FY 2011 to FY 2021 overall conditions aren't 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 very low, funding for major maintenance should be increased by directing savings from efficiencies identified to major maintenance until the 3% goal is achieved.

The City has recently addressed two of its poorest rated facilities by replacing them. The City's archives center moved from an old building in Chimney Park to a newly constructed building on the PSU campus. The Police Property Warehouse moved from an old building at SW 17<sup>th</sup> and Jefferson to new space in the Guilds Lake commercial development. While this is one way to address a backlog of maintenance issues, it is expensive. But, in both of these cases the physical capacity of the old buildings was limited and restricting operations.

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% 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 \$10 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 of \$857,000 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 \$857,000 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 roof which is the most pressing need. Grants are this facilities best resource for addressing maintenance needs.

OMF has high 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. We have included the replacement values of these three assets but have no 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 medium confidence in these assessments, except in the replacement values assessment where we have a medium-low confidence level. 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.

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 is a system that will be replaced prior to FY 2021 because its condition goes beyond Poor by then. The system has to be replaced prior to FY 2021 because prior to then Motorola, the system's vendor, will not provide support to it. This is because the 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 2021 because the condition goes beyond 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

The CAD system is in the process of being replaced. Migration to the new system is now tentatively set for April 2011.

The PPDS system will be replaced prior to FY 2021. The replacement of this system is in the planning stage.

#### Telecommunications – Integrated Regional Networking Enterprise (IRNE)

The annual major maintenance funding gap for this new system is 5% of replacement value less \$306,000 we have in the rates for major maintenance. Five percent of replacement is the industry standard for large technology infrastructure and reflects the shorter life of components compared to buildings. 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 necessitated those efficiencies being turned into rate relief as opposed to replacement/major maintenance funding. The replacement value listed doesn't include the fiber provided to the City as part of franchise agreements and partnerships.

#### IT Operations

The assets in IT Operations include storage area networks (SAN), data networks, email system, and core servers. This infrastructure has a life of 5 - 7 years. Our assumption about condition in FY 2021 then is based on the infrastructure needing to be replaced twice in the 10-year period. BTS should be collecting one-seventh 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 going to poor. The fund has been able to redirect some savings from efficiencies into this replacement fund.

#### Strategic Technologies - Corporate Applications

Corporate applications include GIS, TRACS, CAD, PPDS, and CIS. CAD and PPDS were 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 is a new asset grouping to reflect the City's new enterprise business system recently implemented to replace IBIS and numerous other information system. 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

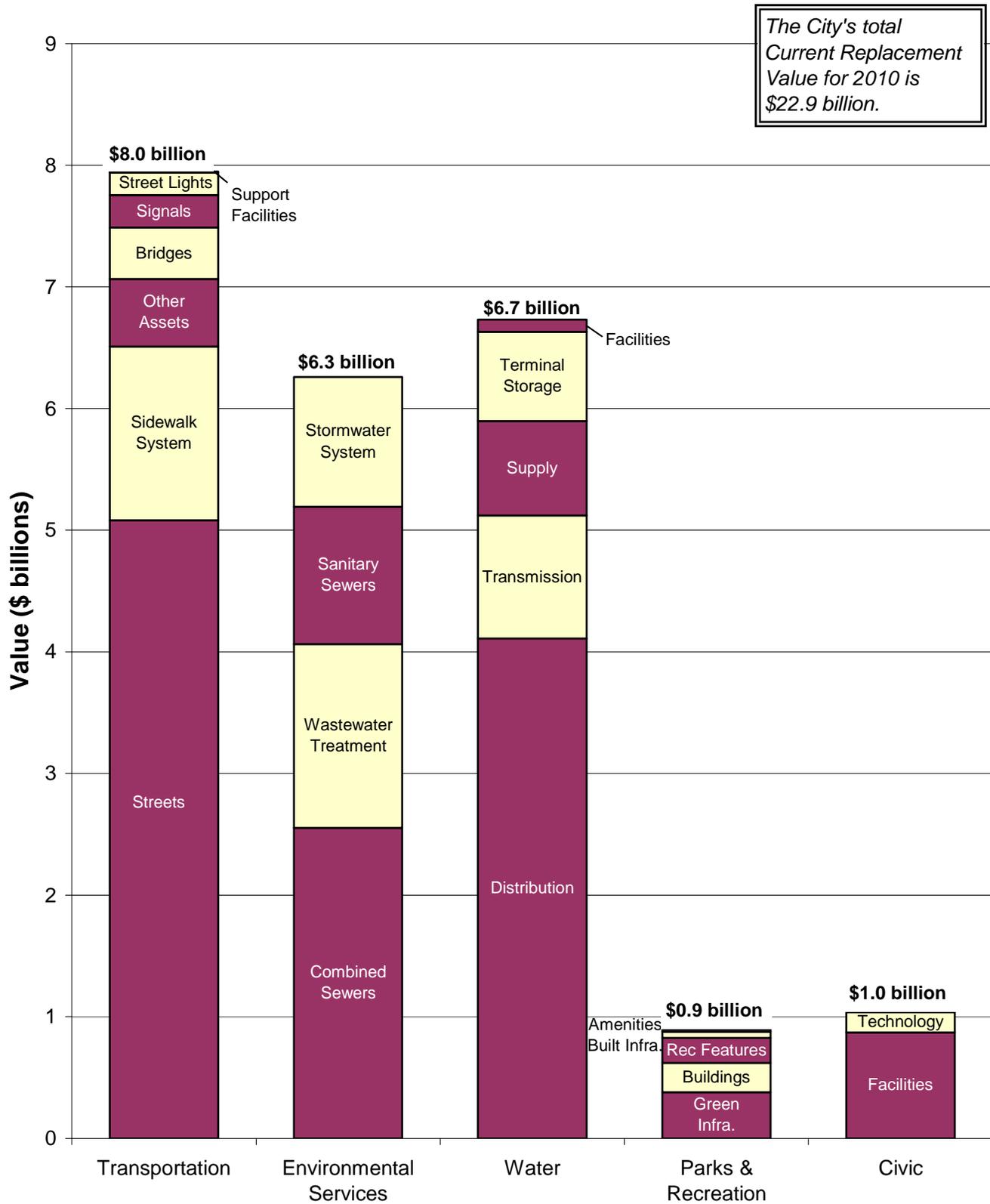
## 7. Appendices

---

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**

# Appendix 1a: Current Replacement Values of City Assets

December 2010



# Appendix 1b: Current Replacement Value of Capital Assets Data Sheet

December 2010

Capital Asset Class	Description	Value (in millions)	Confidence level	Notes
<b>Transportation</b>				
arterial & collector streets	4,931 lane miles	\$5,082.1	2 - Low	by lane mile, improved
local streets				
sidewalks	8,781,173 sq yds	\$781.5	4 - High	
curbs	3,252 centerline miles	\$515.1	4 - High	
corners	37,715 corners	\$139.6	4 - High	
structures (bridges only)	159 bridges	\$448.6	5 - Optimal	
traffic signals (hardware only)	1,070 traffic signals	\$274.8	4 - High	
street lights	54,911 street lights	\$189.1	2 - Low	
support facilities	various buildings	\$6.8	None to Low	
other transportation assets		\$560.5	Low to Optimal	
<b>Total Transportation</b>		<b>\$7,998.1</b>		
<b>Environmental Services</b>				
combined sewers	890 mi. of pipe & access	\$2,552.0	3 - Moderate	ENR 8578 to 8835 (3.0%) plus approx. \$157 million in new investment in various system components plus 911 green street facilities estimated at \$40,000 each.
sanitary sewers	990 mi. of pipe & access	\$1,127.0	3 - Moderate	
stormwater system	450 mi. of pipe & access & 911 gr.st. fac.	\$1,067.0	2 - Low	
wastewater treatment systems	2 treatment plants & 96 pump stations	\$1,514.0	3 - Moderate	
<b>Total Environmental Services</b>		<b>\$6,260.0</b>		
<b>Water</b>				
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	\$776.0	3 - Moderate	
transmission	75 miles of large diameter conduits, with various supports, 9 conduit trestles 7 river crossings, 49 miles of large diameter transmission mains	\$1,010.9	3 - Moderate	
terminal storage	220 million gallons finished water storage, interconnecting piping, post-storage treatment facilities, and microhydro facility.	\$732.4	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	\$4,110.7	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	
<b>Total Water</b>		<b>\$6,733.0</b>		

Continued on next page.

# Appendix 1b: Current Replacement Value of Capital Assets

## Data Sheet, continued

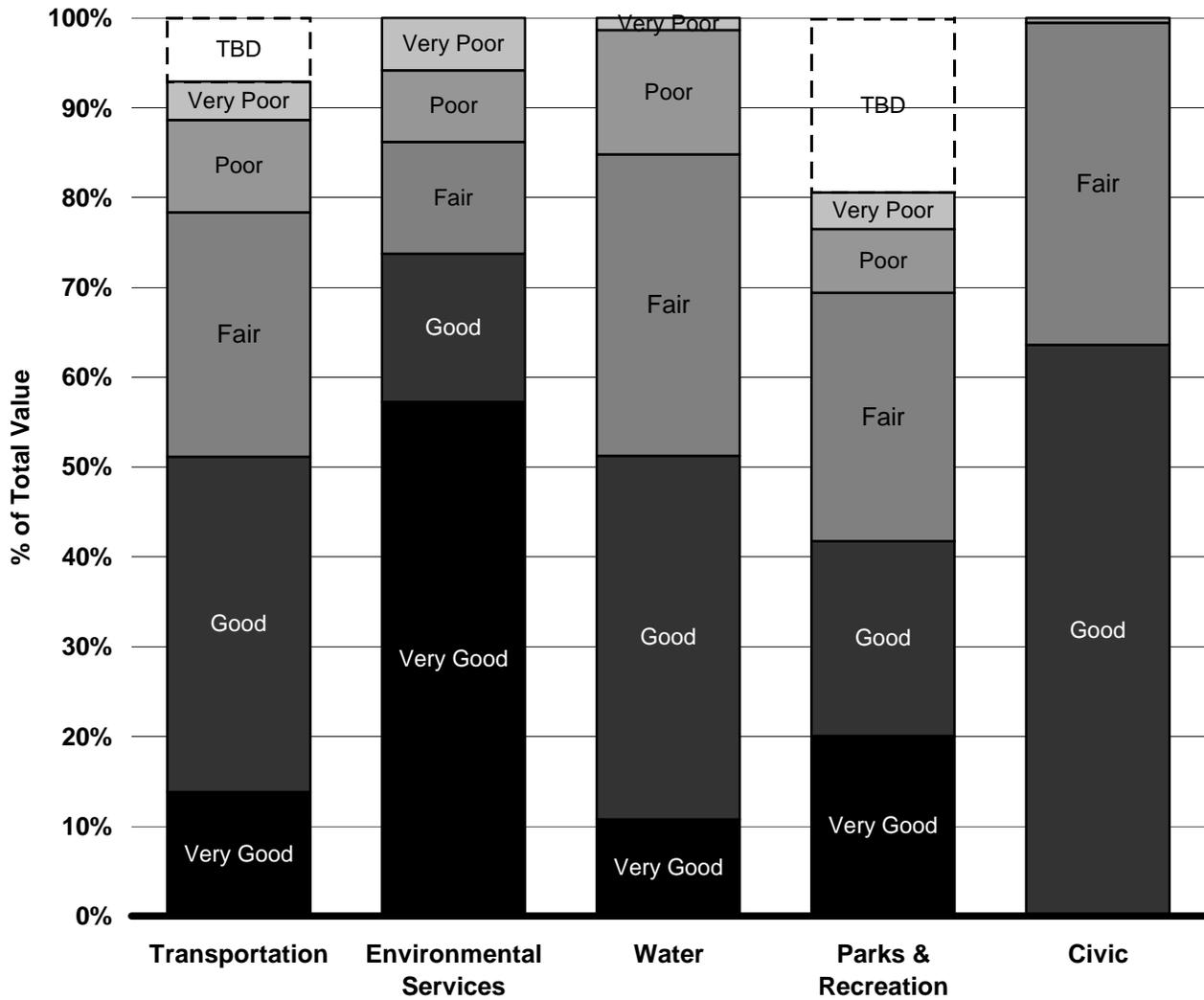
December 2010

Capital Asset Class	Description	Value (in millions)	Confidence level	Notes
<b>Parks and Recreation</b>				
<b>amenities</b>		\$16.5		Additional assets added to the PP&R system in FY 09-10 added to total, not sub-category.
decorative elements	memorials, plaques, decorative fountains	\$5.2	2 - Low	
furnishings- developed parks	benches, tables, drinking fountains, etc.	\$6.7	4 - High	
furnishings in natural areas	benches, tables, drinking fountains, etc.	\$4.1	2 - Low	
<b>buildings and pools</b>		\$241.0		Additional assets added to the PP&R system in FY 09-10 added to total, not sub-category.
community, arts, pools	major public buildings	\$148.7	4 - High	<-- includes MAC, Pittock, CM2, Community Centers, St. Johns Racquet Center, Pools
remaining buildings	minor buildings	\$92.3	3 - Moderate	
<b>recreation features</b>		\$206.0	3 - Moderate	total of all rec features escalated by 3% from 2009 to 2010.
gathering places	amphitheaters, plazas			
marine	docks, boat ramps			
off-leash areas	designated off-leash areas			
play areas	play grounds			
sports	courts and fields			
water play	spray features, splash pads			
<b>built infrastructure</b>		\$52.4	2 - Low	<-- incomplete data, escalated by 3% from 2009 to 2010. Additional assets added to the PP&R system in FY 09-10 added to total, not sub-category.
circulation	trails, walks, roads, parking lots			
utilities	gas, electric, water, sewer, irrigation			
<b>green infrastructure</b>		\$378.6		
natural areas (7,523 acres)	natural ecological systems	\$159.7	4 - High	escalated by 3% from 2009 to 2010
developed (196 parks, 3,417 acres), undeveloped (207 acres)	managed gardens, grass, trees, shrubs	\$218.6	2 - Low	escalated by 3% from 2009 to 2010
<b>Total Parks</b>		<b>\$894.7</b>		
<b>Civic</b>				
Facilities (buildings, structures)				
Police facilities	Four precincts, Justice Center, property warehouse, equestrian division, and vehicle storage lot	\$71.0	4 - High	
Office buildings	Portland Building, 1900 Building, City Hall	\$137.0	4 - High	
Other buildings	Archives and Records Center, Kerby Garage, and Portland Communications Center	\$44.0	4 - High	
Union Station	Train station and related buildings	\$31.0	4 - High	
Spectator facilities	Memorial Coliseum, Rose Quarter parking garages, and PGE Park	\$420.0	4 - High	
Portland Center for the Performing Arts	Portland Center for the Performing Arts	\$89.0	2 - Low	
Fire facilities	30 stations, administration building and support facility	\$79.0	4 - High	
Technology				
800 MHz radio system	Towers, communication devices, and backbone infrastructure	\$48.9	3 - Moderate	
Telecommunications	Telephone system	\$14.7	2 - Low	
IT operations	Email system, storage servers, data networks and core servers	\$4.5	2 - Low	
Strategic technology	Large corporate applications such as TRACS, CAD, PPDS, and Cayenta	\$48.7	3 - Moderate	
EBS	The City's enterprise business system that replaced IBIS and other info systems	\$50.0	4 - High	
<b>Total Civic</b>		<b>\$1,037.8</b>		
<b>Total Capital Assets</b>		<b>\$22,923.6</b>		

# Appendix 2a: Current Condition of Capital Assets

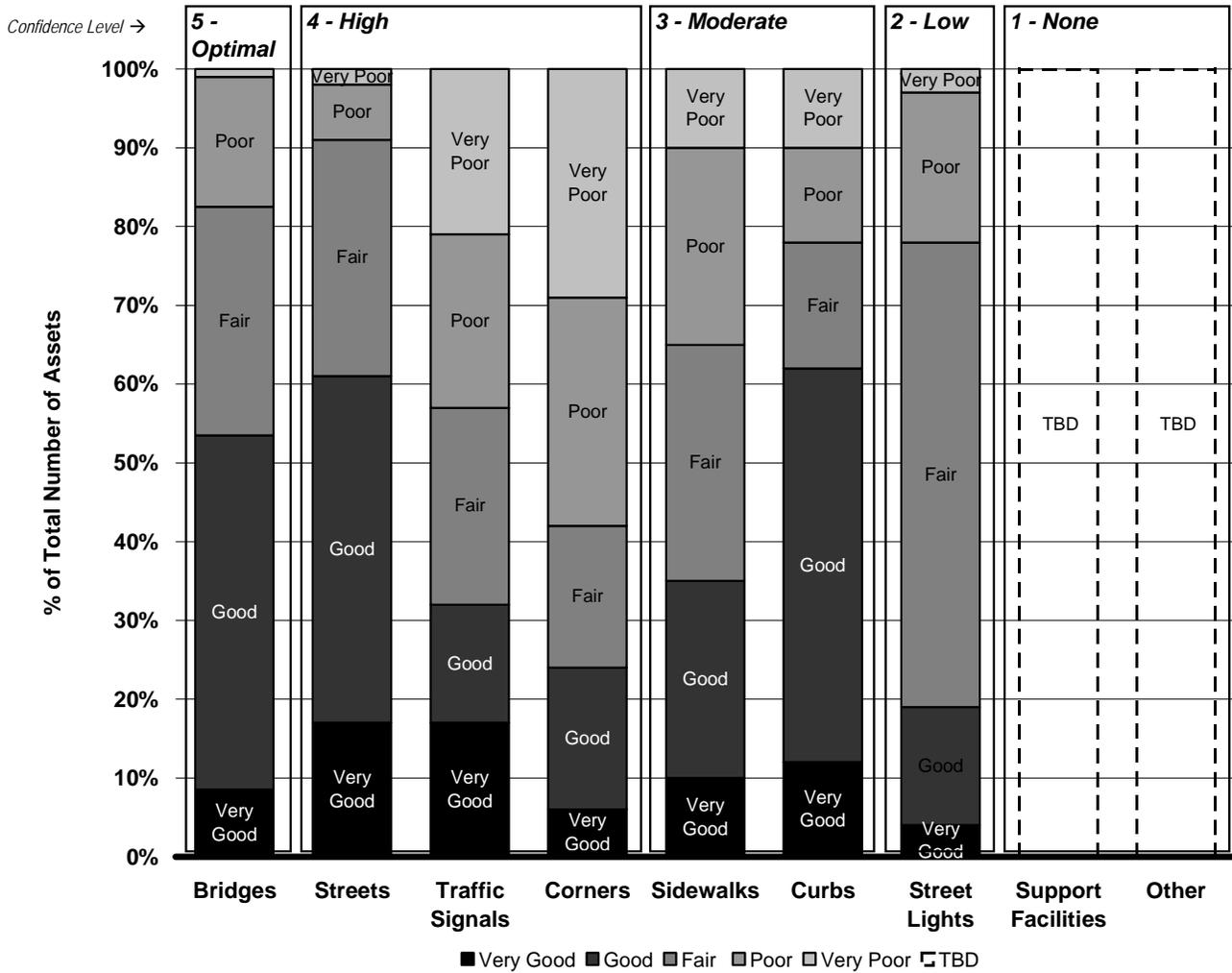
## All Assets

December 2010  
 (revised October 2011)



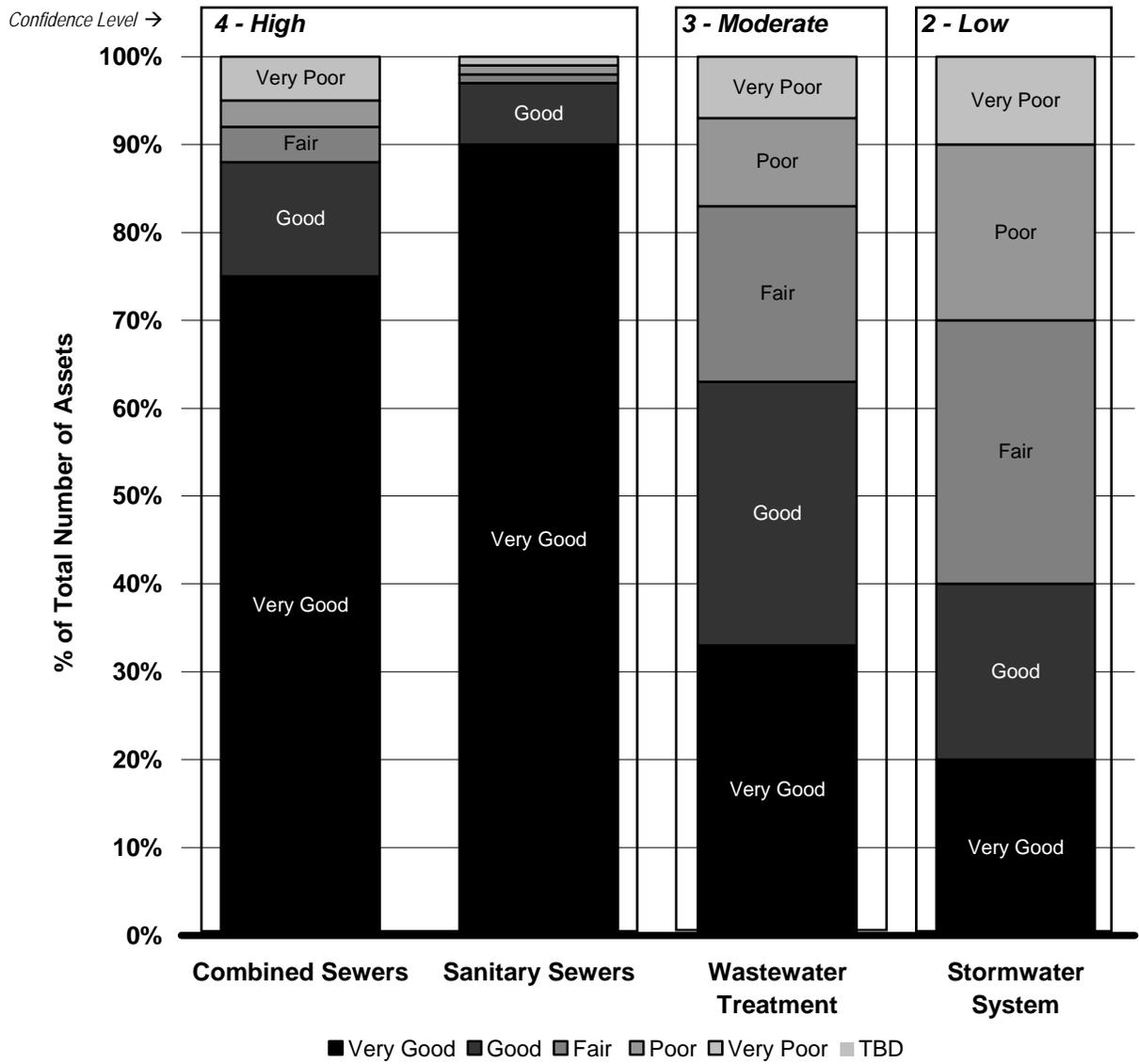
# Appendix 2b: Current Condition of Capital Assets Office of Transportation

December 2010



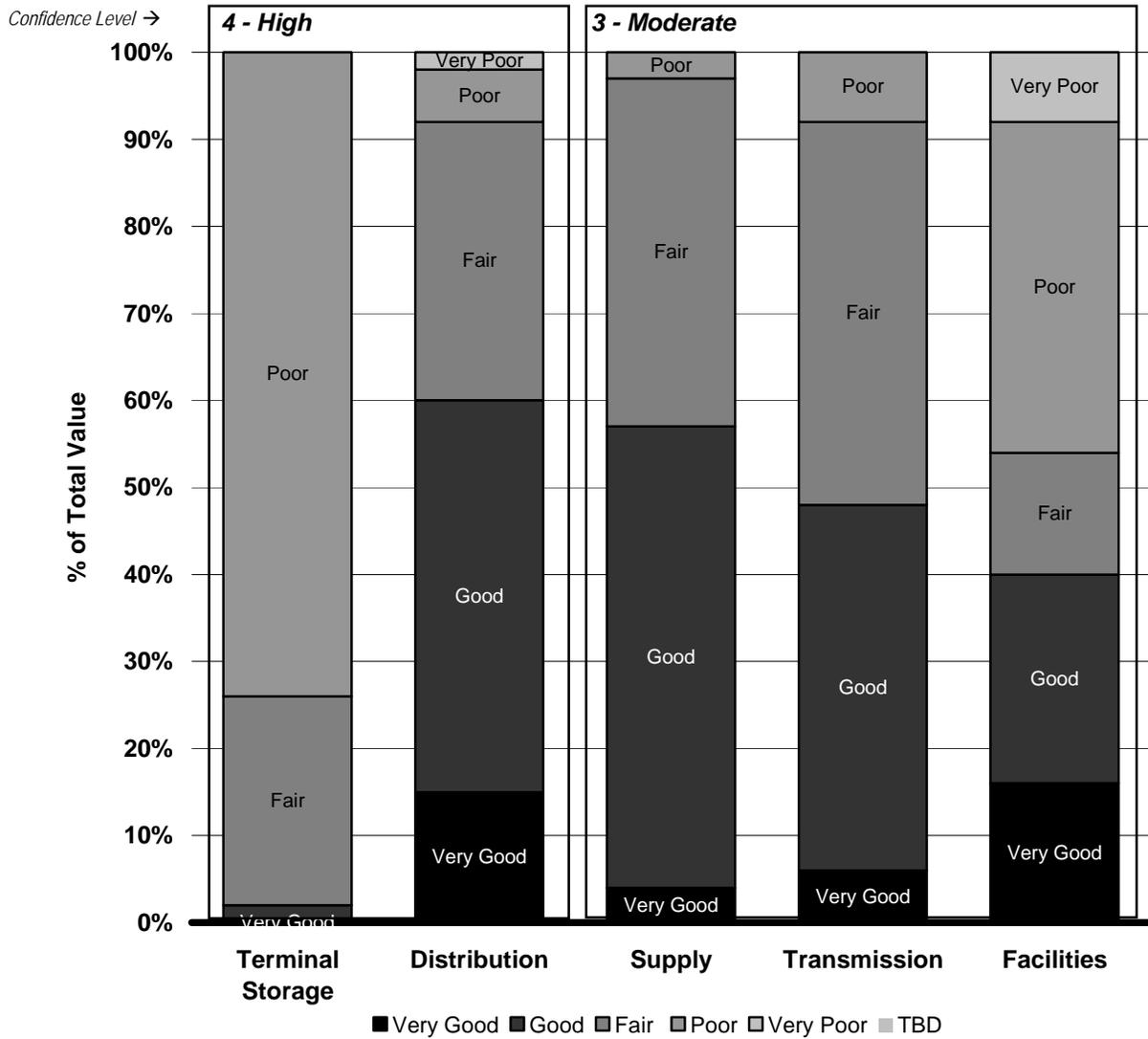
# Appendix 2c: Current Condition of Capital Assets Environmental Services

December 2010



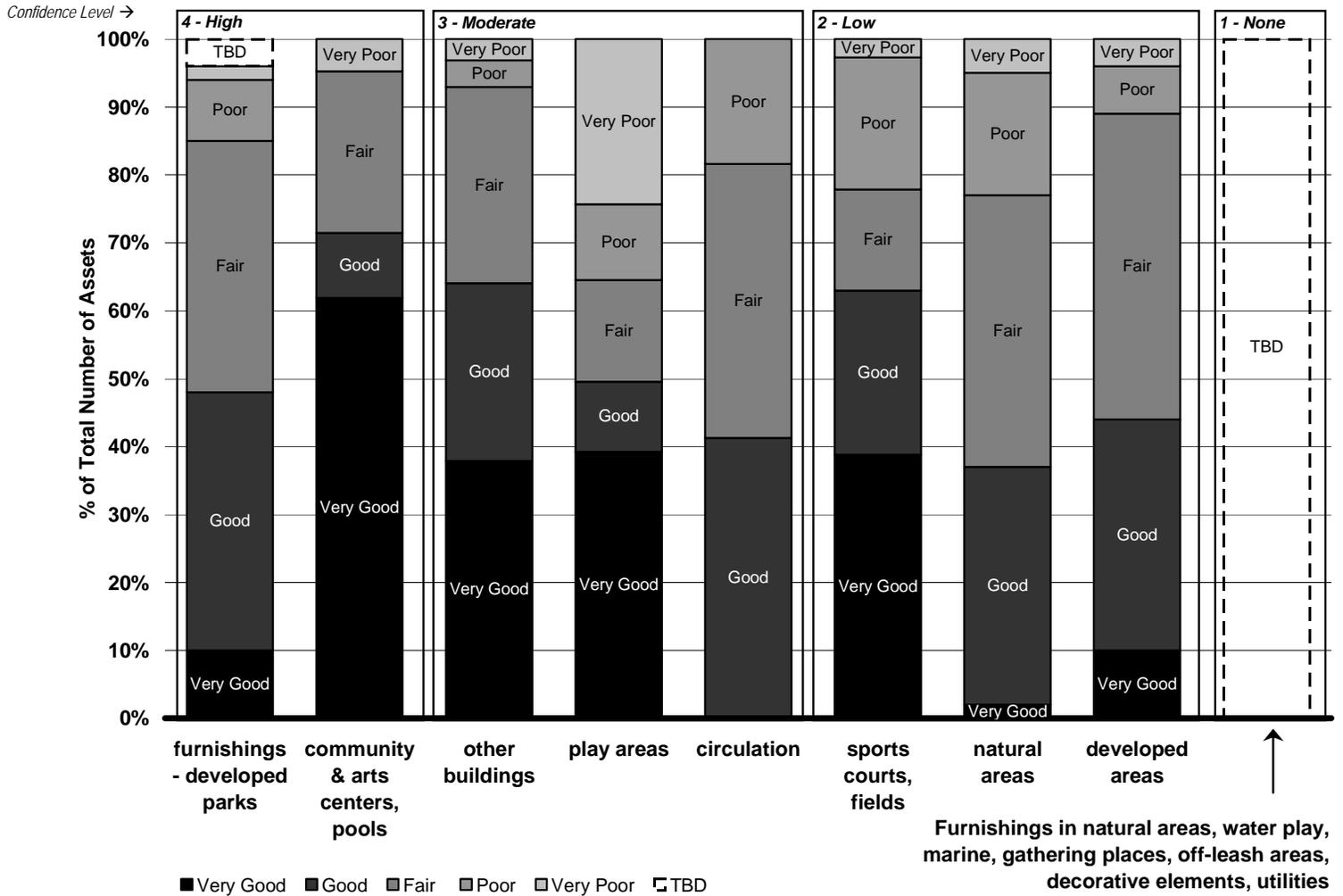
# Appendix 2d: Current Condition of Capital Assets Water Bureau

December 2010



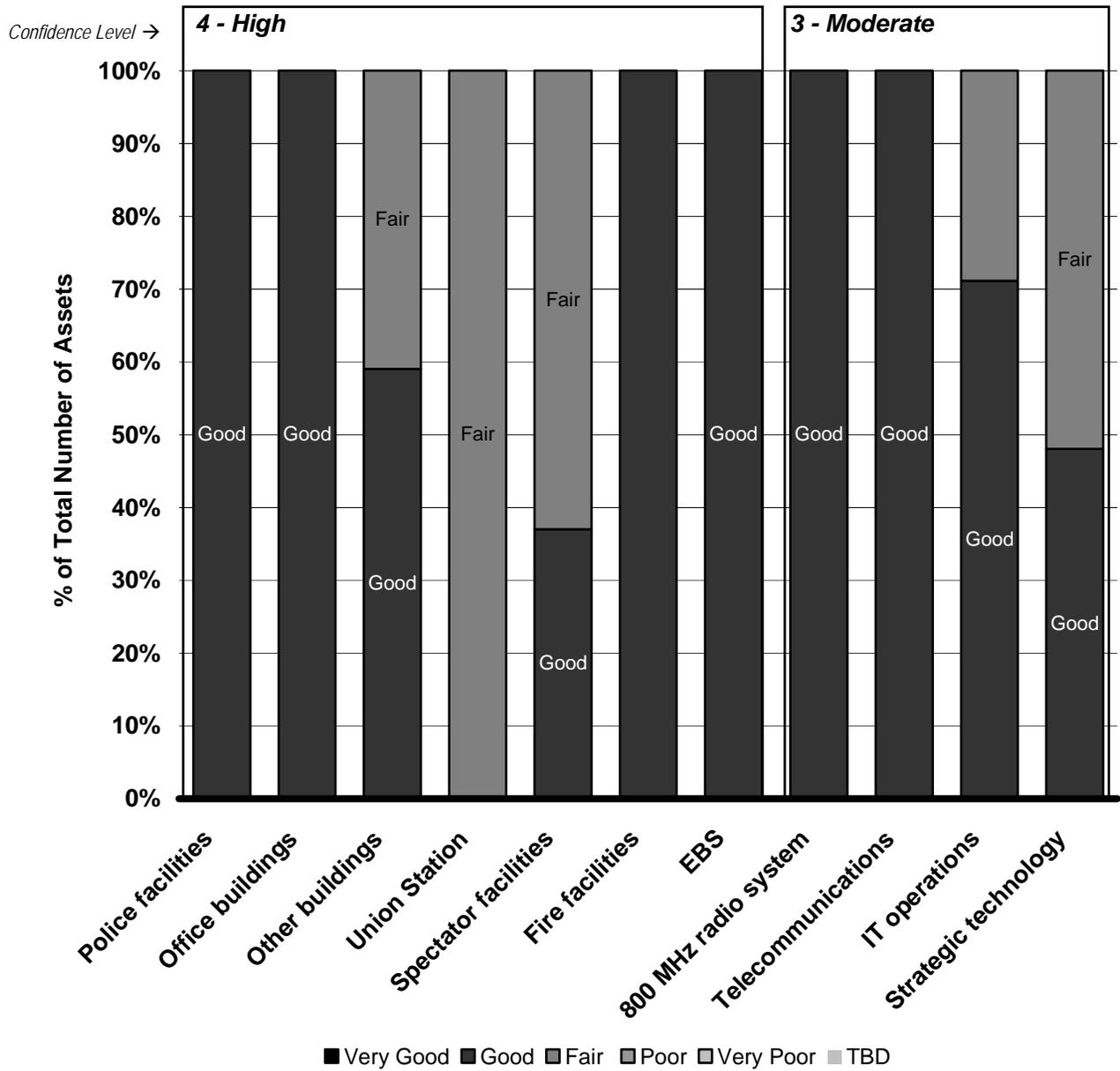
# Appendix 2e: Current Condition of Capital Assets Parks Bureau

December 2010  
(revised October 2011)



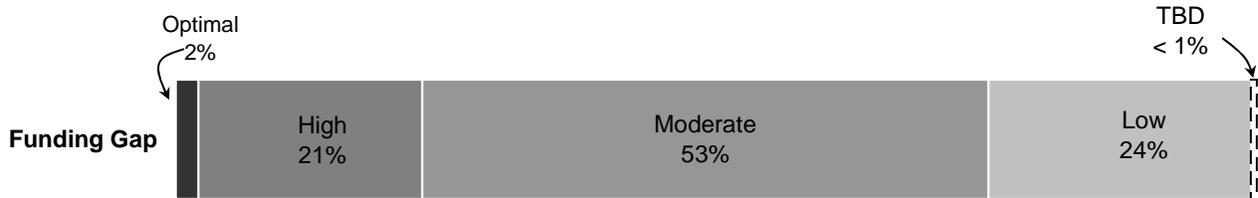
# Appendix 2f: Current Condition of Capital Assets Civic (OMF, Police, Fire)

December 2010



# Appendix 2g: Data Confidence Level Summary

December 2010



# Appendix 2h: Current Condition of Capital Assets Data Sheet

December 2010

Bureau and capital asset type	Current Condition (in %)						Confidence level	Notes
	Very Good	Good	Fair	Poor	Very Poor	TBD		
<b>Transportation</b>								
arterial & collector streets	17	44	30	7	2	0	4 - High	
local streets	0	0	0	0	0	100	tbd	
sidewalks	10	25	30	25	10	0	3 - Moderate	
curbs	12	50	16	12	10	0	3 - Moderate	
corners	6	18	18	29	29	0	4 - High	
structures (bridges only)	9	45	29	17	1	0	5 - Optimal	
traffic signals (hardware only)	17	15	25	22	21	0	4 - High	
street lights	4	15	59	19	3	0	2 - Low	Weighted average of Option B & C lights
support facilities (for PDOT & BES)	condition ranges from poor to very good						None - Moderate	
other transportation assets	condition range from poor to very good or tbd						Low to Optimal	
<b>Environmental Services</b>								
combined sewers	75	13	4	3	5	0	4 - High	Based on regular ongoing assessments.
sanitary sewers	90	7	1	1	1	0	3 - Moderate	
wastewater treatment systems	33	30	20	10	7	0	4 - High	Based on estimate of repairs for each process area. Updated CBWTP facilities plan in final draft.
stormwater system	20	20	30	20	10	0	2 - Low	
<b>Water</b>								
supply	4	53	40	3	0	0	3 - Moderate	
transmission	6	42	44	8	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	
<b>Parks and Recreation</b>								
<b>amenities</b>								
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	tbd	in process
decorative elements	0	0	0	0	0	100	tbd	low priority for assessments
<b>buildings and pools</b>								
community centers, arts centers, pools	62	10	24	0	5	0	4 - High	Inspections done in 2005-2006. Twenty percent of major buildings re-inspected in FY 2009-2010.
all buildings (major and minor)	38	26	29	4	3	0	3-Moderate	In process of inspection.
<b>recreation features</b>								
gathering places	0	0	0	0	0	100	tbd	Gathering structures included in buildings. Assessment of other gathering features to be determined.
marine	0	0	0	0	0	100	tbd	Marine dock assessment is in process.
off-leash areas	0	0	0	0	0	100	tbd	to be determined
play areas	39	10	15	11	24	0	3-Moderate	Score calculated on asset replacement cost - not current replacement cost.
sports courts and fields	39	24	15	19	3	0	2 - Low	Condition for sports courts (basketball and tennis only). Fields in process. Based on 2008 report.
water play	0	0	0	0	0	100	tbd	Wading pools shut down per new health regulations. Assessment to be determined for other spray play and PP&R managed water features.

## Appendix 2h: Current Condition of Capital Assets Data Sheet, continued

December 2010

Bureau and capital asset type	Current Condition (in %)						Confidence level	Notes
	Very Good	Good	Fair	Poor	Very Poor	TBD		
<b>Parks and Recreation, continued</b>								
<b>built infrastructure</b>								
circulation	0	41	40	18	0	0	3-Moderate	Includes paved vehicular circulation - data not available yet on other park circulation systems (pathways, etc.). Based on December 2009 assessment - only categorized Good, Fair, and Poor. No Very Good or Very Poor categories used.
utilities	0	0	0	0	0	100	tbd	to be determined
<b>green infrastructure</b>								
natural areas	2	35	40	18	5	0	2 - Low	information is from 2006
developed areas	10	34	45	7	4	0	2 - Low	inspection and assessment in process
<b>Civic</b>								
<b>facilities (buildings, structures)</b>								
police facilities	0	100	0	0	0	0	4 - High	
office buildings	0	100	0	0	0	0	4 - High	
other buildings	0	59	41	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	tbd	Working with Metro/MERC on oversight.
fire facilities	0	94	0	6	0	0	4 - High	
<b>technology</b>								
800 MHz radio system	0	100	0	0	0	0	3 - Moderate	
telecommunications	0	100	0	0	0	0	3 - Moderate	
IT operations	0	64	26	10	0	0	3 - Moderate	
strategic technology	0	48	52	0	0	0	3 - Moderate	
EBS	0	100	0	0	0	0	4 - High	

# Appendix 2i: Projected Condition of Capital Assets - 2020 Data Sheet

December 2010

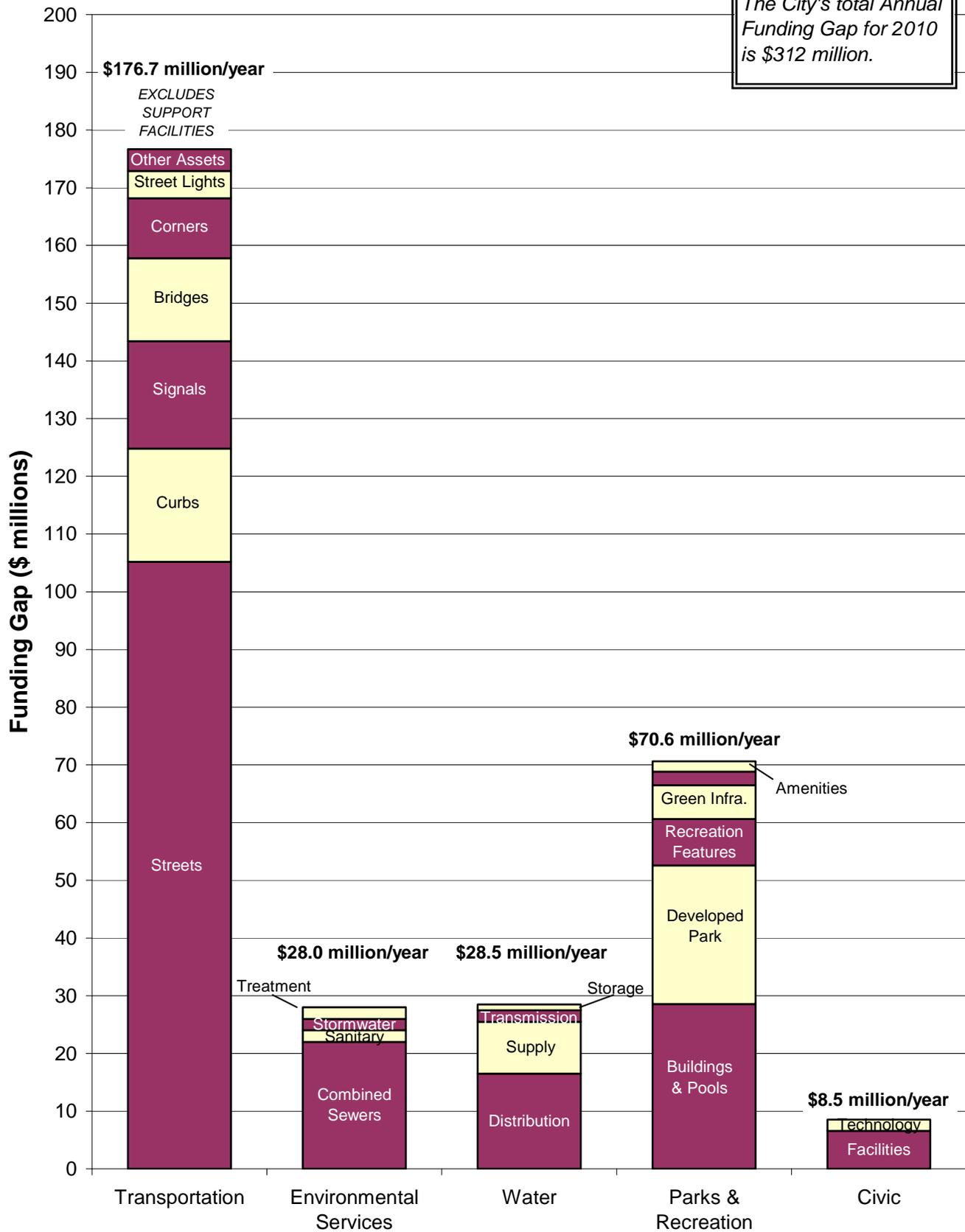
Bureau and capital asset type	Projected Condition (in %)						Confidence level	Notes
	Very Good	Good	Fair	Poor	Very Poor	TBD		
<b>Transportation</b>								
arterial & collector streets	0	0	0	0	0	100	tbd	
local streets	0	0	0	0	0	100	tbd	
sidewalks	10	20	25	30	15	0	2 - Low	
curbs	10	40	15	20	15	0	2 - 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	19	3	4	15	59	0	2 - Low	<-- Weighted average of Option B & C lights; Assumes street lights over 30 years old are replaced
support facilities (for PDOT & BES)	0	0	0	0	0	100	tbd	
other transportation assets	0	0	0	0	0	100	tbd	
<b>Environmental Services</b>								
combined sewers	76	11	6	4	3	0	4 - High	Assumes shift of resources to pipe rehab and treatment system improvements after 2012 (CSO program completion).
sanitary sewers	93	4	1	1	1	0	3 - Moderate	
stormwater system	20	20	30	20	10	0	2 - Low	
wastewater treatment systems	40	25	20	10	5	0	3 - Moderate	
<b>Water</b>								
supply	15	20	45	10	10	0	4 - High	
transmission	0	45	45	10	0	0	3 - Moderate	
terminal storage	80	0	15	5	0	0	4 - High	
distribution	15	40	35	10	0	0	3 - Moderate	
facilities (buildings and support facilities)	35	30	30	5	0	0	4 - High	
<b>Parks and Recreation</b>								
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	
<b>Civic</b>								
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	59	41	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	94	0	6	0	0	4 - High	
<b>Technology</b>								
800 MHz radio system	0	100	0	0	0	0	3 - Moderate	
Telecommunications	0	100	0	0	0	0	3 - Moderate	
IT operations	0	0	71	29	0	0	2 - Low	
Strategic technology	0	100	0	0	0	0	3 - Moderate	
EBS	0	100	0	0	0	0	4 - High	

# Appendix 3a : Annual Funding Gap

in millions per year

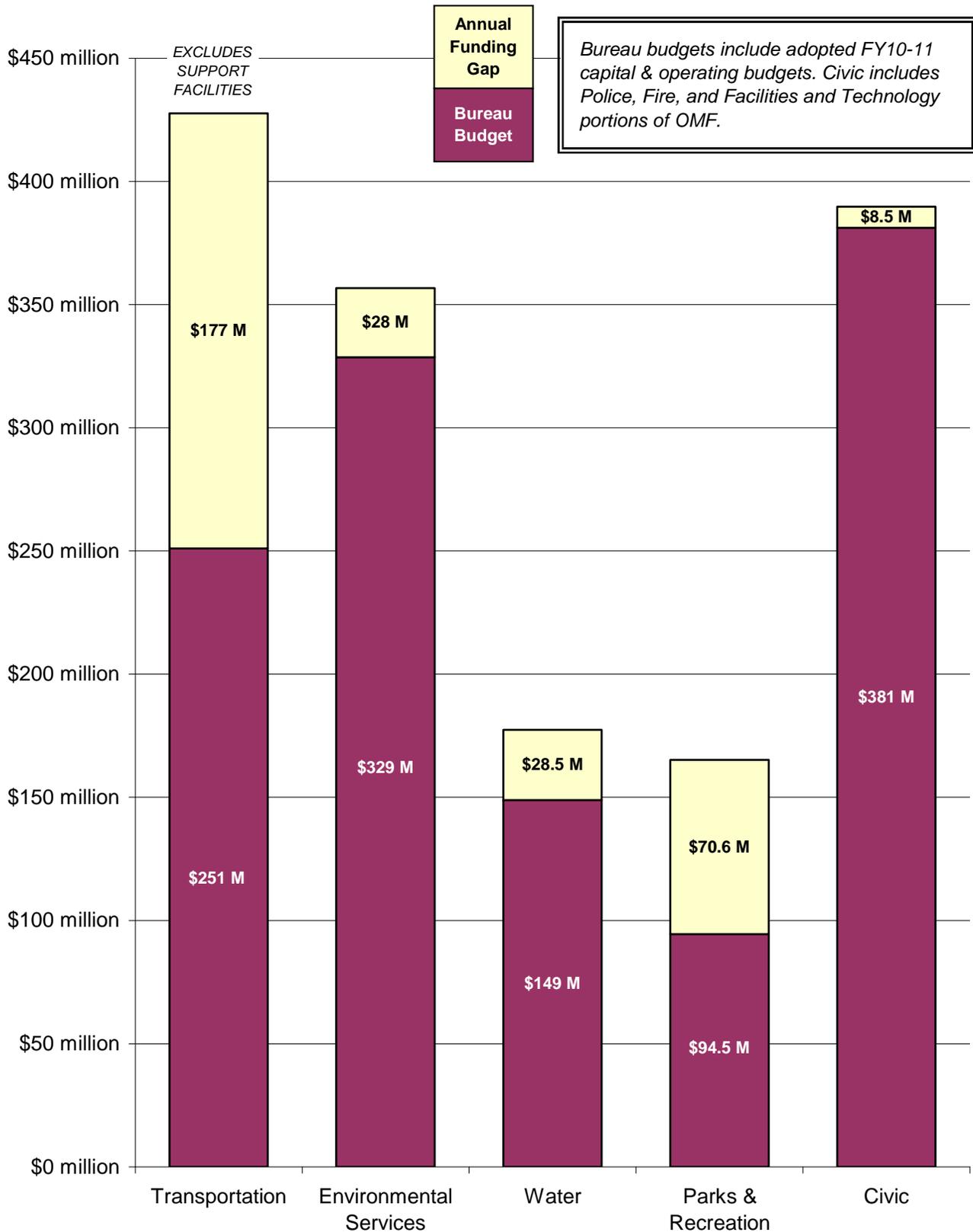
December 2010

The City's total Annual Funding Gap for 2010 is \$312 million.



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

December 2010



# Appendix 3c: Annual Funding Gap Data Sheet

December 2010

Bureau and capital asset type	Value* (in millions)				Confidence level	Notes
	R/R/R	Capacity	Mandate	Total		
<b>Transportation</b>						
arterial & collector streets	\$105.2	\$0.0	\$0.0	\$105.2	2 - Low	
local streets						
sidewalks	n/a	n/a	n/a	n/a	n/a	<--- adjacent property owners are financially responsible for repairing sidewalks
curbs	\$19.6	\$0.0	\$0.0	\$19.6	4 - High	
corners	\$10.4	\$0.0	\$0.0	\$10.4	4 - High	
structures (bridges only)	\$14.4	\$0.0	\$0.0	\$14.4	5 - Optimal	
traffic signals (hardware only)	\$18.6	\$0.0	\$0.0	\$18.6	4 - High	
street lights	\$4.7	\$0.0	\$0.0	\$4.7	2 - Low	
support facilities (for PDOT & BES)	tbd	tbd	tbd	tbd	tbd	
other transportation assets	\$3.8	\$0.0	\$0.0	\$3.8	Low to Moderate	
<b>Total Transportation</b>	<b>\$176.7</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$176.7</b>		
<b>Environmental Services</b>						
combined sewers	\$11.0	\$10.0	\$1.0	\$22.0	3 - Moderate	Financial plan generally assumes annual rate increases of 6.5% through FY13. Gap represents the difference between the projected revenue and the identified need averaged over 10 years.
sanitary sewers	\$2.0	\$0.0	\$0.0	\$2.0	4 - High	
stormwater system	\$1.0	\$1.0	\$0.0	\$2.0	3 - Moderate	
wastewater treatment systems	\$1.0	\$1.0	\$0.0	\$2.0	4 - High	
<b>Total Environmental Services</b>	<b>\$15.0</b>	<b>\$12.0</b>	<b>\$1.0</b>	<b>\$28.0</b>		
<b>Water</b>						
supply	\$9.0	\$0.0	\$0.0	\$9.0	3 - Moderate	Preliminary
transmission	\$2.0	\$0.0	\$0.0	\$2.0	3 - Moderate	
terminal storage	\$1.0	\$0.0	\$0.0	\$1.0	3 - Moderate	
distribution	\$12.0	\$4.5	\$0.0	\$16.5	3 - Moderate	
facilities (buildings/support facilities)	\$0.0	\$0.0	\$0.0	\$0.0	3 - Moderate	
<b>Total Water</b>	<b>\$24.0</b>	<b>\$4.5</b>	<b>\$0.0</b>	<b>\$28.5</b>		
<b>Parks and Recreation</b>						
amenities	\$0.6	\$1.1	\$0.1	\$1.8	3 - Moderate	
buildings and pools	\$9.8	\$17.0	\$1.8	\$28.6	3 - Moderate	
recreation features	\$2.7	\$4.7	\$0.5	\$8.0	3 - Moderate	
developed park	\$8.3	\$14.2	\$1.5	\$24.0	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	\$0.8	\$1.4	\$0.1	\$2.4	3 - Moderate	
green infrastructure	\$2.0	\$3.5	\$0.4	\$5.9	3 - Moderate	
<b>Total Parks</b>	<b>\$24.3</b>	<b>\$41.9</b>	<b>\$4.4</b>	<b>\$70.6</b>		
<b>Civic</b>						
Facilities (buildings, structures)						In addition to annual (ongoing) funding gap, OMF reports these one-time needs: \$45M for Union Station renovation and \$8.9M for Spectator facilities reserves funding. OMF is beginning to work with Metro/MERC on the status of PCPA facilities.
Police facilities	\$1.5	\$0.0	\$0.0	\$1.5	4 - High	
Office buildings	\$1.1	\$0.0	\$0.0	\$1.1	4 - High	
Other buildings	\$0.7	\$0.0	\$0.0	\$0.7	4 - High	
Union Station	\$0.9	\$0.0	\$0.0	\$0.9	4 - High	
Spectator facilities	NA	NA	NA	NA	4 - High	
Portland Center for the Performing Arts						
Fire facilities	\$2.4	\$0.0	\$0.0	\$2.4	4 - High	
Technology						
800 MHz radio system	\$0.9	\$0.0	\$0.0	\$0.9	3 - Moderate	
Telecommunications	\$0.4	\$0.0	\$0.0	\$0.4	3 - Moderate	
IT operations	\$0.4	\$0.0	\$0.0	\$0.4	2 - Low	
Strategic technology	\$0.2	\$0.0	\$0.0	\$0.2	3 - Moderate	
EBS	\$0.0	\$0.0	\$0.0	\$0.0	4 - High	
<b>Total for Civic Assets</b>	<b>\$8.5</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$8.5</b>		
<b>Total Capital Assets</b>	<b>\$248.5</b>	<b>\$58.4</b>	<b>\$5.4</b>	<b>\$312.4</b>		
<p><b>R/R/R</b> (Repair, Rehabilitation, Replacement): Additional funding necessary to repair, rehabilitate and replace existing asset to bring them up to current service levels. Also includes replacement of assets considered obsolete.</p> <p><b>Capacity</b>: Additional funding necessary to meet the demands of existing customers, based on current levels of service.</p> <p><b>Mandate</b>: Additional funding necessary to improve existing assets to meet regulatory requirements, exclusive of improvements that fall under R/R/R or Capacity.</p>						

## 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	<u>Sidewalks</u> : Visual inspection; Guidelines in the Operating Policy and Sidewalk Repair Program <u>Curbs</u> : Functional purpose, that is, if they protect the street edge and direct runoff and if they present a hazard to traffic <u>Corners</u> : Same guidelines as sidewalks
Bicycle Network	To be determined
Structures	<u>Bridges</u> : Inspection rating system based on Oregon Department of Transportation and National Bridge Inspection <u>Retaining Walls, Harbor Wall</u> : Visual inspection <u>Stairways</u> : Visual inspection <u>Guardrails</u> : To be determined
Traffic Signals	<u>Hardware &amp; Controllers</u> : Age <u>ITS and Other Equipment</u> : To be determined
Streetcar	<u>All Components</u> : 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	<u>Painted Markings</u> : Currently no condition assessment

	<u>Durable Markings</u> : Type of material; regular maintenance; visual inspection
Parking Meters	<u>Single and Double Meters</u> : Age; Visual inspection <u>SmartMeters</u> : 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

Overall, BES applied a 3.0% construction inflation factor to last year's replacement value (a change in ENR from 8578 to 8835) plus investment made during FY09 (\$122 million in combined, \$13 million in sanitary, \$9 million in stormwater, and \$13 million in wastewater). An additional 186 green street facilities were added to the inventory and all green street facilities were valued at an average of \$40,000 each.

### 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 financial plan assumes rate increases of 6.5% for both fiscal years 2012 and 2013. After that, rate increases will be less, but are projected to exceed inflation in order to meet debt service payments and to address the maintenance backlog and system capacity. The total funding gap remains at the same level as reported in the prior year. The most significant issues are:

- \$123 million for rehabilitation of pipe that has exceeded its useful life and has both a high risk and high likelihood of failure, as identified in the Systems Plan;
- An undefined amount to address pipe capacity in the combine basins (estimated to be as high as \$1 billion including pipe upsizing and stormwater infiltration facilities); and
- \$60 million for capacity related projects at Columbia Boulevard Wastewater Treatment Plant.

## 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).

Pump mains and vulnerable mains are assumed to cost more than the average pipe, due to routing, easements and sensitive locations (in terms of stability and environmental issues). The Bureau has developed a cost model to more reliably estimate project costs for small mains.

### 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 maintenance.

All reported condition information values are based on the % 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. Art work and memorials are inventoried; assessments will be by others in future.
Buildings and Pools	Visual inspection and/or remaining life	Major and minor building assessments complete.
Recreation Features	Visual inspection	Courts and playgrounds 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 vegetation units were inventoried and assessed in 2004.

PP&R is updating its annual asset inspection program to determine the condition of all assets and will inspect 20% 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 in the categories of Growth (projects needed to meet current service levels for all customers), Preserve (repair, rehabilitate and replace existing assets to meet current service levels), Safety (projects needed to bring assets up to current codes and meet mandates such as ADA) and Efficiency (projects that improve the cost effectiveness of maintaining and operating our assets).

In past years, PP&R calculated the annual funding gap as just the difference between the funding needed to bring existing assets to good condition (also defined as eliminating the maintenance backlog) and available funding. The unmet needs of existing customers for basic levels of service were not included. They will be included in this year's calculations to present a more accurate picture of current gaps in service and the resources needed to fill them.

## **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% of replacement value. Current funding at 1% 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 \$10 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 (telecommunications); and annual needs to ensure replacement and upgrades of technology on accepted schedules (IT Operations).

## 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 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 34, which allows the City to capitalize costs that extend an asset's useful life; and (ADD additional GASB, see Jane Kingston's email)
- 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

**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:

	<b>Inventory completeness</b>	<b>Condition assessment method and frequency</b>	<b>Process and documentation</b>	<b>Resulting confidence level</b>
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 – corrective 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).

