

SDOT's Transportation Infrastructure Status & Condition Report



SDOT ASSET MANAGEMENT Status and Condition Report



TRB Conference
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Our mission, vision, and core values

Mission: deliver a high-quality transportation system for Seattle

Vision: connected people, places, and products

Committed to **5 core values** to create a city that is:

- Safe
- Interconnected
- Affordable
- Vibrant
- Innovative

For **all**

Seattle: A Snapshot



- One of fastest growing cities in US
- Economy is based on high-tech, education, seaport, industry, culture
- Geography is hilly, with fresh- and saltwater bodies limiting land area
- Geology features glacial till and saturated soils plus earthquake hazard

SDOT Asset Management Background

- 1970s: started Structures AM program
- 1980s: started Pavement AM program
- 2007: Department-wide Program, funded by Bridging the Gap Levy delivered first Status & Condition Report
- Program hiatus for 2 years (recession and staffing)
- 2013: Hired new AM Manager to rebuild program
- 2016: Now titled the Asset & Performance Management Program with 7 employees

SDOT Asset Management Background (cont.)

Before



After



Natural Habitat

SDOT Asset Management Background (cont.)

- Primary Focus of AM Program Implementation:
 - Asset Status & Condition Reporting
 - Central Database for Asset & Work Management
- Preliminary Work on AM Practice Areas:
 - Levels of Service
 - Risk
 - Organizational Competency
 - Performance Measures

SDOT Status & Condition Report

- Published December 2015:
seattle.gov/transportation/inventory.htm
- Provides technical information on 47 assets within 11 recognized asset classes
- Useful reference for decision-making
- Reference guide for general public
- Informs future year budgets
- Gap analysis to increase AM competency
- Revised the third edition to support MAP-21 requirements





Expanded Report

- Long-term operational cost forecasting
- Measures and trends that link to performance.seattle.gov/
- Estimated asset data confidence, replaced asset condition TBD with Unknown
- Better unit cost data, e.g., sidewalks by sq. ft., component
- Revised asset classes to better align with internal AM practices
- Bookmarked PDF, easily navigable with icons for each chapter in the footer



Total Replacement Cost



	Pavement System	\$8,562M	43%
	Bike/Ped System	\$5,449M	27%
	Bridges & Structures	\$5,237M	26%
	All Other Assets	\$794M	4%

Data Confidence



















	High	\$8,920M	45%
	Medium-High	\$466M	2%
	Medium	\$10,256M	51%
	Medium-Low	\$104M	.5%
	Low	\$296M	1.5%

Table II: SDOT TRANSPORTATION INFRASTRUCTURE ASSETS= \$20 BILLION

	Asset Class/Asset	Inventory Status	Replacement Value (\$M)	Data Confidence	Condition			Unk.
					Good	Fair	Poor	
	BIKE & PEDESTRIAN SYSTEM		\$5,449					
	Bicycle Racks	3,301	\$2.2	High	97.8%	1.2%	0.5%	0.5%
	Kiosk	150 (e)	\$1.1	Low				100%
	Marked Crosswalks	5,357	\$5.4	Medium-High	53.4%	16.7%	29.6%	<1%
	Sidewalks	33,373 block faces	\$5,280	Medium	23.9%	5.6%	1.0%	69.6%
	Stairways	509	\$63.6	Medium-High	61%	28%	11%	
	Street Furnishings	Unknown	Unknown	Low				100%
	Trails	40.2 lane miles	\$96.3	Medium-Low				100%
	BRIDGES & STRUCTURES		\$5,237					
	Air Raid Siren Tower	1	\$5	High	100%			N/A
	Areaway Street Walls	236	\$218.0	Low	11%	58%	12%	19%
	Bridges	117	\$4,112.0	High	31%	52%	17%	0%
	Bridge Hydrant Vaults	13	\$65	High	100%			
	Elevator	1	\$1.5	High	100%			
	Retaining Walls	582	\$903.1	Medium	42%	36%	19%	3%
	Tunnel	1	\$74	High		100%		
	CHANNELIZATION		\$4.9					
	Pavement Markings		\$4.9	Medium				100%
	INTELLIGENT TRANSPORTATION SYSTEM		\$377.5					
	Beacons	391	\$5.9	Medium	32.5%	6.6%	1.0%	59.8%
	Bluetooth Readers	Service	\$0.0					
	Cameras	257	\$2.6	Medium	52.5%			47.5%
	Communications Network	150 miles (e)	\$75.0	Low				100%
	Counters	13	\$3	Medium-High				
	Dynamic Message Signs	51	\$9.7	Medium-High	100%			
	Network Hubs	14	\$9	Medium-High				100%
	Radar Speed Signs	43	\$4.3	Medium	53.5%			46.5%
	Transportation Operations Center	1	\$1.0	High	100%			
	Traffic Signal Assemblies	1,071	\$281.1	Medium-High	12%	51%	35%	2%
	PARKING PAYMENT DEVICES		\$20					
	Pay Stations	2,022	\$20	High	100%			
	PAVEMENT SYSTEM		\$8,562					
	Arterial	1,547 lane miles	\$4,678	High	46.5%	17.8%	35.7%	
	Non-arterial	2,407 lane miles	\$3,884	Medium	59.9%	11.5%	13.6%	15.0%
	REAL PROPERTY		\$80.5					
	Buildings & Yards	15	\$80.5	Medium-High	40%	40%	20%	
	Parcels	57	N/A	Medium-High				N/A
	Shoreline Street Ends (ROW)	143 (e)	N/A	Medium-Low				N/A
	SIGNS		\$66.8					
	Sign Assemblies	181,431	\$66.8	Medium	39.5%	<.01%	<.01%	60.5%
	TRAFFIC SAFETY STRUCTURES & DEVICES		\$30.9					
	Chicanes	22	\$66	Low				100%
	Crash Cushions	40	\$78	Medium	82.1%	7.7%	5.1%	5.1%
	Guardrails	75,000 LF, 772 units	\$7.5	Medium-Low	50.9%	44.6%	0.3%	4.3%
	Median Islands	500 (e)	Unknown	Low				100%
	Speed Cushions	25 (e)	\$31	Low				100%
	Speed Dots	3	\$0.02	Low				100%
	Speed Humps	100 (e)	\$5.0	Low				100%
	Traffic Circles	1,056	\$21.1	Medium High	94.7%	3.8%	0.2%	1.3%
	TRANSIT		\$106.2					
	Historic Transit Shelters	2	\$22	High	100%			
	Real Time Transit Information Signs	13	\$2.3	Medium-High	100%			
	Streetcar System	2 Lines	\$103.0	High	100%			
	Transit Loading Platforms	6 (e)	\$70	Low				100%
	URBAN FOREST		\$107.2					
	Irrigation	131	Unknown	Low				100%
	Landscaped Areas	5,371k SF, 218 units	\$37.5	Medium	15.4%	6.3%	0.9%	77.4%
	Trees	41,000 (e)	\$69.7	Medium	75%	17%	5%	3%

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Tunnel	1	\$0.74	High		100%		
COMMUNICATION		\$1.0					

INTELLIGENT TRANSPORTATION SYSTEM		\$377.5					
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Table I: Performance Measures












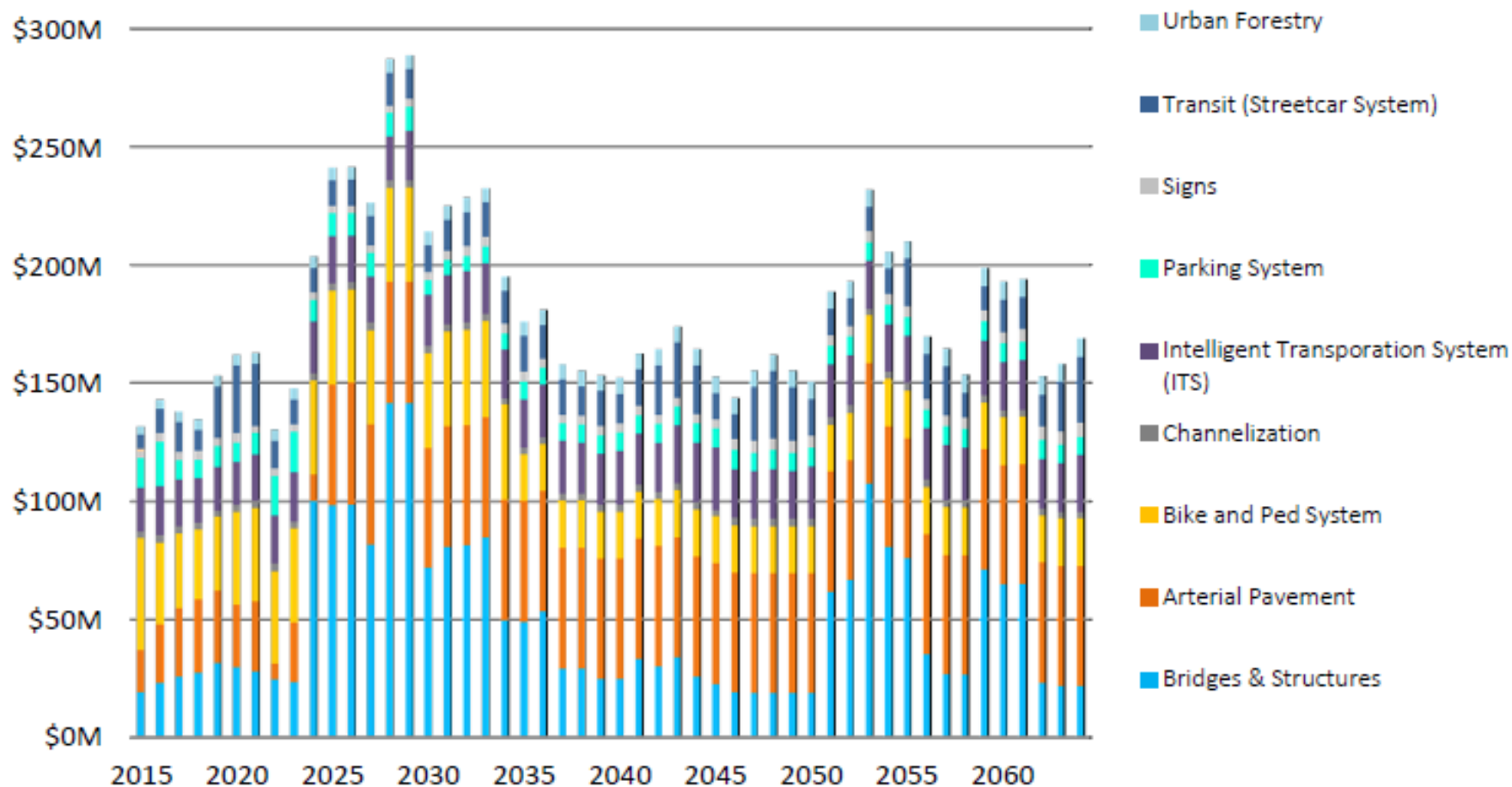
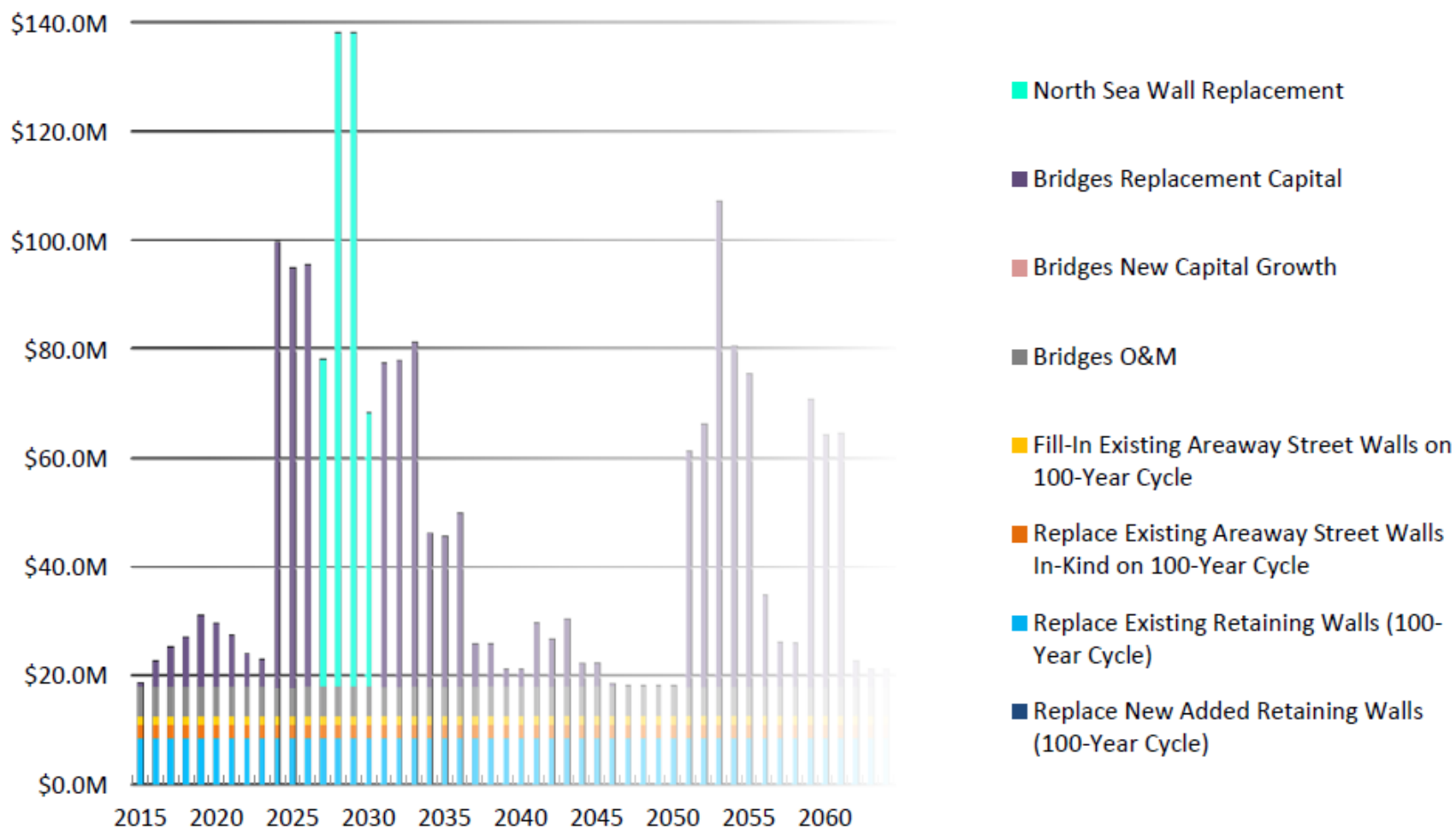
Policy goal/Performance Measure	2014 Planned	2014 Results	2015 Planned	Goal Met	Trend	Desired Trend
BRIDGING THE GAP						
Percentage of planned annual Bridging the Gap programmatic goals met or exceeded (Annual measure: 2012 & 2013) (5-year Rolling Trend)	99.1%	98.6%	90.0%			
BIKE & PEDESTRIAN SYSTEM						
Marked Crosswalks – # of crosswalks remarked	500	512	500			
Sidewalks – % of sidewalk repair requests responded to within 5 business days of notification	NA	NA	80%			
BRIDGES & STRUCTURES						
Bridges – # of bridge repair requests completed	190	366	253			
Bridges – # of inspections performed on NBI (National Bridge Institute) bridges	95	95	124			
CHANNELIZATION						
Pavement Markings – # of miles of painted centerline marking re-stripped	850	855	520			
INTELLIGENT TRANSPORTATION SYSTEM						
% of Transportation Operations Center downtime due to planned maintenance	0.01%	NA	0.01%			
Traffic Signal Assemblies – % of downtime due to planned maintenance	0.01	NA	0.01			
Traffic signal assembly maintenance events	779	779	770			
PARKING PAYMENT DEVICES						
Pay Stations – % of on-street paid parking areas with occupancies within the range of 1-2 available spaces per block face	75%	27%	75%			

Chart II: 2015-2064 (50-Year) Operational Cost Forecast for SDOT
(2015 Dollars)



2015 - 2064 (50-Year) Unconstrained Cost Forecast for Bridges & Structures (2015 Dollars)



*Bridge Replacement forecast does not include full rebuild of the Magnolia Bridge, estimated to cost \$350 million in 2015



Asset Class – Bridges and Structures

Section 2

The Bridges and Structures asset class consists of the transportation structures that are associated with the street network and a few one-of-a-kind roadway structures. The Roadway Structures group in the Capital Projects and Roadway Structures (CPRS) Division maintains all roadway structures.

Asset	Replacement Value	Condition				Data Confidence
		● Good	● Fair	● Poor	Unk	
Air Raid Siren Tower	\$500,000	-	100%	-	-	High
Areaway Street Walls	\$218,000,000	11%	58%	12%	19%	Low
Bridges	\$4,112,390,000	31%	52%	17%	-	High
Bridge Hydrant Vaults	\$650,000	100%	-	-	-	High
Elevator	\$1,500,000	100%	-	-	-	High
Retaining Walls	\$903,137,000	42%	36%	19%	3%	Medium
Tunnels	\$738,000	-	100%	-	-	High

Total: \$5.237 Billion

Performance Measures	2014 Planned	2014 Results	2015 Planned
Bridge repair requests completed	190	366	253
Inspections performed on NBI (National Bridge Institute) Bridges	95	95	124
Inspections performed on Areaway Street Walls	11	11	13
Inspections performed on Retaining Walls	116	116	116

Retaining Wall Inventory Status

Asset	Inventory Count	Data Confidence	Replacement Value	Useful Life (Years)	System Replacement Value	Anticipated Annual Growth
Earth Retaining Wall/Bulkhead	579	Medium	\$300-\$1,000/SF		\$203,136,770	Unknown
Alaska Way Seawall	2	High			\$700,000,000	Unknown
Total	581	Medium		75 (concrete) 50 (timber)	**\$903,136,770	

**Reported replacement value for retaining walls decreased significantly from 2010. This is due to accidental double counting of a pier and the Alaska Way Seawall. □

Life Cycle Costs, Maintenance Approach and Funding

BTG funded crosswalk maintenance started in 2007. Prior to BTG, the department performed maintenance in response to a customer request, or maintenance crew observation. Using BTG funding, SDOT developed a maintenance program for remarking crosswalks on a regular maintenance cycle. The 2014 BTG budget remarked 512 crosswalks. The Safe Routes to Schools (STRS) program, capital projects, and private projects remark crosswalks annually as well. Current funding allows for remarking of every crosswalk within a 10-

year period. We estimate marked crosswalk useful life from assets affected by heavy pedestrian and vehicle traffic. Crosswalks wear in varying ways, so SDOT maintains some crosswalks more frequently than others.

Funding requirements for maintenance of the concrete platform for raised crosswalks are included in a general maintenance budget and are not separable at the asset level.



Program Long-Range Plan

- Publish system-wide asset mapping for public use
- Publish Streetcar Asset Management Plan, Support State AMPs for Bridges / Pavement
- Improve asset onboarding practices and data collection
- Develop comprehensive performance management and corporate analytics support
- Implement comparative risk models and risk management
- In 2018, publish the next iteration of the S&C Report, as SDOT's overall Asset Management Plan

Questions?

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<http://www.seattle.gov/transportation/assetmanagement.htm>

www.seattle.gov/transportation

