



Improving Data Quality for Pavement Management System

Sui G. Tan
Metropolitan Transportation Commission

Overview

- Background
- MTC's Data Quality Management Plan
- Performance Measures



Why is it Important?

MAP-21 Requirements Focus on:

- **Performance**
- **Accountability**
- **Transparency**



Background

Pavement
Technical
Assistance
Program

Data
Quality
Mgt Plan

StreetSaver
PMS

Regional
Transport.
Plan

Goals of DQM

- (1) Provide consistent pavement distress identification
- (2) Improve data quality
- (3) Provide industry standards and accountability
- (4) Meet the minimum qualifications required for responding to RFP

Garbage In – Garbage Out



Data Quality Management Plan

1. Consultant prequalification
2. Quality control plan - before, during, and after production
3. Quality acceptance
4. Rater Certification Program

Source: <http://tinyurl.com/mm39ptx>

Consultant Prequalification



REQUEST FOR PROPOSALS
FOR
**2014 PAVEMENT MANAGEMENT INSPECTION
SERVICES**
(February 3, 2014)

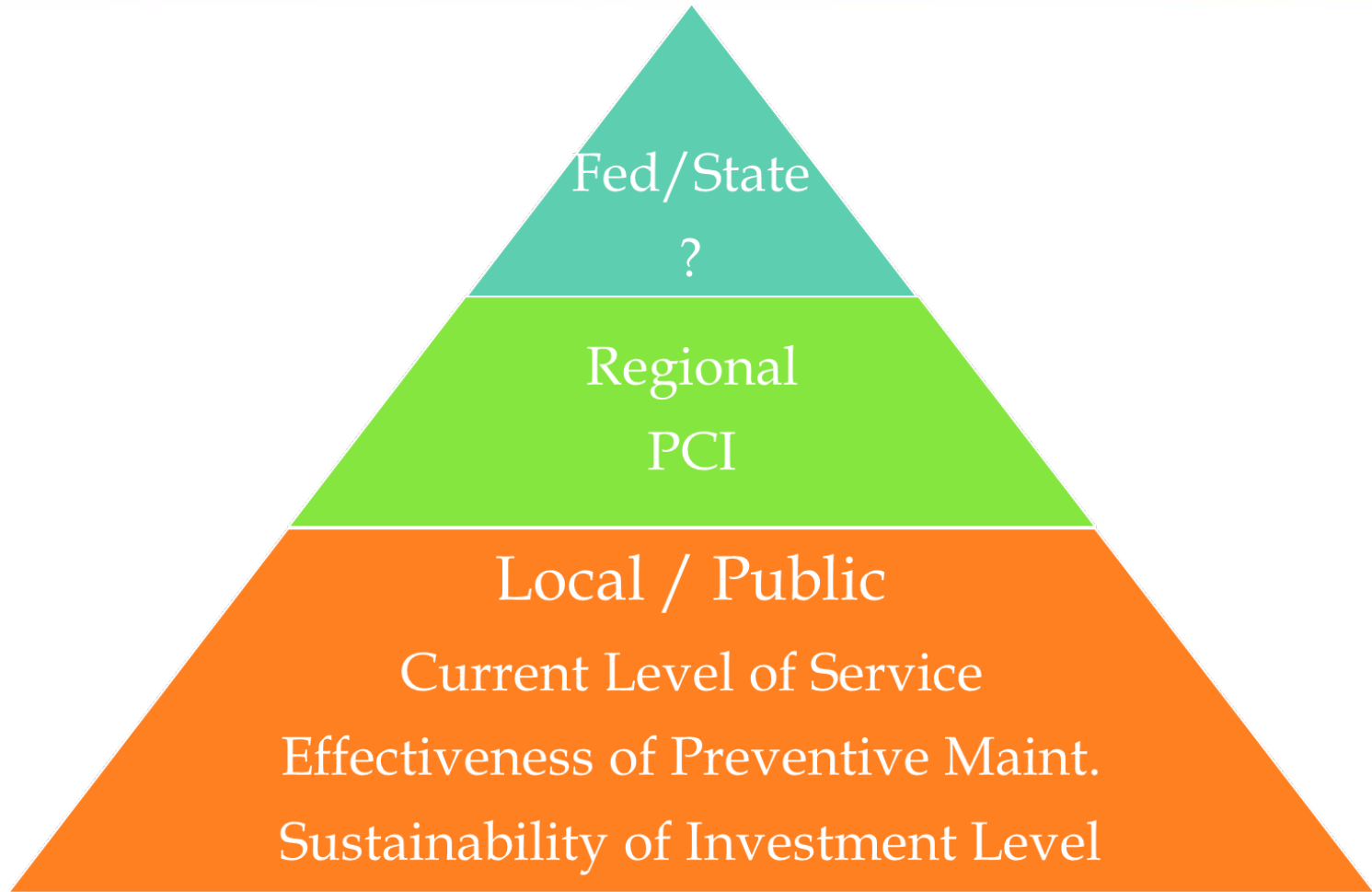
8. Develop a formal data collection Quality Management Plan (QMP). The QMP shall address data quality control for data collection as well as quality acceptance by City staff. Preference will be given to **firms that have been pre-qualified through the MTC Data Quality Management Plan.**

Key Performance Indicators

Keys Questions on Asset Management Plan:

- **Existing condition?**
- **Maintenance \$ currently invested?**
- **Maintenance \$ for SGR?**
- **Effectiveness of pavement preservation?**

Level of Performance Metrics



Guiding Principles

- **Measurable**
- **As objective as possible**
- **Can be fairly applied**
- **Utilize data widely available**
- **Meaningful (e.g. promotes pavement preservation)**

Proposed MAP -21 Performance Metrics

Metric	Surface Type	Condition	Range
IRI	All	Good	< 95 in/mi
		Fair	95-170 (Pop <1 million)
			95-220 (Pop >1 million)
		Poor	> 170 (Pop <1 million)
			> 220 (Pop >1 million)
Cracking_ %	All	Good	< 5%
		Fair	5-10%
		Poor	> 10%
Rutting	Flexible	Good	< 0.20 in
		Fair	0.20-0.40 in
		Poor	> 0.40 in
Faulting	Rigid	Good	< 0.05 in
		Fair	0.05-0.15 in
		Poor	> 0.15 in

KPI:

% Poor or Failed; % of Very Good or Better
Network PCI, 3-yr Moving Avg PCI

Current Level of Service												
County	Jurisdiction	Total Lane Miles	Total CL Miles	% Poor or Failed	% Very Good or Better	2012 PCI				3-yr Moving Average		
						Art	Coll	Res	NET	2010	2011	2012
	Regional Benchmarks (weighted)	42,788	20,634	24%	31%	73	66	63	66	66	66	66
ALA	ALAMEDA	303.9	137.8	22%	29%	70	72	62	66	66	67	68
	ALAMEDA CO.	990.3	471.8	9%	16%	71	73	71	71	72	73	71
	ALBANY	59.1	29.4	36%	20%	64	60	54	58	60	58	57
	BERKELEY	452.8	216.2	38%	28%	70	50	58	58	60	59	59
	DUBLIN	254.0	116.0	0%	84%	88	85	88	87	82	84	86
	EMERYVILLE	47.1	19.8	5%	51%	77	75	70	75	77	78	78
	FREMONT	1064.9	496.9	30%	31%	73	61	57	63	64	63	63

KPI:

Sustainability Index = Actual M&R Annualized 10-Year Needs

County	Jurisdiction	Network PCI	Actual M&R /Lane Mile	Needs/Lane Mile	Sustainability Index
	Regional Benchmarks	66	\$10,400	\$27,000	39%
Alameda	ALAMEDA	66	\$9,800	\$26,900	36%
	ALAMEDA COUNTY	71	\$3,600	\$16,200	22%
	ALBANY	58	\$12,700	\$29,800	43%
	BERKELEY	58	\$11,600	\$32,400	36%
	DUBLIN	87	\$6,300	\$5,600	113%
	EMERYVILLE	75	\$0	\$16,100	0%
	FREMONT	63	\$11,900	\$29,100	41%
	HAYWARD	69	\$14,000	\$22,600	62%
	LIVERMORE	76	\$5,800	\$15,000	39%

KPI:

$$\text{Pavement Preservation Index (PPI)} = \frac{\text{Actual PM \%}}{\text{Recommended PM\%}}$$

County	Jurisdiction	Network PCI	\$PM/ Lane Mile	% Actual PM	% PM Needs	Pavement Preservation Index
	Regional Benchmarks	66	\$ 1,336	17%	16%	1.06
Alameda	ALAMEDA	66	\$ 1,271	13%	15%	0.88
	ALAMEDA CO.	71	\$ 671	18%	28%	0.67
	ALBANY	58	\$ 1,247	10%	13%	0.78
	BERKELEY	58	\$ 263	2%	11%	0.20
	DUBLIN	87	\$ 3,124	50%	79%	0.62
	EMERYVILLE	75	\$ 48	100%	35%	2.87
	FREMONT	63	\$ 5,140	43%	16%	2.76

Just Remember...

**If it wasn't
documented, it
didn't happen!**

Questions?

Sui Tan, PE
StreetSaver Program Manager
Metropolitan Transportation Commission
stan@mtc.ca.gov

References

- NCHRP Synthesis of Highway Practice 401 – Quality Management of Pavement Condition Data Collection (Flintsch and McGhee 2009)
- Practical Guide for Quality Management of Pavement Condition Data Collection, FHWA 2013