REGIONAL ASSET MANAGEMENT PROGRAM SCOPING: FINAL REPORT

Submitted to
PSRC

Puget Sound Regional Council

30 APRIL 2014

Prepared and Submitted by

Aakavs Consulting
24919 SE 41st Dr
Issaquah, WA 98029
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1 BACKGROUND</td>
<td>1</td>
</tr>
<tr>
<td>1.2 PURPOSE</td>
<td>1</td>
</tr>
<tr>
<td>1.3 AUDIENCE</td>
<td>1</td>
</tr>
<tr>
<td>2. METHODOLOGY</td>
<td>2</td>
</tr>
<tr>
<td>3. LOCAL AND REGIONAL SWOT ANALYSES</td>
<td>3</td>
</tr>
<tr>
<td>3.1 CITY OF SEATTLE</td>
<td>3</td>
</tr>
<tr>
<td>3.2 CITY OF FIFE</td>
<td>4</td>
</tr>
<tr>
<td>3.3 PIERCE COUNTY</td>
<td>5</td>
</tr>
<tr>
<td>3.4 CITY OF MILL CREEK</td>
<td>6</td>
</tr>
<tr>
<td>3.5 KING COUNTY</td>
<td>7</td>
</tr>
<tr>
<td>3.6 CITY OF AUBURN</td>
<td>8</td>
</tr>
<tr>
<td>3.7 CITY OF BELLEVUE</td>
<td>9</td>
</tr>
<tr>
<td>3.8 CITY OF BREMERTON</td>
<td>10</td>
</tr>
<tr>
<td>3.9 CITY OF ARLINGTON</td>
<td>11</td>
</tr>
<tr>
<td>3.10 OVERALL REGIONAL SWOT</td>
<td>12</td>
</tr>
<tr>
<td>4. SOFTWARE NEEDS, OPTIONS AND PRICE</td>
<td>13</td>
</tr>
<tr>
<td>4.1 SOFTWARE/ SYSTEM NEEDS</td>
<td>13</td>
</tr>
<tr>
<td>4.2 SOFTWARE OPTIONS AND PRICE</td>
<td>13</td>
</tr>
<tr>
<td>4.2.1 StreetSaver</td>
<td>13</td>
</tr>
<tr>
<td>4.2.2 Paver</td>
<td>15</td>
</tr>
<tr>
<td>4.2.3 Cartegraph</td>
<td>15</td>
</tr>
<tr>
<td>4.2.4 Agile Assets</td>
<td>16</td>
</tr>
<tr>
<td>5. REGIONAL RECOMMENDATIONS</td>
<td>17</td>
</tr>
<tr>
<td>5.1 MAJOR RECOMMENDATIONS</td>
<td>17</td>
</tr>
</tbody>
</table>
1. INTRODUCTION

1.1 Background

Aakavs Consulting (Aakavs) was contracted by the Puget Sound Regional Council (PSRC) to assist them with the development of a regional asset management program scope to manage roadways and bridges. At this point, the scoping exercise is very preliminary. This report provides certain insights, but further in-depth investigation efforts are required in future to fully assess and develop such scope in detail.

The following sections will help the reader understand this document, its structure, and also its overall usage and relationship to PSRC’s initial scoping exercise related to regional asset management program.

1.2 Purpose

This document primarily establishes a common understanding of the major regional understanding from the perspective of strengths, weaknesses, opportunities and threats (SWOT). Further, various roadway and bridges asset management software options and associated pricing are also documented here.

1.3 Audience

This technical document will facilitate understanding of the items mentioned in the Purpose section above among key stakeholder groups. The following stakeholders should review this document:

1. All stakeholders who are related to this project.
2. All stakeholders who will review and produce further documentation and work products based on this document.
3. All stakeholders who will be associated with the development of the regional asset management program goals in future.
2. METHODOLOGY

At the start of the project, Aakavs and PSRC conducted 4 telephone interviews with 4 major MPOs in the US to understand their operations, goals and objectives. Emphasis was given to learn how MPOs operate across US in various situations and states.

1. Metropolitan Transportation Commission, Greater San Francisco Bay Region
2. Regional Transportation Commission, Greater Reno, NV Region
3. Grand Valley Metropolitan Council, Greater Grand Rapids, MI Region
4. Southeastern Michigan Council of Governments, Greater Detroit, MI Region

Another series of telephone interviews was conducted with the following regional participants within the PSRC region. The focus was to understand the strengths, weaknesses, opportunities, and threats (SWOT) of the local partners, and how their existing practices, data and software could be leveraged for the common benefit of the entities within the PSRC region.

1. City of Seattle
2. City of Fife
3. Pierce County
4. City of Mill Creek
5. King County
6. City of Auburn
7. City of Bellevue
8. City of Bremerton
9. City of Arlington

From the interviews and interactions above, the final SWOT analysis was prepared for all participants to develop an idea of the regional SWOT analysis. Presentation materials were prepared for the PSRC board members, committees and sub-committees. Then overall software and system needs across the PSRC region were identified. Appropriate software options with pricing were investigated to address the identified needs, and final recommendations were provided.
3. LOCAL AND REGIONAL SWOT ANALYSES

This section documents the regional SWOT for all the participating agencies in this project. An overall SWOT is also presented to summarize the overall findings at the end.

3.1 City of Seattle
3.2 City of Fife

Opportunity

- Only 7 square miles of City area
- One substantial bridge over railroad - Pierce County inspects

Weakness

- Need more funding
- No real compliance processes
- Identify which improvement to fund
- WSDOT collects arterial data biennially, PCI data every 10 years
- No MAP 21 reporting

Strength

- No software is used

Threat
3.3 Pierce County

![SWOT Matrix]

- **Opportunity**
  - Converting to Hansen
  - CRAB Reporting
  - Contextual data to better predict type of improvement to implement

- **Strength**
  - Comprehensive Asset Management System
  - Risk based analysis on individual assets
  - Pavement condition collected biennially
  - Asset Management closely tied with Budgeting Process
  - Performance Measurements
  - Preservation Models
  - “Maintenance Connection” software used

- **Weakness**

- **Threat**

3.4 City of Mill Creek

Opportunity

Newer City - Roads are still good but will be requiring maintenance soon

Strength

Reports to WA State annually - HPMS system

Uses Software - name required

Survey entire road system

Use survey data with pavement management software to prioritize improvements

Smaller City - doesn't qualify for WSDOT survey of arterials every two years

Data update every 3-4 years

CVery poorly funded - need resources - consultant support, financial support, tools etc.

Weakness

Focus on chip seals though they are not well received

Threat
3.5 King County

Opportunity

RCAMM potentially can integrate with multiple other business systems

Strength

RCAMM system - defined standards of care and levels of service
Annual bridge inspections - compliance with NBI
Entire prism of roadway into RCAMM and related maintenance management software
Field measurements go into database to develop composite measures
Deflection testing on all arterial roadways - survey of substructure
Data collection by walking streets 2-3 years
CRAB reporting - annual year-end reporting

Weakness

Need to better understand the "rate of deterioration" rather than simply the PCI process

Threat

Manual calculations of lifecycle costs
3.6 City of Auburn

**Opportunity**

- Understand new treatment options
- Condition is monitored every 5 years due to budget restrictions - the frequency of monitoring and data collection need to improve
- Repair work is entered into the system as repairs are entered to maintain a real-time look at the condition of the roadway
- Higher data gathering frequency required to illustrate good use of regional funds

**Strength**

- Cartograph software is used for pavement condition database last time. Still evaluating results. If results are not satisfactory, the city will revert to deflection surveying. Note that Cartograph is cheaper than traditional deflection surveying per costs provided by Cartograph.
- Separated into 2 different systems - local roads and arterials
- Track ADT to reset deterioration curves
- Contracts with King County to survey bridges biennially with load bearing ratings to determine weight restrictions
- Cartograph is also used for field data collection by doing an instrumented vehicle scan of all assets within a roadway prism

**Weakness**

**Threat**

- No reporting requirements
- Community outreach and public education is required to make them understand the needs and risks

- Find SS to perform the actual work
3.7 City of Bellevue

Opportunity

- Streets department maintain pothole patching and other maintenance work on pavements. This database is separate from the long term large pavement preservation projects reflected in CIP planning. These two databases do not interact.
- Funding preservation on regional routes that are not necessarily in regional centers
- City to City – with other similar cities – comparison will be useful

Strength

- Several factors influence prioritization:
  - Run needed list from Pavement Management System and produce maps
  - Segment results are produced and then segments are combined to address reasonable segments of roadways
  - Consider other factors e.g. stay out of areas where other conflicts may be present (e.g., development and capital projects)
  - Pavement survey every street - every 2 years
  - Uses StreetSaver software - weighs different roadway types and different FFC roadways
  - Uses consultant's van for data collection, also measures IRI (roughness rating). Found minor differences in rating between consultants van data collection and walking surveys
  - HPMS reporting with WA State
  - Contracted with King County to survey all City bridges (over 20 feet) biennially

Weakness

- Needs a way to ensure that data is being collected consistently

Threat

- ADA requirement - how is that impacting other agencies' budgets and implementation of projects? Are other agencies doing only curb ramps or any other improvements too e.g. sidewalk improvements etc.
3.8 City of Bremerton

Opportunity

Pooled funding for data collection will help since the region could benefit from economies of scale

City to City - similar cities - comparison will help

Frequent data collection will help improve operations and business systems in the long-run

WA State is putting too much resources in rural areas - need to adjust the resource splitting

Strength

Contracts with County for bridge inspections

No software is used other than MS Excel spreadsheets. Look at the data as it comes in and rank them by segments.

HPMS updates - annual reporting

Need more frequent data on the status of AKA ramps and other assets

Weakness

Very infrequent data collection due to budget restrictions. Usually, drive the roads with instrumented van for data collection

Threat

Need lots of data and frequently - any kind of regional program would add value to satisfy data collection needs
3.9 City of Arlington

Opportunity
- Have good foundation for program continuation - still early in program development
- Serve as a regional data collector/aggregator
- Provide resources to small cities for pavement condition data collection
- First time ever surveying roads - planning to do it every 2 to 3 years
- Support intra-regional comparisons and best practices research

Strength
- Uses a software - Cartegraph.
- Uses visual inspection of all roads, and PCI system
- Pavement data collection to be continued as a part of transportation benefit district creation
- Developing ADA ramps module in-house
- Track pavements and stormwater. Stormwater is included in Cartegraph.

Weakness
- System is very new, not much data

Threat
- No reporting requirements
### 3.10 Overall Regional SWOT

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide collaborative resources to smaller Cities for pavement conditions data collection</td>
<td>Software usage for causing and analysing conditions data</td>
</tr>
<tr>
<td>Support intra-regional comparisons and best practices research; comparison between similar Cities can also help</td>
<td>Use visual inspections for pavement and bridges conditions</td>
</tr>
<tr>
<td></td>
<td>King County, Pierce County, and WSDOT helps in regional data collection</td>
</tr>
<tr>
<td></td>
<td>King County, Pierce County, and WSDOT helps in regional data collection</td>
</tr>
<tr>
<td></td>
<td>Reporting requirements are not mandatory, including MAP 21</td>
</tr>
<tr>
<td></td>
<td>CRAB reporting - annual year-end reporting</td>
</tr>
<tr>
<td>Higher data gathering frequency required region-wide Regional program can help</td>
<td>Community outreach and public education is required for awareness of</td>
</tr>
<tr>
<td>Asset Management software needs to be integrated with conditions data for roadways and bridges</td>
<td>needs and risks</td>
</tr>
<tr>
<td></td>
<td>Its unclear how for ADA requirements are been complied with</td>
</tr>
<tr>
<td></td>
<td>Find S5 to perform the actual data collection and analyze conditions</td>
</tr>
<tr>
<td>Performance dashboards are required</td>
<td></td>
</tr>
<tr>
<td>Weakness</td>
<td>Threat</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. SOFTWARE NEEDS, OPTIONS AND PRICE

4.1 Software/ System Needs

This section documents the software and system needs, and software options with ballpark pricing information. Aakavs recommends PSRC to further investigate software feasibility and pricing before making any purchasing decisions.

High level software and systems needs are as follows:

- Software – capture asset conditions and perform analysis
- Data Collection Systems – preferably mobile GIS based
- Content and Record Management system
- Analysis and Reporting Tools
- Management/ Operations Dashboard – preferably web GIS based

4.2 Software Options and Price

Aakavs and PSRC have evaluated few major software in the roadways and bridges asset management sector and shortlisted the following 4 products. The recommended option is StreetSaver.

4.2.1 StreetSaver

The StreetSaver program is provided by the Metropolitan Transportation Commission, Regional Streets & Roads Program. Currently the StreetSaver licensing is $1,500/year that includes nightly database backup, restoration and fixes, enhancements and upgrades. Effective July 1, 2014, StreetSaver Online annual subscription fee will be adjusted based on the size of the agency. For the current users, StreetSaver is offering a “price lock” savings program that locks in the current price for a year when they renew.

About 65% of its current users will not see a price increase, as StreetSaver introduces a tiered system of pricing with the adjustment. The new pricing may be more equitable for smaller agencies.

<table>
<thead>
<tr>
<th>Miles</th>
<th>Sections</th>
<th>Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>(whichever is greater)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20</td>
<td>&lt; 200</td>
<td>$750</td>
</tr>
<tr>
<td>20-200</td>
<td>201 -1000</td>
<td>$1,500</td>
</tr>
<tr>
<td>200-500</td>
<td>1001-2000</td>
<td>$2,500</td>
</tr>
<tr>
<td>&gt;500</td>
<td>&gt;2000</td>
<td>$3,500</td>
</tr>
</tbody>
</table>
For example, the Surf Pines Homeowners Association in Oregon has 8 centerline miles and 42 management sections. The new cost will be $750 per year which represents a 50% reduction in price. On the other hand, Seattle, Washington - with 1,677 centerline miles and 14,000 sections - will see an increase from $1,500 to $3,500 per year. Consultants' pricing remains unchanged at $2,000 per year.

The price quoted above is based on one agency. If PSRC is thinking about a region-wide annual licensing agreement and provides the centerline miles of each jurisdiction within the region, more favorable pricing can be worked out with StreetSaver.

Below is a list of StreetSaver users in the PSRC region. Current users are noted as Online, while others are using older desktop versions.

<table>
<thead>
<tr>
<th>Software</th>
<th>Local Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Online City of Bellevue</td>
</tr>
<tr>
<td>2</td>
<td>Online City of Bothell</td>
</tr>
<tr>
<td>3</td>
<td>Online City of Enumclaw</td>
</tr>
<tr>
<td>4</td>
<td>Online City of Issaquah</td>
</tr>
<tr>
<td>5</td>
<td>Online City of Kenmore</td>
</tr>
<tr>
<td>6</td>
<td>Online City of Kirkland</td>
</tr>
<tr>
<td>7</td>
<td>Online City of Lakewood</td>
</tr>
<tr>
<td>8</td>
<td>Online City of Mill Creek</td>
</tr>
<tr>
<td>9</td>
<td>Online City of Mukilteo</td>
</tr>
<tr>
<td>10</td>
<td>Online City of Redmond</td>
</tr>
<tr>
<td>11</td>
<td>Online City of Renton</td>
</tr>
<tr>
<td>12</td>
<td>Online City of Sammamish</td>
</tr>
<tr>
<td>13</td>
<td>Online Seattle Department of Transportation (SDOT)</td>
</tr>
<tr>
<td>14</td>
<td>Online Snohomish County</td>
</tr>
<tr>
<td>15</td>
<td>8.0 City of Auburn</td>
</tr>
<tr>
<td>16</td>
<td>7.5 City of Bainbridge Island</td>
</tr>
<tr>
<td>17</td>
<td>7.5 City of Newcastle</td>
</tr>
<tr>
<td>18</td>
<td>7.5 City of North Bend</td>
</tr>
<tr>
<td>19</td>
<td>8.0 City of Woodinville</td>
</tr>
</tbody>
</table>

Keeping the above information in view, PSRC may consider using StreetSaver region-wide for all participating agencies for the following major reasons:

1. **Leverage economy of scale** – lots of existing users, and more users will collaborate at marginal costs.
2. **Centralized database** – all participants can use the same StreetSaver database and programs for the roadways and bridges asset management needs. Data will be easily interchangeable.
3. Training, Support and Maintenance – StreetSaver is a time-tested established product and many users within PSRC region are satisfied users for a long time. Good technical support is expected from StreetSaver. Users are familiar with the program.

4. Time to Market – As many users within the region are successfully using the program for a while, the rollout times and learning curve will be minimal.

5. Enterprise Integration – StreetSaver database can interact and integrate with other enterprise business systems and portals in future.

4.2.2 Paver

The Paver Program is provided by the Colorado State University. One copy of the PAVER 6.5.7 software costs $795 and comes with one serial number. That serial number can be used to activate the software 3 times, whether that be on 3 different machines or on the same machine 3 times (machine rebuild, upgrade or crash). It also allows deactivating the software 3 times. So if an user is upgrading the machine, PAVER software can be deactivated before uninstalling the software or wiping the machine clean - this will allow the user to activate it on the new machine.

If there is a need to activate the software more than 3 times, 3 additional activations for that same serial number can be purchased for $150, or 6 additional for $300. The maximum number of activations any one serial number can have is 9 - the original 3 and additional 6. If more activations are needed a new serial number should be bought for $795. The maximum number of deactivations any one serial number can have is 3. No additional deactivations can be purchased.

Each serial number comes with a year of technical support and upgrades. Maintenance from the next year will be $550/ year for 3 activations, $650/ year for 6 activations, and $750/ year for 9 activations. If PAVER software was bought within the past year or have been renewed, the Field Inspector or Image Inspector software (add-ons) are eligible for the Colorado State University (CSU) Subscribers discount.

The software manuals cost $20 for one copy, and $17.50/ copy for multiple copies. The Distress Manuals or the Pavement Management for Airports, Roads, & Parking Lots Book costs $180. Shipping and handling costs for the software and manuals can vary from $15 to $20.

There are not many users in the WA state for this software.

4.2.3 Cartegraph

This program is provided by Cartegraph. The cost per user is $3000. The unlimited user pricing depends on total number of users and the population being served – it can range from $70,000 and upwards including a software licensing fee and an initiation fee. Any implementation services will be additional, and it typically starts from $30,000 and upwards in professional services. Any training or yearly maintenance will be separately charged.
The software can support multiple asset types using various modules, and provides tracking dashboards with integrated GIS and reporting functions. The software is primarily an asset management software for local Govt. (e.g. utilities infrastructure), but has pavement management aspects too.

### 4.2.4 Agile Assets

This program is provided by Agile Assets. The software can support various asset types, and has lots of dashboard and tracking features with detail reporting. It's targeted for huge enterprises and the initial implementation costs including licensing range from $250,000 and upwards.
5. REGIONAL RECOMMENDATIONS

5.1 Major Recommendations

This section documents the major recommendations:

- Some agencies are already collecting valuable data on pavement conditions and bridges. These should be made available region-wide for comparisons and benefits to other agencies.
- Some agencies who are ahead in pavement management should extend help to other agencies who are starting or yet to start. Data collection help, guidance, strategies and tactics should be shared.
- PSRC may also consider promoting a POOL system to promote a collective effort for region-wide data collection, data sharing, software sharing, software licensing and maintenance costs.
- PSRC may also help build consensus across the region to use one software – choosing from the existing and proven software programs that are already in use within the region. This may help keep the costs down and create lesser migration issues.
- Data collection method and frequency, conditions data analysis, and reporting objectives and priorities should be discussed and determined across the region to have a sustainable and current system of pavements and bridges. All participating agencies should develop the charter and standards with PSRC. Once developed and agreed, a region-wide follow through effort will be required.