Peak Metrics Report Out
The Department of Public Works aims to deliver high quality, cost effective, efficient, safe services involving public infrastructure to enhance the quality of life in Denver.

**Strategies**

**#1: Maintain the Present**
- Complete/Implement Strategic Master Plans & Increase efficiency in service level

**#2: Design and Build the Future**
- Complete/Implement Strategic Master Plans

**#3: Build bridges with stakeholders**
- Facilitate stakeholder meetings
- Strengthen Media Relations
- Improve customer service
- Citizen’s Survey

**Tactics**

- Maximize local funds and outside sources
- Manage contractors & change orders
- Capital Projects on time/on budget
Planning for Infrastructure Improvements

Complete and/or implement Strategic Master Plans to manage the PRESENT and FUTURE infrastructure

- **Strategic Transportation Plan**
  - Increase multi-modal transportation options
  - Efficient and well-maintained infrastructure
  - Increase accessibility to stakeholders
  - Manage congestion to reduce travel times
  - Complete capital projects on time and on budget

- **Strategic Parking Plan**
  - Utilize new technologies to understand behaviors and calibrate time restrictions
  - Increase the waste diversion rate
  - Utilize new Smart Meters to improve customer service and performance
  - Seek efficiency and cost containment
  - Maximize the leverage of local derived funds with outside sources

- **Solid Waste Management Master Plan**
  - Increase the program proportional to population growth
  - Expand the program proportional to population growth
  - Increase system capacity in proportion to development need
  - Balance the needs and skill levels of all user groups
  - Increase multi-modal travel options

- **Storm Drainage Master Plan**
  - Increase capability of City to manage 2-yr and 5-yr storms
  - Increase system capacity in proportion to development need
  - Increase access to high ease of use facilities

- **Sanitary Sewer Master Plan**
  - Maintain existing sewer system to extend system life
  - Increase system capacity in proportion to development need
  - Balance the needs and skill levels of all user groups
  - Increase "Green Fleet"

- **Denver Moves**
  - Increase access to high ease of use facilities
  - Increase multi-modal travel options
  - Increase "Green Fleet"

- **Greenprint Denver**
  - Improve water quality of South Platte River
  - Use economy of scale to minimize mobilizations across the City
  - Pave streets and neighborhoods for optimum life extension
  - Coordinate activities with other agencies to minimize conflicts

- **6-Year Pavement Management Plan**
  - Use economy of scale to minimize mobilizations across the City
  - Pave streets and neighborhoods for optimum life extension
  - Coordinate activities with other agencies to minimize conflicts
  - Manage projects effectively and efficiently to control costs
Strategic Project Delivery Initiative

Goal: To deliver projects efficiently and effectively by:
- Mitigating risk
- Increasing competition
- Promoting effective project management
- Creating administrative efficiencies
### Strategic Project Delivery Initiative

#### Outcome, Strategies, and Tactics

**Efficient and Effective Project Delivery**

**Mitigate Risk**
- Determine Qualified Bidders

**Increase Competition**
- Conduct Risk Assessment
- Increase Qualified Bidder Pool

**Manage Project Performance**
- Report project statistics routinely
- Understand Changes through Root Cause Analysis

**Increase Efficiency of Administrative Elements**
- Document and Streamline Processes
- Decrease Time to Process Contracts
- Decrease Time to Process Payments
- Complete Post-Project Evaluations

---

**Strategic Project Delivery Initiative**

October, 2012
Strategic Project Delivery Initiative: Project Implementation Partnership

User Groups
- Parks and Recreation
- Arts and Venues
- Safety
- General Services
- Public Library

Functional Stakeholders
- Budget and Management Office
- Division of Small Business Opportunity (OED)
- City Attorney Office
- Office of the Controller
- City Council
# Strategic Project Delivery Initiative: Metrics

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Metrics</th>
<th>Goal</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigate Risk</td>
<td># of Prequalified Applications</td>
<td>Increase</td>
<td>--</td>
<td>102</td>
<td>187</td>
<td>185</td>
<td>175 YTD</td>
</tr>
<tr>
<td></td>
<td># of Prequalified Contractors</td>
<td>Increase</td>
<td>--</td>
<td>94</td>
<td>153</td>
<td>159</td>
<td>153 YTD</td>
</tr>
<tr>
<td>Increase Competition</td>
<td>Ave # of Bids per Project (Hard Bid)</td>
<td>Increase</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>4.7</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td>Ave. Bid Ranges (Hard Bid)</td>
<td>Decrease</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>$495,887</td>
<td>$301,626</td>
</tr>
<tr>
<td>Manage Project Performance</td>
<td>Schedule Performance Index</td>
<td>0.90 or Above</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.83</td>
<td>0.91 YTD</td>
</tr>
<tr>
<td></td>
<td>Ave Change Orders per Project</td>
<td>Decrease</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Change Orders as % of Original Contracts</td>
<td>Decrease</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>13%</td>
</tr>
<tr>
<td>Increase Administrative Efficiency</td>
<td>On-Time Payments (Construction and Professional Service)</td>
<td>Decrease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>65%</td>
</tr>
<tr>
<td></td>
<td>Time to Process Contracts</td>
<td>Decrease</td>
<td></td>
<td></td>
<td></td>
<td>96</td>
<td>81</td>
</tr>
</tbody>
</table>
Improvement Efforts

**Construction Management and Administration**
- Standardize and Document Processes
- Staff Performance Plans
- Training/Orientation

**Payments**
- Policy and Process Review
- Technology

**Closeout**
- Standardize and Document processes
- Generate Lessons Learned

- # Prequalified Contractors
- # Change Orders
- CO as % of Original Contract
- Schedule Performance Index
- Ave # Bids/Project
- Processed Pay Applications
- Prompt Payment
Moving People: Building a Multimodal City
Future Growth: Challenges & Opportunities

Denver is projected to increase from 580k in 2005 to 762k in 2035.

The Denver Region is projected to increase from 2.7m in 2005 to 4.2m in 2035.
Our Transportation Challenge

More people are going places…. more often
Traffic congestion is increasing...lane miles are not
Delays continue to get longer…

![Graph showing transportation metrics over years: 2005, 2015, 2030.](chart.png)
Operation and Physical improvements can impact the system when individuals make Behavior changes to how they use the transportation system.
Strategy

- Define future transportation options
- Provide multimodal improvements
- Maximize efficiency and safety
- Maintain existing infrastructure

- Major Improvements and Studies
- Transit and Roadway Improvements
- Transit Support Strategies
- Operational and Safety Strategies
- Bicycle, Pedestrian and Street Gaps
- Maintenance of Infrastructure
- Transportation Demand and Traffic Management
Focus on STP

Complete and/or implement Strategic Master Plans to manage the PRESENT and FUTURE infrastructure

- **Strategic Transportation Plan**
  - Increase multi-modal transportation options
  - Efficient and well-maintained infrastructure
  - Increase accessibility to stakeholders
  - Manage congestion to reduce travel times
- **Strategic Parking Plan**
  - Utilize new technologies to understand behaviors and calibrate time restrictions
  - Utilize new Smart Meters to improve customer service and performance
  - Increase accessibility to stakeholders
- **Solid Waste Management Master Plan**
  - Increase the waste diversion rate
  - Expand the program proportional to population growth
  - Seek efficiency and cost containment
  - Create an integrated parking website
- **Storm Drainage Master Plan**
  - Increase system capacity in proportion to development need
  - Increase system capacity in proportion to population growth
- **Sanitary Sewer Master Plan**
  - Maintain existing sewer system to extend system life
  - Increase system capacity in proportion to development need
- **Denver Moves**
  - Increase access to high ease of use facilities
  - Increase needs and skill levels of all user groups
  - Increase multi-modal travel options
- **Greenprint Denver**
  - Increase water quality of South Platte River
  - Increase multi-modal travel options
  - Increase "Green Fleet"
- **6-Year Pavement Management Plan**
  - Use economy of scale to minimize mobilizations across the City
  - Pave streets and neighborhoods for optimum life extension
  - Coordinate activities with other agencies to minimize conflicts

- **Complete capital projects on time and on budget**
- **Maximize the leverage of local derived funds with outside sources**
- **Manage project effectively and efficiently to control costs**
PW Street Maintenance: 6-Year Pavement Management Plan

Metrics to be Reviewed:

- Pothole Request Response Time
- Asphalt Plant Cost Savings
- Pavement Condition Index (PCI) and Amount of Network Paved
Average Pothole Request Response Time

Average Pothole Request Response Time (Days)

Goal
Maintain/Decrease Time Annually

Note: Did Not Start Tracking Goal Until 2009
Pothole Request Response – Goals/Plans

- **Applicable STP Strategies** -
  1) Maintain existing infrastructure
  2) Maximize efficiency and safety

- **Metrics** - Response time for citizen requested pothole repair to 311

- **Goals** - Patch 95% of all requests within 24 hours

- **Plan** - Upgrade existing patching equipment fleet with single operator Python hot mix asphalt patch machine; develop and implement automated work order system to eliminate duplicate databases and link to pavement management system
Asphalt Plant Cost Savings

Asphalt Plant - Cost Savings (%) Over Outside Vendor

- 2008
- 2009
- 2010
- 2011
- 2012

Year

Cost Savings in %

Asphalt Plant - % Savings

2008: 25%
2009: 15%
2010: 10%
2011: 10%
2012: 10%

October, 2012
Asphalt Plant Cost Savings – Goals/Plans

- **Applicable STP Strategies-**:
  1) Maintain existing infrastructure
  2) Maximize efficiency and safety

- **Metrics-**: Compare production costs of City-owned asphalt plant with bid price for vendor-supplied asphalt

- **Goals-**: Maintain internal production costs below outside purchase costs

- **Plan-**: Maintain and upgrade the existing plant to fit program needs at production level of 200,000 to 250,000 tons annual; manage hauling resources to maximize the total value of internal asphalt production
Pavement Condition Index (PCI) and Amount of Network Paved

Network Adjusted Pavement Condition Index

Year
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
(Praj)

PCI Condition Value
- 70
- 70.5
- 71
- 71.5
- 72
- 72.5
- 73

GOAL - PCI - Overall

PCI - Overall

Amount (%) of Network Paved Per Year

Year
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
(Praj)

% of Network Paved
- 0.0%
- 1.0%
- 2.0%
- 3.0%
- 4.0%
- 5.0%
- 6.0%
- 7.0%
- 8.0%
- 9.0%

GOAL - % of Network Paved

% of Network Paved
Network PCI and Percent Paved Goals/Plans

- Applicable STP Strategies:
  1) Maintain existing infrastructure
  2) Maximize efficiency and safety

- Metrics:
  Network average PCI with new streets excluded and percentage of network paved annually

- Goals:
  Target is set to establish a sustainable network condition

- Plan:
  With increased funding the annual amount of streets paved will be increased using a mix of applicable treatments to preserve existing pavements and remediate the backlog of streets beyond useful life
Traffic Engineering Services
Multi-modal Connectivity

Metrics to be Reviewed:

- Downtown Signal Retiming Project
- Traffic Signal Timing Projects
- Signs and Markings Production
Downtown Signal Retiming Project
Multi Modal Strategies 2011/2012

Light Rail

18th Street - Northbound

Bicycles

16th Street Mall - Northbound

Pedestrians

16th Street Mall - Southbound

Vehicles

Before and After Daily Travel Time Savings (person hours)
Downtown Signal Retiming Project
Multi Modal Strategies

- Applicable STP Strategy: Transit Support Strategies, Transportation Demand and Traffic Management, Maintenance of Infrastructure, Bicycle, Pedestrian and Street Gaps, Operational and Safety Strategies

- Metrics: Reduction in travel time for person trips, fuel consumption, pollution and greenhouse gases and dollars lost due to delay.

- Goal: To complete a multimodal evaluation of traffic signal operations in the downtown Denver core and implement traffic signal timing to achieve person trip benefits. Enable RTD to operate 4 car Light Rail Trains through the Downtown Loop.

- Plans: Base traffic signal timing on person trips instead of focusing on a single mode of transportation. Collect and report on data for pedestrians, bicycles, transit and vehicles.
Traffic Signal Timing Projects
2009 – 2012 DRCOG TSSIP - Average per intersection

- Average User Savings per day/per intersection is approximately $485.00 both for the City and for the region
Traffic Signal Timing

• Applicable STP Strategy: Transportation Demand and Traffic Management/Operational and Safety Strategies

• Metrics: Reduction in travel time, fuel consumption, pollution, greenhouse gases and dollars lost due to delay.

• Goals: Manage existing roadways to maximize efficiencies for all modes of travel. Retime/review 150 traffic signals per year.

• Plans: Implement new traffic signal control system. Transfer existing traffic signals to new traffic signal control system. Use new traffic signal control system to develop reports that identify key maintenance operations and system performance.
Tactics Metrics Dashboard: Signs and Markings Production

Relationship of Sign and Crosswalks Installation

Cost Comparison

October, 2012
Signs and Markings

• Applicable STP Strategy: Maintenance of Infrastructure/ Bicycle, Pedestrian and Street Gaps/ Operational and Safety Strategies

• Metrics: Number of signs replaced or removed. Maintain a 12 year replacement cycle for traffic control signs. Sq Ft of crosswalk pavement markings installed. Achieve a 4 year replacement cycle for crosswalks

• Goals: To have all traffic control signs and pavement markings visible day or night for the intended purpose.

• Plans: Implement review and consolidation program for traffic control signs using a systematic approach. Increase productivity and reduce cost of the pavement marking program by implementing new pavement marking surface preparation technologies. Build on the concepts used to solve the faded traffic sign replacement backlog.
Denver Moves
Making Bicycle and Multi-use Connections

Metrics to be Reviewed:

- Completion of the Denver Moves Network
- Increase access to high ease of use facilities
- Grow the bicycle mode share
Build the Denver Moves Network

YEAR
CUMULATIVE MILES
0 20 40 60 80 100 120 140 160
CUMULATIVE MILES
0 5 10 15 20 25 30
MILES EACH YEAR
0 5 10 15 20 25 30

Cumulative Total
Yearly Total

October, 2012
Applicable STP Strategy- Maintain exiting infrastructure through bicycle, pedestrian, street gaps

Metrics- Complete infrastructure recommendations in Denver Moves

Goals- Achieve 311 miles of on-street bicycle facilities

Plan- Entrepreneurial approach to use annual program and CIP; be opportunistic by leveraging other projects to incorporate Denver Moves recommendations; coordinate with street maintenance schedule; integrate bike markings into TES striping program
Access to Bike Facilities

Percent of HH within 1/4 mile

- 2010
- 2011
- 2012
- Remaining

40%
4%
5%
51%
Access to Bike Facilities

- **Applicable STP Strategy**: Provide multimodal improvements through roadway improvements
- **Metrics**: Increase access to high ease of use facilities
- **Goals**: Every household within ¼ mile of high ease of use facility
- **Plan**: Coordinate with Parks; Create Denver Bike Boulevard Guidelines, Successful design for pilot corridor
Larger Bike Mode Share

- Citywide Bike
- Citywide Walk
- Downtown Bike

October, 2012
Larger Bike Mode Share

- **Applicable STP Strategy** - Define future transportation options
- **Metrics** - Grow the number of people choosing bicycles as mode of travel
- **Goals** - Achieve a 15% bicycling and walking commute mode share
- **Plan** - Continue to increase the amount of bicycle infrastructure, support Denver B-cycle, support Bike Denver and TMAs with education and outreach efforts
PW Partners in Achieving the STP Vision

STP

Community

DRCOG

FHWA/FTA

RTD

CDOT

Private Developers

Office of Economic Development

Community Planning & Development

Parks & Recreation

Peak Metrics Report Out

October, 2012
Public Works is continuously looking to:

• leverage opportunities,

• cultivate partnerships,

• develop projects that are on shelf, ready to implement
**Future Topics**

Complete and/or implement Strategic Master Plans to manage the PRESENT and FUTURE infrastructure

- **Strategic Transportation Plan**: Increase multi-modal transportation options<br>- Efficient and well-maintained infrastructure<br>- Increase accessibility to stakeholders<br>- Manage congestion to reduce travel times

- **Strategic Parking Plan**: Utilize new technologies to understand behaviors and calibrate time restrictions<br>- Utilize new Smart Meters to improve customer service and performance<br>- Create an integrated parking website

- **Solid Waste Management Master Plan**: Increase the waste diversion rate<br>- Expand the program proportional to population growth<br>- Seek efficiency and cost containment

- **Storm Drainage Master Plan**: Increase capability of City to manage 2-yr and 5-yr storms<br>- Increase system capacity in proportion to development need

- **Sanitary Sewer Master Plan**: Maintain existing sewer system to extend system life<br>- Increase system capacity in proportion to development need

- **Denver Moves**: Increase access to high ease of use facilities<br>- Balance the needs and skill levels of all user groups<br>- Increase multi-modal travel options<br>- Increase "Green Fleet"

- **Greenprint Denver**: Improve water quality of South Platte River<br>- Increase multi-modal travel options<br>- Coordinate activities with other agencies to minimize conflicts

- **6-Year Pavement Management Plan**: Use economy of scale to minimize mobilizations across the City<br>- Pave streets and neighborhoods for optimum life extension

**Complete capital projects on time and on budget**<br>**Maximize the leverage of local derived funds with outside sources**<br>**Manage project effectively and efficiently to control costs**