Tillamook County Public Works Department

Asset Management Project

Readiness Assessment

Submitted to:
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Revision History

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Chapter 1 Introduction

Tillamook County Public Works Department (TCPWD) manages a 397 mile county roads network for the 25,845 citizens in Tillamook County[1]. The 2007 replacement value of county pavements alone is $268.4 million.[2] Over the last 25 years, TCPWD has experienced significant reductions in available revenues and staff. From a high of 50 employees in 1982, there are currently 27 TCPWD employees. The July 2008 loss of federal forest fees will result in further personnel reductions as up to 40% of the County's road revenues are lost. Road condition is currently the worst of all 36 Oregon counties[3]. TCPWD leadership has changed within the last two years and management positions reduced reflecting declining revenues and current management challenges as budget uncertainties continue. Recent storms have damaged County roads and the port's railroad to the Willamette Valley. This will further impact the condition of County roads as freight moves from rail transport to the road network.

TCPWD managers are seeking more effective ways to target available resources so that organizational actions are aligned with community priorities. The ability to link day to day operations with strategic objectives requires accurate information on road network needs, the resources used to manage them, and regular performance reporting that shows whether conditions are improving, where services are provided and the cost of County road services. This information helps all—employees, elected officials and the public—understand how the communities needs are being addressed and at what cost. **The ability to strategically target available resources for the least cost with an understanding of the long term implications is known as asset management.**

The first task in providing the desired level of service requires an understanding of the current level of service provided. This report assesses key elements of the current road network management practices within TCPW including:

- Processes & practices (inventory, condition, replacement value, cost accounting, strategic planning, internal communication and the consistency of management practices and standards)

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[1] Portland State University Center for Population Research and Census, November 2007

[2] Engineering Information Services rates road condition every other year using TCPWD costs. As of June 2007, EIS reports the replacement value of County roads alone as $268.4 million. This does not include the value of other transportation network assets, such as bridges. The historic depreciated value of county roads is $22 million, as reported in the *Tillamook County, Oregon Comprehensive Annual Financial Report*, June 30, 2007. TCPWD also administers solid waste disposal for Tillamook County. The assessment of solid waste management practices is not considered in this document.

[3] Letter from Engineering Information Services, October 24, 2007

- Information systems
- Data & knowledge of assets including knowing what happens if they fail, the likelihood of failure, their historic and projected cost, given their age and performance
- Service delivery mechanisms (in-house or contracted)
- Organization and people
- Performance linked to a financial plan based on options for levels of service and what happens to system condition over time given these alternative scenarios, their costs and benefits

The readiness assessment is one of four tasks used to provide a road map for implementing improved asset management practices at TCPWD.

Chapter 2 — Assessment Summary

Key asset management elements are found in leading public works organizations worldwide. Many points of excellence as well as opportunities can be found in government agencies seeking to continuously improve the strategies, methods, tools and information used to support decision making. Following is an initial assessment of how Tillamook County Public Works Department (TCPWD) compares to best asset management practices.

Asset Management Element	Assessment of Current Practice
Organization & People	
Best Practice Description Continuous improvement and AM principles and practices are integrated into the organization: ■ Articulated vision & top support ■ Roles and responsibilities are well defined ■ Dynamic agency communication includes collaboration across functions (engineering, operations, finance) ■ Consistent and well documented practices with accessible information that support s decisions and tracks accountability ■ Agency consults customers and integrates requests for service into decision making ■ Staff understands & supports vision, is well trained and has access to information.	**TCPWD Strength** TCPWD's new leadership is engaged in defining vision that supports AM. Recently, the culture has shifted to a decision model based on collaboration across functions and shared decision making. Information is shared and options examined. Communication as a team is frequent. This, along with the knowledge of many long term employees, makes the agency well positioned to integrate AM. Many roles have been reassigned recently. Documentation of roles & responsibilities occurred in 2007. **Needs Improvement** Clarify asset inventory, condition and data maintenance roles and responsibilities. Access to information is limited as many data sets require knowledge of where the information is, and training on software used to access it. Training on e-mail, and IRIS software is needed .

Asset Management Element	Assessment of Current Practice
Policy & Strategies	
Best Practice Description Clear strategies and measurable performance against targets exist that lead to sustainable infrastructure management. ▪ Strategic plans exist. ▪ Operating, capital and financial plans are linked and funding strategies tied to long range needs. ▪ Master facility plans are tied to capital improvement plans. ▪ Asset plans define alternative levels of service, including current level of service, that address the ability to reach useful life of assets ▪ Performance targets are adopted and compared to objective descriptions of desired and actual conditions of features. These form the basis of maintenance and operations manuals. ▪ Community desired outcomes are linked to services provided and regular feedback with stakeholders occurs. ▪ Risk management identifies critical assets and guides resource allocation. ▪ Maintenance costs are reported and used to evaluate against long term asset needs.	**TCPWD Strengths** TCPWD has an on-going commitment to respond to community requests for service. Recent Futures Council survey and strategies track perception of service and strategies to implement a County-wide vision. Risk-based decision making has been required to address significant weather events in 2006 and 2007. Excellent cost accounting tracks the cost of maintenance services. **Needs Improvements** County strategic vision and goals need to be integrated with TCPWD vision and strategies. Explicit performance targets are needed and an asset plan developed that reflects alternative levels of service, including the cost and consequence of the current level of service, and the long term needs of the road network and its assets. This should reflect the desired level of service as expressed by the community. Project selection and services should reflect strategic priorities.

Asset Management Element	Assessment of Current Practice
Information Systems, Data and Knowledge	
Best Practice Description Accurate records are maintained on all assets and information integrated across the agency. ▪ Inventory, condition and value are known for each asset class. Work accomplishments are tracked. ▪ Risk-based priority is established including consequence and likelihood for all asset classes. ▪ Explicit confidence is stated as a part of asset reporting. ▪ Information is gathered to understand the lifecycle of assets. ▪ Databases are integrated and information accessible to all who need it. ▪ An appropriate mix of data collection technology is used to support high quality of data and minimize data maintenance. ▪ Inspection occurs on defined schedules and sampling techniques are used. ▪ Information on public perception is updated regularly through surveys and complaint tracking.	**TCPWD Strengths** TCPWD uses IRIS to track costs and service requests. IRIS modules optimize pavement management strategies and inventories and condition are known for pavement, bridges, signs, and guardrails. Inspection cycles are every other year for pavement and bridges. Vehicles are inventoried in the EM module and preventive maintenance cycles established. The service request module of IRIS tracks citizen requests. Recent storms have lead to risk management approach to work priorities. **Needs Improvement** A 2006 culvert inventory is not maintained. Continuously maintained culvert and levee inventory and condition assessment are needed. There is no condition assessment for buildings, or quarry sites. Multiple software is used to track bridge condition (Excel and inspection reports), and equipment management (IRIS and Truck Management). There is no comprehensive report stating the TCPWD asset inventory, condition, replacement value or confidence in data. No laptops or GPS are used; the GIS module of IRIS is not supported by AOC. Inspection standards, measures and frequency should be documented for all asset classes and QA/QC methods adopted that assure data accuracy and repeatability. Regular performance reports should include service request volumes and community survey results on perception of service. A response standard for SR is needed. Comprehensive risk assessment should identify and plan for risk that protects the public safety, services and minimizes future costs. The results should be included in an asset plan.

Chapter 3

Method

Beginning in January 2008, the following approach was used to complete this task.

- Review existing documentation
    - policy, asset inventory, condition & performance, business processes, resource allocation, budgeting & project selection, organization, performance reporting, information technology and data collection and processes
- Understand current practice, priority setting & issues[4]
    - Interview TCPWD Director & management staff
    - Conduct a Self Assessment Survey[5] of TCPWD management
    - Interview County Commissioner, planning, emergency response, decision makers in community
- Compare to best practice
    - Summarize results
    - Review preliminary results with Director
- Finalize readiness assessment

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[4] See Appendix A: List of Interviewees
[5] See Appendix B: Self Assessment Survey

Chapter 4 Best AM Practice

The *International Infrastructure Management Manual*[6] describes two levels of asset management practice, basic and advanced. A continuum of improving public works management and managing infrastructure typically evolves within an agency from a basic knowledge of network needs to more specific, documented processes and information based on performance targets and explicitly adopted management strategies.

Basic asset management practice addresses minimum legal and organizational requirements for financial planning and reporting. From this, the current level of service is developed for an annual budget process, and usually a five year capital plan for new or replaced assets. Basic or foundational asset management may include:
- Inventory of major asset classes (for example, miles of pavement by functional classification, bridges, miles of guardrail, ditches, culverts, number of signs)
- An understanding of assets that are most critical to the community (for example, regulatory signs, arterial pavements, levees)
- Asset condition and performance for critical assets (pavement and bridge inspections based on established criteria) but reliance on the judgment of knowledgeable maintenance or engineering staff for non-critical asset classes' condition
- Simple cost/benefit discussions for key projects prior to requesting or assigning resources, versus more rigorous and documented options analysis for capital investment options

As asset management practice evolves, investment strategies are based on the desired community outcomes, are supported by technical information gathered in the field as to where work was performed on which asset, and targets expenditures that better manage preservation of an asset so that the useful life of an asset can be achieved with the least cost. These actions support explicitly agreed to service standards. Continuously improving the link between what the community has explicitly stated it is willing to pay, with where and what activity is performed, improves accountability and an understanding of why work is performed.

Advanced asset management practice key elements include:
- Corporate strategic plan is explicitly linked to a commitment or chartered asset management strategy. Links exist between service outcomes, programs, an asset management plan and performance.

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[6] *International Infrastructure Management Manual*, INGENIUM, New Zealand, 2006

- Options that include consideration of the lowest cost for managing an asset, or lifecycle costs, including knowledge of the costs to design, build, operate, maintain, renew/repair, replace and decommission an asset[7]. Explicit considering of these costs, the risks and benefits to the community and capacity of the organization to deliver the service occur at this point..
- Operational objectives are aligned with performance measures.
- Information systems are integrated, understood and used.
- Skills and training are aligned to explicit roles and responsibilities and knowledge is shared, as appropriate
- Investment strategies are based on risk assessment, projection of future costs and consequences and a commitment to continuous improvement.

Criteria for determining where an agency is in its evolving practice, from basic infrastructure management to growing application of asset management, and finally state-of-the-art asset management, have been recently documented by the National Cooperative Highway Research Program.[8] Elements include:
- Overall description of agency practice
- Policy guidance
- Asset life-cycle focus
- Asset performance and costs
- Impacts of asset performance
- Resource allocation, budgeting and project selection
- Organization
- Performance measurement
- Information technology and data collection and processing

It is these criteria that will be used to assess Tillamook County Public Works Department's current practice.

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7 Up to 80% decisions about an asset's lifecycle costs are determined at the design/build point of its life
[8] NCHRP Synthesis 371, *Managing Selected Transportation Assets: Signals, Lighting, Signs, Pavement Markings, Culverts, nd Sidewalks*, Washington, D.C. 2007

Chapter 5

Current State

Organizational Description, People and Practice

Organization

Tillamook County Public Works Department is organized into three districts, North, Central and South, with a foreman organizing and managing work within each district. A shop foreman is responsible for equipment management, a traffic safety technician manages signs and pavement markings, while a bridge specialist coordinates bridge inspections and maintenance, as well as assists in development permit review. Engineering staff reviews development permits, performs survey and grade staking for grade widening and improvement projects generally less than 2,000 feet in length, and coordinates information about the road network. Office staff is responsible for data entry in the Integrated Road Information System (IRIS), cost accounting, customer service, billing and timekeeping, record-keeping, file maintenance as well as basic accounting responsibilities for the Department. In total, the TCPWD has 27 employees. Many employees have worked for TCPWD between 20 and 40 years, and are nearing retirement. The director, a civil engineer, joined TCPWD in October 2006.

Recent changes in management have resulted in a more collaborative decision making structure. On-going maintenance project priorities are discussed daily and work assigned. Priority consideration is given to high maintenance areas and those areas receiving requests for service. This involves the director and foremen. As additional resources are made available for paving projects, the Director described the allocation process as: 1) Consideration of geographic (district) equity. 2) The foremen then make a list of need or projects giving priority to high-volume or arterial roads. 3) These priorities are then reviewed with the County Road Advisory Committee. 4) Finally the County Board reviews and approves the ranked list of paving projects.

Inventory Condition Assessment & Documentation

TCPWD is responsible for managing Tillamook County's road network, including roads (paved and gravel), bridges, traffic signs, pavement markings, guardrails, levees, and county facilities, including TCPWD buildings and quarry sites. Vehicles and equipment used to maintain these facilities are also TCPWD assets. Following summarizes information on each of these asset classes.

Asset Inventories	Process				
	Inventory?	Documented Condition?	Documented inspection process?	Established inspection schedule?	If yes, frequency?
Roads	Yes IRIS-SS	Yes	Yes	Yes	Every 2 years
Bridges	Yes Spreadsheet	Yes	Yes	Yes	Every 2 years
Traffic Signs -reflectivity	Yes IRIS-RI	Partial IRIS-RI	Yes Annual report	Yes	Once per year-night inspection
Traffic Signs -maintenance	-	Yes IRIS-RI	Yes Report	On-going	
Guardrail	Yes IRIS-RI	Yes	No	No[9]	-
Culverts	Yes[10]	Yes (2006)	No	No	-
Ditches	No	No	No	No	-
Pavement Markings	No[11]	No	No	-	-
Levees	No	No	No	No	-
Buildings	No	No	No	No	-
Vehicles	Yes IRIS-EM	No	Yes[12]	Yes	By need
Quarry sites	No	No	No	No	No

The County road assets value is reported at the network level using the written down or historic depreciated value method. The road network value as stated in the annual *Tillamook County, Oregon Comprehensive Annual Financial Report for* July 2007 is $21,631,778. However, Engineering Information Services rates road condition every other year using TCPWD costs. As of June 2007, EIS reports the replacement value of County roads alone as $268.4 million. This does not include the value of other transportation network assets, such as bridges.

[9] Guardrail inspection begun spring 2007.
[10] Nestucca/Neskowin Watersheds: Culvert Prioritization and Action Plan for Fish Passage, August 2006.
[11] Pavement markings are repainted by contractor (Marion County) one time a year with oil-based paint. An Excel spreadsheet notes the materials used and length of line and type to calculate materials.
[12] Equipment Management tracks preventive maintenance performed by vehicle.

Self Assessment Survey Results & Recommendations

TCPWD management was interviewed January 15 and 16, 2008 and asked to complete a Self Assessment Survey (see Appendix B: Self Assessment Survey). Follow up information was gathered January 22 and 23, 2008 and results of the survey analyzed. Survey responses are summarized. Observations about TCPWD current practice follow, including recommendations that move TCPWD to a more sustainable management of road assets.

Policy.

1. "Our agency has clearly defined policy goals."

There were inconsistent responses to this statement. While most agreed with this statement, comments indicate that existence of administrative policies could have been confused with clear programmatic policies. Specific mention was made that improvements were needed to right-of-way encroachment, the spray program, Local Access Roads, drainage ditching and trees in the right-of-way policies. At a minimum, new management was unaware or they disagreed with this statement, referring to reliance on past practice, not policy, as the basis of reaching goals.

2. "Our agency has official performance measures for evaluating progress toward our goals."

Most disagreed, or strongly disagreed with this statement. Beyond pavement condition, there was lack of clarity as to whether these existed. Foremen rely on their judgment, not performance indicators to allocate resources. The question was raised as to whether the County Road Advisory Council (CRAC) directs road improvement, not performance.

3. "Our agency can articulate its goals as target values of its performance measures."

Most disagreed with this statement, or agreed with reservation citing the frequent need to revisit goals because core elements of the goal or "the desired result or purpose" were not addressed. One responder declined to select an option which may indicate a lack of understanding of the statement itself.

Recommendation: Listing and communicating established federal, state, local statutes, County policy, governing engineering standards and practices, and agency policies and procedures would benefit all. Clear priorities are needed among County goals. The role of the CRAC in setting goals and targeting performance needs to be clarified. These should be linked and guide investment and management decision ranking criteria and should speak to each program's management, funding levels, performance measures and public outreach materials.

Accountability

4. "Our agency can document the current condition of its assets."

Many respondents saw clear differences in the ability to report on some assets' condition (pavement, signs, bridges, guardrails), and other assets' condition which is unknown (culverts, ditches). Further comment questioned the frequency or period that the condition assessment covered. The lack of available staff and resources to assess condition was mentioned as a problem. Software programs that could be used to track asset performance are not fully used.

5. "Our agency can document changes in the conditions of its assets over time."

A similar response to #4 distinguished between those asset classes that could be tracked and those that couldn't. However, even though programs are available to do this, they are not fully used or asset condition trends reported.

6. "Our agency regularly reports on the conditions of its assets and the agency's actions to preserve them."

Most disagreed with this statement. With the exception of pavement condition, asset condition is not reported on or the actions the TCPWD takes to preserve asset condition. One responder suggested that service requests were a means of reporting on the needs for preservation or repair.

7. "Our agency regularly evaluates the effectiveness of programs and projects using hard data."

Almost all disagreed or strongly disagreed with this statement. With the exception of signs management, most feel this is not occurring. This may reflect a lack of understanding that signs data is used to develop the sign program or projects.

Recommendation:
A comprehensive inventory of all County road assets is needed. Documented, regular and repeatable inspection processes based on established standards and frequencies are needed for each asset class. Preventive maintenance activities should be segregated in the cost accounting system so that actions correlate to managing the lifecycle of an asset. Staff should be involved in regular training which distinguishes activities that are reactive maintenance (response to service requests) versus proactive, or preventive maintenance (usually scheduling work targeted at maintaining an asset's condition or preventing its deterioration).

Consistent quantitative reporting is needed that links activity costs, asset condition, and asset and operational performance targets. These performance reports should be conveyed to staff on a regular basis, at least annually. These same data should form the basis of reporting to those setting annual department funding priorities, including the CRAC, County Commissioners and the public. Assess the sign data collection, program and project evaluation processes, and reporting. As appropriate, implement similar inventory, condition, and definition of activities that track asset performance over its lifecycle. Develop processes that evaluate each program's effectiveness and project selection using specific data.

Resource Allocation

      8. "Our agency can document the tradeoffs of investing more or less in its various programs."

Responses were equally split between those who disagree and agree with this statement. Some cost tracking exists which documents the effectiveness of the paving program (e.g., paving versus pot hole patching). This is not possible for other programs (e.g., pavement markings).

      9. "Our agency considers alternative methods or "fixes" for problems."

Most agreed with this statement, although the director and a foreman disagreed this was being done. Another foreman suggests new leadership has introduced this at TCPWD. The lack of agreement may reflect newly instituted practices, or the lack of consistency in using this approach. One respondent suggests the cost information and service requests provide additional opportunities to examine hard data as tradeoffs are evaluated. Recent natural events (wind and flooding events in November 2006 and December 2007), the lack of resources and the current nature of the agency's emergency response activities may have influenced the differences in responses.

      10. "Our agency has a consistent and defensible process of project identification and selection."

Most disagree with this statement, or see the need for an adopted plan with clear performance triggers (e.g., correlating the pot hole patching service requests and the cost to repair these on a route with the cost and longer term benefit of more structural repairs). Local Access Roads (LAR) were mentioned as a specific problem area. Response to service requests on LARs result in significant resource expenditures. A County Commission Board order mandates a minimum response to LAR service requests. Adjoining counties explicitly do not provide service on LARs.

      11. "Our agency considers long-term costs of the way it operates using life-cycle costing techniques."

Almost all disagree or strongly disagree with this statement. Signs management may be the exception to this statement.

      12. "Our agency has established trigger values of performance measures resulting in various actions."

Most disagree or strongly disagree with this statement. Several did not respond perhaps indicating a lack of understanding of the question itself. A comment was made that complete failure may be the trigger for action and the "Band Aid" effect (e.g., pothole patching, or adding a sign that weight limits a bridge) the action itself. Project selection following an analysis of tradeoffs between short term repeat activities (pothole patching) versus long term needs is just beginning in TCPWD. Historic budget allocations are the start point in budget development;

however, declining resources has forced consideration of tradeoffs between programs. State and federal funding assistance has been targeted at assets (bridge and paving) in poor or very poor condition.

Recommendation:
The Cost Accounting System does not capture the lifecycle activities for all asset classes. Account codes should be revised to better reflect each asset's lifecycle. An explicit and consistent method based on scoring points and weighted to reflect community priorities is needed. This should be used to rank order projects within a program, and across programs. Resource allocation and budget development should be aligned with project selection criteria, categories considered in a tradeoff analysis and performance measures and targets. Criteria should reflect board-adopted policies and objectives.

Operational Efficiency
13. "Our agency coordinates its maintenance with the maintenance of relevant water/sewer infrastructure and private utilities which share its right of way."

Opinion is split as to whether this statement is true. TCPWD notifies utilities who share the right of way before paving occurs and asks them to complete their work before TCPWD begins theirs.

14. "Our agency purchases materials and equipment in bulk with other agencies to reduce costs."

Opinion is split as to whether this is a true statement. Currently, TCPWD buys many materials in bulk (signs, safety supplies, rock, cold mix, sanding, paint striping materials and beads) based on low bid and negotiated prices. However, other than striping paint which is purchased on Marion County's contract, materials and equipment are not bought cooperatively with other agencies. Efforts are underway to join the Portland Metropolitan Area Transportation Cooperative, or PMAT, a group of Oregon transportation and public works agencies that have agreed to share resources (labor, materials and equipment) by the means of a joint intergovernmental agreement.

15. "Our agency reduces its costs through joint ownership and shared use of equipment with nearby agencies."

Opinion is split on whether this is true. Since October 2006, efforts to cost share through joint ownership have begun, although one respondent described efforts as "minimal". During natural disasters, partnerships exist with ODOT, ODF, BLM, and the National Guard.

16. "Our agency shares data with other departments in local government."
All agree with this statement, however, this occurs upon request.

17. "Our agency shares data with the state and other local transportation agencies."

While some disagree with this statement, it may be due to lack of awareness that such reports are required and currently made available. In particular, cost information is produced and reported to the state DOT on a regular basis.

18. "Our agency uses performance-based contracting."

Most disagree with this statement. Low bid has been the usual method for awarding contracts, when done at all. The exception is that during storm events, performance is used as a consideration for awarding contracts (e.g., generators).

19. "Our agency makes appropriate use of private contractors."

Most agree with this statement, or said it was not applicable. Contractors are rarely used which may reflect a lack of resources to hire contractors. One respondent stated that contractors are only hired "if it is cheaper to use private contractors."

20. "Our agency considers design-build contracting, total closure construction and other innovative methods."

Response was spread across all categories, including "not applicable." A lack of agency resources excludes the possibility of using innovative construction management methods. One respondent suggested that OTIA III-funded projects to rebuild six County bridges may be incorporating some of these techniques.

Recommendation

New management is beginning to implement innovative ways to reduce operational costs. TCPWD should adopt an explicit policy that as resources are spent on the County's road assets, consideration of innovative techniques for new or major renewal projects will be considered, including performance-based contracting. Bulk materials purchases and equipment sharing should be pursued as a regular practice. As stated, progress is being made in intergovernmental resource sharing (PMAT agreement). These policies and activities to improve operational efficiency should be listed in a regular annual report so all employees, CRAC, the County Board and the public are made aware of these efficiencies.

Data Collection and Organization

21. –a "Our agency has complete information on its assets…"

Responses were divided. In general, complete knowledge of assets is limited to pavement, bridges, signs, guardrails and equipment (rolling stock). Information is tracked within IRIS for these asset classes. Information is incomplete or not maintained on pavement markings, culverts, ditches, levees or TCPWD buildings.

–b "Our agency has complete information on its spending/costs…"

Cost information is tracked by activity within in the Cost Accounting System, which always includes job code, which are by activities performed to major asset classes (roads, bridges, equipment, e.g.), or by operational activity (engineering, e.g.). Districts are noted by a route code (road/project) and for major activities on one project, a four digit project number. Additional information includes the location of worked performed (district, milepost, road segment), or the road or asset's name (e.g., Bewley Creek Bridge). A separate spreadsheet lists country bridge information.

-c "Our agency has complete information on the public's satisfaction." There is less agreement with this statement. Current efforts are underway to better integrate community perception of service and how the County performs its work.

22. "Our agency collects data on all its assets regularly, in cycles of three years or less for pavements."

There was agreement that this statement is true for pavements, bridges, and signs within IRIS. Guardrail condition was assessed in 2007. The Road Information System (RIS) module contains inventories for these asset classes. Pavement inventory and condition information is maintained in IRIS's Street Saver (SS) module. Pavement condition is updated every other year. The Cost Accounting System tracks the cost of all work performed and the road segment it is performed on.

23. "Our agency has quality control/quality assurance procedures to assure the accuracy of its data."

Several respondents did not respond to this statement, indicating a lack of knowledge about QA/QC procedures used in TCPWD, or a lack of clarity about the question itself. Pavement and bridge condition assessment have repeatable, documented procedures that assure data quality. The signs program, while thorough and based on engineering standards, does not have fully documented condition assessment procedures or standards which could be repeated by other TCPWD employees and assure similar results. The Traffic Safety Technician bases his assessment on national guidelines but uses his judgment to ascribe sign condition. This is also true for the guardrail condition assessment. Other assets, or important activities such as vegetation management, do not have quality assurance or control procedures. One respondent noted that the Cost Accounting System has been reviewed by FEMA which validated the accuracy of its information and business processes that maintain it.

24. "Our agency's data is readily accessible to everyone who needs it." The majority of respondents disagree with this statement, or did not answer. This may indicate the "silo" nature of available information. As two respondents stated, there is a willingness to share data but it is not available digitally or needs to be requested.

Recommendation:
Pavement, bridge, sign and guardrail inventory is current and condition known. Equipment management has just begun recently, as has guardrail condition assessment. However, inventory and condition information on critical assets, such as culverts, ditches, levees, and buildings are either not complete, or are not present. Quality assurance and quality control for signs and guardrails are not fully documented. This process to assess asset condition should be documented against established standards and measures. The objective is to ensure a repeatable process that would achieve similar results when conducted by more than one individual. Beyond pavement and bridges, TCPWD does not currently report on each asset class's inventory, condition, the method of assessing condition or the confidence and frequency of method s used. Documentation of roles, responsibilities and methods for collecting and maintaining inventory information is needed.

Asset information is currently confused with the ability to track activity costs performed on an asset class (roads, bridges, signs). A regular schedule for assessing asset condition should be established that reflects the risks to the community and County liability. Training on use of IRIS should be targeted to those managers responsible for data maintenance and condition assessment.

Budget development and annual reports to the public and decision makers should include an explanation of the current level of service and effect it has on road assets condition and annual accomplishments (e.g., miles of roads overlayed, signs replaced or maintained, miles of guardrail repaired). Public expectations and TCPWD efforts should be linked and long term implications of current services understood. This results-based resource allocation should reflect public discussion and County-adopted priorities and be conveyed to TCPWD employees, stakeholders (CRAC and the County Board) and the public.

Technology
    25. "Our agency uses GPS devices, laptops and other appropriate technology for data collection."
Almost all disagree with this statement.

    26. "Our agency maintains its asset inventory, locations and condition data, on computers."
There is a split in those that agree with this statement, and those that disagree. Not all assets information is maintained in IRIS; the Cost Accounting System is most consistently used to track job costs which may or may not relate to asset location, and does not include asset condition.

However, as noted in 24, above, many asset inventories, condition and location are carried within other IRIS modules, like Street Saver (pavements) or the Road Inventory System (signs, guardrails). Bridge data is currently split between spreadsheets and consultant reports.

27. "Our agency uses GIS software."

Respondents either disagree strongly or disagree with this statement. Several did not respond to the statement itself.

28. "Our agency uses software with predictive and optimization capabilities."

While several respondents did not know or felt the statement to not be applicable, other responses were split between agree (pavement) and disagree (all other assets).

29. "Our agency uses software that coordinates our work, tracking projects, public complaints, and agency spending."

Opinion was split between those who disagree with this statement, stating in one case that work and projects are not coordinated using software, and those who agree with the statement, suggesting that the Cost Accounting System tracks projects and activity costs. One respondent said "some" coordination occurred. Agency activity and project spending, as well as service requests are tracked carefully in IRIS. The disposition of service requests is not linked to project or jobs performed. There is no standard for how quickly a service response will be acted on or closed.

Recommendation:

IRIS contains many elements of information supporting infrastructure asset management. Pavement optimization models are used which allow benchmarking performance to other Oregon counties. Assign clear responsibility for completing high priority asset inventories and condition assessments and a schedule for completing this, where needed. Document the methods for assessing asset condition, including citing sources of standards and measures used. The objective is to maintain current and accurate data on asset inventory, condition, performance, cost and work accomplishment. Data roles and responsibilities, and, where appropriate, training on use of these digital tools should be clearly identified. Protocols for closing service requests should be identified and links to work performed made explicit. The use of the Maintenance Management Module (MM)[13] should be explored. This would provide a schedule for maintenance. Coordination with activities described in the CAS module would be required so that planned and actual work could be coordinated. A review of current activities in CAS should evaluate whether activities correlate with the management of an asset's life cycle (e.g., pavement overlays versus pothole

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[13] Currently in use by Josephine County.

patching). By doing this, evaluation of the cost effectiveness of an activity can be evaluated and expenditures over an asset's life minimized.

Chapter 6

Next Steps

Several refinements are needed to set recommendations in priority order.

1. TCPWD management reviews the draft *Readiness Assessment* and makes suggested edits and corrections.
2. Finalize document.
3. Conduct a risk management review of agency business practices and asset needs with TCPWD management.
4. Apply risk rating to recommendations and establish priority-based approach to implementing improvements.
5. Assign responsibility and timeline for implementing improvements.

Results of this process will be reflected in this project's Task 3 deliverable, development of an asset management plan.

Chapter 7 Appendices

Appendix A
TCPWD Asset Management
List of Interviews[14]

Interviewee	Role
Public Works Department	
-Tom Abbott	Traffic Safety Technician
-Kip Birmingham	Bridge Specialist
-Grant Graves	District 3 (South) Foreman
-Ed Grimes	District 2 (Central) Foreman
-Rick Kjemperud	District 1 (North) Foreman
-Chris Loffelmacher	Shop Foreman
-Jeanette Steinbach	Accounting Clerk II
-George Urrey	Engineering Technician
-Liane Welch	Director
-Peggy Weitman	Accounting Technician
Tillamook County	
Rick Adams	Fire Chief
Todd Anderson	Sherriff
Bill Campbell	Director, Department of Community Dev.
Karen Richards Dye	Treasurer
Tim Josi	County Commissioner
Other	
Shirley Kalkhoven	Chair, Futures Council
Gus Meyer	Tillamook member, County Road Advisory Committee

[14] Schedule interviews through Jeannette Steinbeck 503-842-3419

Appendix B

Tillamook County
Self Assessment of Current Practice[15]

Interviewee
Name_____**Position**_____**Date**_____
Additional Interviewee Names & Positions

_____
_____
_____
_____

	Strongly Disagree[16]	Disagree	Agree	Strongly Agree
Policy				
Our agency has clearly defined policy goals.	1	2	3	4
Our agency has official performance measures for evaluating progress toward our goals.	1	2	3	4
Our agency can articulate its goals as target values of its performance measures.	1	2	3	4
Accountability				
Our agency can document the current conditions of its asset.	1	2	3	4
Our agency can document changes in the conditions of its asset over time.	1	2	3	4
Our agency regularly reports on the conditions of its assets and the agency's actions to preserve them.	1	2	3	4
Our agency regularly evaluates the effectiveness of programs and projects using hard data.	1	2	3	4

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[15] From *Transportation Asset Management for Local Government Agencies,* Midwest Regional University Transportation Center, May 2006
[16] An average score of 2.0 or less in any of these sections should identify areas for improvement.

	Strongly Disagree[16]	Disagree	Agree	Strongly Agree
Resource Allocation				
Our agency can document the tradeoffs of investing more or less in its various programs.	1	2	3	4
Our agency considers alternative methods or 'fixes' for problems.	1	2	3	4
Our agency has a consistent and defensible process of project identification and selection.	1	2	3	4
Our agency considers the long-term costs of the way it operates using life-cycle costing techniques.	1	2	3	4
Our agency has established trigger values of performance measures resulting in various actions.	1	2	3	4
Operational Efficiency				
Our agency coordinates its maintenance with the maintenance of relevant water/sewer infrastructure and private utilities which share its right-of-way.	1	2	3	4
Our agency purchases materials and equipment in bulk with other agencies to reduce costs.	1	2	3	4
Our agency reduces its costs through joint ownership and shared use of equipment with nearby agencies.	1	2	3	4
Our agency shares data with other departments in its local government.	1	2	3	4
Our agency shares data with the state and other local transportation agencies.	1	2	3	4
Our agency uses performance-based contracting.	1	2	3	4
Our agency makes appropriate use of private contractors.	1	2	3	4
Our agency considers design-build contracting, total closure construction and other innovative methods.	1	2	3	4
Data Collection and Organization				
Our agency has complete information on its assets, its spending/costs, and the public's satisfaction.	1	2	3	4
Our agency collects data on all its assets regularly, in cycles of three years or less for pavements.	1	2	3	4
Our agency has quality control/quality assurance procedures to assure the accuracy of its data.	1	2	3	4
Our agency's data is readily accessible to everyone who needs it.	1	2	3	4

	Strongly Disagree[16]	Disagree	Agree	Strongly Agree
Technology				
Our agency uses GPS devices, laptops, and other appropriate technology for data collection.	1	2	3	4
Our agency maintains its asset inventory, locations and condition data, on computers.	1	2	3	4
Our agency uses GIS software.	1	2	3	4
Our agency uses software with predictive and optimization capabilities.	1	2	3	4
Our agency uses software that coordinates our work, tracking projects, public complaints and agency spending.	1	2	3	4