Benchmarking Performance of Public Facilities: Making Smart Decisions about Energy and Use

Philadelphia City Planning Commission
Office of Innovation and Technology
Mayors Office of Sustainability

PA Chapter of the American Planning Association
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Presenters

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1 Context and Issues
   Alan Urek

2 Initiatives: Facilities Planning
   Mark Wheeler

3 Benchmarking and Disclosure
   Alex Dews

4 Questions and Discussion
Core Issues

- Two-pronged: **Assets and Data**
- Facilities themselves
  - Supply and demand
  - Changes in use
  - Declining condition
  - Lack of resources
- Roadblocks to proper management and planning
  - Overarching strategy needed
  - Data gaps
  - Political considerations
  - Resources
1  Context and Issues

How We Got Here

- Population growth to 1950s (2.0 M)
  - 1960 comp plan envisioned a bigger city (2.5 M)
  - Built public facilities to support the bigger city
  - Access to vast resources

- “Unexpected” population loss over 40 years (1.5 M)
  - Resources diminished
  - Planning lagged
  - Lost track of our assets, their use, etc.
  - Political influences
City Portfolio

- >1,000 City-owned buildings and structures (excludes PHL)
- ~13.8 million square feet
  - Average size: 27,000 SF
  - Range from 40 to 1.2 M SF
- Average age: 69 years
- Range from 282 years (c.1730) to present
1 Context and Issues

Public-Facilities Planning and Management

- Department of Public Property, Mayor’s Office of Sustainability
- Operating departments
- Mayor’s Task Force
- Comprehensive Plan: Philadelphia2035
- Annual Capital Budget; Six-year Capital Program

The FY2015-2020 Capital Program

City of Philadelphia
1 Context and Issues

Capital Program Responsibilities

City Planning Commission Staff
- Process Coordination
- Public Needs / Adopted Plans
- Geospatial Analysis

Department of Finance, Office of Budget & Program Evaluation
- Financial Analysis
- Spending Limits
- Administration Priorities

Department of Public Property, Capital Projects Division
- Facilities Analysis
- Capital Project Management
- Department Support

Department or Organization
- Operational Analysis
- Strategic Direction
- Internal Master Plan
Department of Public Property (DPP)

Core mission
• The DPP manages the infrastructure that supports City government operations. To this end, the department is responsible for the acquisition, disposition, lease, design, construction, renovation and maintenance of City properties.
DPP Facilities Management Division

- Responsible for the operation, service, repair, and maintenance of 150+ City-owned facilities and property (nearly 5.4M SF), including:
  - “Quadplex:” City Hall (600K SF), One Parkway Building, Municipal Services Building and Criminal Justice Center
  - Licenses and Inspections, Fleet, Streets and Office of Supportive Housing Facilities
  - Police and Fire Departments facilities
DPP Capital Projects Division

- Manage capital improvement program for 15 City operating departments, 1,082 facilities with a total of 11.7 million square feet including:
  - Fire and Police
  - Prisons
  - Parks & Recreation
  - Health
  - Human Services
  - Libraries
Mayor’s Task Force on City Facilities

- Established by executive order in August 2011
  - **Facilities Task Force** appointed by the mayor, chaired and composed of external experts and City Council reps
  - **Facilities Working Group** chaired by the managing director and composed of City administration reps

- Mission
  - Best financial terms for housing City operations
  - Clean, safe, and code-compliant
  - Complementary uses are co-located
  - Underutilized facilities are merged
Mayor’s Task Force on City Facilities

- Composition
  - Academia
  - Bar Association, Real Estate Section
  - Building Owners and Managers Association (BOMA)
  - Philadelphia Chamber of Commerce
  - Philadelphia City Council
  - Commercial real estate brokers
  - Other

- Committees
  - Leases
  - Utilities
  - Facilities
1 Context and Issues

Definition of the Problem

- The portfolio of public facilities is too large for our population
- City resources can’t support our portfolio
- Building operations and maintenance (O&M) suffer
- Creates deferred maintenance problems
- Capital funding is diverted to deferred maintenance
- Hamstrings the ability to do capital planning and programming
- Limited O&M data to use to manage and measure progress
Initiatives to Resolve the Problem

- Preventive Maintenance Unit to avoid deferred capital maintenance
- Collaboration with the Mayor’s Task Force on City Facilities
  - Utility Payment and Energy Efficiency
  - Leasing Best Practices
  - Consolidation, merging and co-location of City facilities
- New performance budgeting process will consider cost-benefit analysis of capital and operating investments
- Master facilities database that includes pertinent asset information, including
  - Proximity to similar facilities
  - Energy use
  - Facility use
  - Operating cost per square foot
2 Initiatives: Facilities Planning

Integrated Approach

- Capital Project Management
- Long-Range Facility Planning
- Maintenance Work Orders
- Space Management / Space Assessments
- Utility Cost Tracking & Benchmarking
- O & M Cost Tracking
- Emergency Response & Planning
Current Situation

2 Initiatives: Facilities Planning
2 Initiatives: Facilities Planning

Goal

Integrated Asset Management System

- W.O.
- W.O.
- W.O.
- W.O.
- Budget
- Purchasing
- Energy Cap
2 Initiatives: Facilities Planning

**Inputs**
- Facility Stats
- Investment Data
- Customer Needs
- Utility Costs

**Strategies**
- Reprogram/Space Reallocation
- Repair
- Replace
- Consolidate
- Close
- Dispose

**Outputs**
- O&M Costs Data
- Operations Data
- Space and Utilization Data
- Warranty Expiration Data
- Reports/Alerts

**Outcomes**
- Improved Quality of Facilities and Services
- Cost Containment
- Reduced Leasing
- Performance-based Budgeting
- Pro-active Capital Planning
2 Initiatives: Facilities Planning

Asset Data to Capture

- Building ID
- Building Type
- Square Feet
- Condition
- Use/Capacity
- Occupants
- Bldg Systems
- Age of Systems
- O&M Costs
- Capital Investments
- Warranties
2 Initiatives: Facilities Planning

Data Consumers

- PHILA2035
- Building ID
- Building Type
- Square Feet
- Condition
- Use/Capacity
- Occupants
- Bldg Systems
- Age of Systems
- O&M Costs
- Capital Code
- Location

- Capital Projects
- Budget Office
- Public Safety
- Greenworks
- Departments w/ Maintenance Responsibilities
- Mayor, Managing Director, Council
- Open Data
Implement Integrated Asset Management

- Established multi-department working group
- Technical study underway
- RFP in early 2015
- Phased implementation depending on RFP responses
Master facilities database

- Step towards integrated asset data management
- Comprehensive inventory of facilities owned and leased: all buildings, fields, playgrounds, fixed equipment
- Basic building characteristics
- Lease info
- Capital expenditures
- Data gaps and static
## Facility Characteristics

<table>
<thead>
<tr>
<th>Asset_ID</th>
<th>Asset_Name</th>
<th>Bldg_SQFT</th>
<th>Bldg_SQFT_U</th>
<th>Bldg_FL</th>
<th>Bldg_YR</th>
<th>Site_Acres</th>
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<td>287</td>
<td>City Hall</td>
<td>659,185</td>
<td>100</td>
<td>9</td>
<td>1868</td>
<td>7.59</td>
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<td>1438</td>
<td>Philadelphia Museum of Art (PMA)</td>
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<td>4</td>
<td>1929</td>
<td>14.49</td>
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<tr>
<td>2978</td>
<td>Three Parkway Building</td>
<td>626,880</td>
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<td>324</td>
<td>Records Dept Archive Center</td>
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<td>1953</td>
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<td>93</td>
<td>Criminal Justice Center</td>
<td>571,570</td>
<td>100</td>
<td>17</td>
<td>1994</td>
<td>1.59</td>
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<tr>
<td>165</td>
<td>Municipal Services Building (MSB)</td>
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<td>16</td>
<td>1968</td>
<td>2.4</td>
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<td>868</td>
<td>District Attorneys Office (D.A.)</td>
<td>484,884</td>
<td>88</td>
<td>&lt;Null&gt;</td>
<td>1930</td>
<td>0.24</td>
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<td>1766</td>
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<td>319</td>
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<td>1829</td>
<td>11.49</td>
</tr>
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</table>
2 Initiatives: Facilities Planning

Building Characteristics

Buildings By Age
City-Owned

- 0 - 39
- 40 - 74
- 75 - 120
- 121 - 282

Utility Cost per Square Foot
FY11

- $4 or less
- $4.01 to $12
- Greater than $12
2 Initiatives: Facilities Planning

205 Recreation Centers
Service Areas: 64 sq. mi. of Walksheds
2 Initiatives: Facilities Planning

Estimated Overlap: 28 square miles
2 Initiatives: Facilities Planning

Demand and Demographic Variables

[Map showing various facilities and demographic data]
## 2 Initiatives: Facilities Planning

### Phila2035 Example

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Type</th>
<th>Service Area (Square Miles)</th>
<th>Overlap</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>In West Park</td>
</tr>
<tr>
<td>52nd and Master</td>
<td>Playground</td>
<td>14.07</td>
<td>8.10</td>
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<tr>
<td>John Anderson</td>
<td>Recreation Center</td>
<td>7.46</td>
<td>7.46</td>
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<tr>
<td>Clayborn-Lewis</td>
<td>Recreation Center</td>
<td>2.92</td>
<td>2.92</td>
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<tr>
<td>Conestoga</td>
<td>Playground</td>
<td>13.11</td>
<td>7.10</td>
</tr>
<tr>
<td>Conshohocken</td>
<td>Playground</td>
<td>3.22</td>
<td>3.22</td>
</tr>
<tr>
<td>Ford Road</td>
<td>Playground</td>
<td>3.26</td>
<td>3.26</td>
</tr>
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</table>
3 Benchmarking and Disclosure
Energy
PHILADELPHIA REDUCES ITS VULNERABILITY TO RISING ENERGY PRICES

Environment
PHILADELPHIA REDUCES ITS ENVIRONMENTAL FOOTPRINT

Equity
PHILADELPHIA DELIVERS MORE EQUITABLE ACCESS TO HEALTHY NEIGHBORHOODS

Economy
PHILADELPHIA CREATES A COMPETITIVE ADVANTAGE FROM SUSTAINABILITY

Engagement
PHILADELPHIANS UNITE TO BUILD A SUSTAINABLE FUTURE

5 goals, 15 targets, over 150 initiatives
Buildings account for 62% of carbon emissions in Philadelphia.
Weather as a driver of citywide energy use

- **2006**: 3,952 MMBTU (1,289 hours)
- **2010**: 4,393 MMBTU (1,815 hours)
- **2011**: 4,153 MMBTU (1,617 hours)
- **2012**: 3,746 MMBTU (1,604 hours)
- **2013**: 4,473 MMBTU (1,411 hours)
No information = No action
Cities are looking at what drives demand and competition in other industries
Benchmarking

Year Two Compliance Rate: 90%

250m
Square ft.
(Non-residential)

64
Average ENERGY STAR Score

Represents 25% of total Citywide square footage

1,700 Buildings
Citywide ENERGY STAR Distribution

Average Score: 64
Potential Savings in Benchmarking Portfolio

23% energy reduction across 1,700 Buildings or $100 million in annual savings

Current Energy Usage

Projected usage after basic improvements
Connecting Performance to Financing and Technical Assistance

### Sector Summary by Source EUI (kBtu/per square foot)

<table>
<thead>
<tr>
<th>EUI</th>
<th>Sector</th>
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<tbody>
<tr>
<td>651</td>
<td>Supermarket</td>
</tr>
<tr>
<td>409</td>
<td>Hospital</td>
</tr>
<tr>
<td>348</td>
<td>Medical Office</td>
</tr>
<tr>
<td>233</td>
<td>Retail</td>
</tr>
<tr>
<td>232</td>
<td>Warehouse (Refrigerated)</td>
</tr>
<tr>
<td>216</td>
<td>Hotel</td>
</tr>
<tr>
<td>210</td>
<td>Office</td>
</tr>
<tr>
<td>172</td>
<td>Other</td>
</tr>
<tr>
<td>126</td>
<td>Education (K-12)</td>
</tr>
<tr>
<td>100</td>
<td>House of Worship</td>
</tr>
<tr>
<td>38</td>
<td>Warehouse (Non-Refrigerated)</td>
</tr>
</tbody>
</table>

### Sector Summary by ENERGY STAR Score (1-100)

<table>
<thead>
<tr>
<th>ENERGY STAR Score</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>Warehouse (Non-Refrigerated)</td>
</tr>
<tr>
<td>67</td>
<td>Warehouse (Refrigerated)</td>
</tr>
<tr>
<td>65</td>
<td>Retail</td>
</tr>
<tr>
<td>61</td>
<td>Education (K-12)</td>
</tr>
<tr>
<td>60</td>
<td>Office</td>
</tr>
<tr>
<td>58</td>
<td>Hospital</td>
</tr>
<tr>
<td>53</td>
<td>Supermarket</td>
</tr>
<tr>
<td>46</td>
<td>Hotel</td>
</tr>
</tbody>
</table>

**Logos:** PECO, smartEideas, EnergyWorks, PGW
Managing Data and Outreach with CRM

Building Data Tracking

Email Outreach & Marketing
Providing Individual Feedback and Driving Competition between Buildings

Customized Reporting

2013 Building ENERGY Performance Profile

- ADDRESS: 1717 Arch Street
- YEAR BUILT: 1990
- GROSS FLOOR AREA (SQUARE FEET): 1,377,698
- CPA ID: 883059004

Compare Your Building's ENERGY STAR® Score to Similar Buildings in the U.S. & Philadelphia

(1-100 Score, 100 is most efficient building)

Below is how your building's annual ENERGY STAR® Score compares to other National and Philadelphia Office buildings reported in 2013.

<table>
<thead>
<tr>
<th>National Average Score</th>
<th>Your Building's Score</th>
<th>Philadelphia's Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>85</td>
<td>61</td>
</tr>
</tbody>
</table>

Your Building Ranks #26 out of 165 similar buildings

Energy Reduction Race

Enter Your Building Today!

- Reduce energy and compete for cash prizes!

[Form for entering building information]

- First Name
- Last Name
- Title
- Organization
- Building Address
- Email Address
- How would you use the competition prize to further energy efficiency in your building?

Submit
Support from Partner Organizations

LOCAL PARTNERS

UTILITY PARTNERS

NATIONAL PARTNERS
Benchmarking and Disclosure in Philadelphia
Alex Dews, Mayor’s Office of Sustainability
www.phila.gov/benchmarking
Benchmarking Performance of Public Facilities: Making Smart Decisions about Energy and Use

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