



# **Local Ecosystem Services Marketplaces: Public Utilities as Development Drivers**

**A Report for the Bullitt Foundation**

**By**

**The Institute for Natural Resources**

**Oregon State University**



**May 2012**

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## **A Report for the Bullitt Foundation**

May 2012

*Prepared by*

### **The Institute for Natural Resources**

Created by the Oregon Legislature through the 2001 Oregon Sustainability Act, the Institute for Natural Resources' mission is to provide Oregonians with ready access to current, relevant, science-based information, methods, and tools for better understanding natural resource management challenges and developing solutions.

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## **Acknowledgements**

Cover Photo: McKenzie River, courtesy of Robert G. Parker, University of Oregon

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## **Disclaimer**

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This report does not constitute a standard, specification, or regulation.

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## **List of Acronymns**

CPRC&D	Cascade Pacific Resource Conservation & Development
CRP	Conservation Reserve Program
CWA	Clean Water Act
EWEB	Eugene Water and Electric Board
INR	Institute for Natural Resources
LCOG	Lane Council of Governments
LiDAR	Light Detection and Ranging
MRT	McKenzie River Trust
MWC	McKenzie Watershed Council
NIFA	National Institute of Food and Agriculture
PES	Payment for Ecosystem Services
SWCD	(Upper Willamette) Soil and Water Conservation District
VIP	Voluntary Incentive Program
WCF	Watershed Condition Framework
WID	Watershed Investment District
WNF	Willamette National Forest

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## Executive Summary

The Institute for Natural Resources (INR) received funding from the Bullitt Foundation in 2009 for *Financing Mechanisms that Advance Ecosystem Services Markets and Promote Rural Sustainability*.<sup>1</sup> That research strongly suggested that, at least for the short- and possibly medium-term, payment for ecosystem services (PES) may best be framed at the local and regional levels. INR therefore proposed examining policy and program options that could facilitate and support local and regional marketplaces, pertaining to all forms of PES, rather than more narrowly conceived credit markets.

To pursue this approach, INR proposed expanding its work with the Eugene Water and Electric Board (EWEB). EWEB is the chief supplier of water for the city of Eugene, Oregon, and its source water protection program coordinator is in the process of developing an innovative voluntary incentive program (VIP) to maintain and restore healthy riparian forests along the McKenzie River. EWEB's envisioned VIP is a distinct departure from typical restoration and PES models in that it gives highest payment—or dividend—priority to those properties with intact, healthy riparian forests. In other words, it pays for good stewardship, not for restoration. It can be a model for other utilities, which could duplicate or adapt the program in part or in full depending on variables such as watershed ownership patterns, authorizing authorities for such programs, potential partners, and other features.

INR's Bullitt Foundation funding has used the EWEB program to examine institutional aspects that act as both opportunities and constraints to greater public utility PES program development and administration. Also in 2011, INR was awarded a National Institute of Food and Agriculture (NIFA) grant to examine public utilities as local PES marketplace drivers. The research includes a case study of the EWEB program, examining funding and structural aspects, testing PES buyers' and sellers' preferences and developing a corporate engagement model. Concurrent work on the two projects has enabled INR to leverage information from each to mutually enrich the knowledge and context for both projects.

Few, if any, legislative or legal barriers surfaced during our research. However, a number of pivotal institutional issues have emerged; most are administrative and funding related. While there was consistent interest in the concept of PES, there was fairly consistent lack of knowledge and support regarding the use of PES and green or living infrastructure as a cost avoidance strategy and lack of knowledge regarding how to create and fund such programs. (Note that this report uses the terms "green infrastructure" and "living infrastructure" interchangeably. Both

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<sup>1</sup> [http://inr.oregonstate.edu/download/2010\\_Bullitt\\_Phase2.pdf](http://inr.oregonstate.edu/download/2010_Bullitt_Phase2.pdf)

refer in this case to the targeted riparian forests doing the job of supporting the utility's clean drinking water requirements.)

Interviews and focus groups provided information for the following recommendations. Greater details can be found in the body of the report.

- Knowledge regarding how to design a PES program is a resource. Although many utilities may have heard about PES and living infrastructure, staff may not know where to turn for help and information.
- Education for inreach (internal management communications) as well as public outreach will be critical to building support for funding and implementing EWEB-like programs.
- Utilities might benefit from expanding the partnership concept to other organizations and agencies that might not be part of the watershed investment district or partnership. This could include larger landowners, other utilities, or additional investors.
- All utilities potentially face different resource constraints such as technical support or funding. Larger utilities working with and mentoring the smaller systems can provide comprehensive program ownership and subsequent source protection awareness and actions, to help them face staff, ratepayer base and budget constraints. Regardless of partnership opportunities, utilities and other organizations should think about how PES might be integrated strategically with or into other programs.
- Program design should proceed whether or not funding is immediately available, but always with funding options in mind. An effective approach may be to design the program first in concert with landowners and potential partners and follow that with stakeholder education.
- Finding the right price point as well as other potential non-monetary incentives to encourage participation is a variable that will be area specific and will differ among landowner types and available alternatives.
- Interested utilities will need to acquire realistic valuation of the ecosystem services the program will use.
- Creating a watershed investment partnership or similar interorganizational collaborative arrangements will help all partners add capacities and increase efficiencies through sharing program funding for infrastructure, aligning goals, and utilizing existing competencies.

## 1. Introduction and Background

The Institute for Natural Resources (INR), established through Oregon's 2001 Sustainability Act, has developed expertise in multiple natural resource subjects; and, in particular, a national presence in the developing ecosystem services arena. INR has helped to pioneer Oregon's nationally acclaimed efforts to understand the challenges of accounting for ecosystem services (ES) in natural resources management in a number of ways. Examples include:

- examining how state policies help and hinder the formation of an ecosystem services payments marketplace and what roles finance can play (see Phases 1 & 2 of the Bullitt Foundation-funded final report on funding for ecosystem services payments);
- hosting workshops to connect ecosystem service financiers with landowners, and to connect ES researchers with real-world problems;
- synthesizing and reporting to state legislators working on Senate Bill 513 Ecosystem Services Markets Working Group;
- examining opportunities for payments for ecosystem services involving public utilities, corporations, and landowners;
- moving the national and international dialogue on ecosystem services forward through the Ecosystem Commons, an online professional network.

INR received funding from the Bullitt Foundation in 2009 for *Financing Mechanisms that Advance Ecosystem Services Markets and Promote Rural Sustainability*. The project included two reports, one of which was cited at the national level and circulated to a large mailing list by the USDA Office of Environmental Markets<sup>2</sup>.

Our findings strongly suggested that, at least for the short- and possibly medium-term, payment for ecosystem services (PES) may best be framed at the local and regional levels. In addition, we concluded that while fundamental concepts may hold true across multiple socio-geographic contexts, a variety of models for instituting successful PES systems will be needed in order to create strong marketplace demand and supply and to reflect different regional assets and institutions.

### A. Current Project

INR's research suggests that an expanded view of the marketplace, and increasing public sector interest in its potential (e.g. Davis 2005) has created strategic and tactical openings for public utilities. Their need to protect source waters, their long-term community presence, and their

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<sup>2</sup> [http://inr.oregonstate.edu/download/2010\\_Bullitt\\_Phase2.pdf](http://inr.oregonstate.edu/download/2010_Bullitt_Phase2.pdf)

clearly identified service district boundaries, give them opportunities to play a central role in advancing more sustainable agricultural and forestry practices.

INR already had a strong relationship with the Eugene Water and Electric Board (EWEB), a public utility serving the Eugene/Springfield area in the southern Willamette Valley's McKenzie River watershed. EWEB contracted with INR to research and recommend ecosystem services valuation and accounting methods and models for EWEB-owned forest lands in the McKenzie River Watershed. During this project, INR also had conversations with EWEB about its plans to investigate institutional and structural opportunities to build PES through public utilities.

In 2011, INR was awarded a USDA National Institute for Food and Agriculture grant to examine public utilities as local PES marketplace drivers. That research is at a little before its midpoint as of the date of this report. The work on the two concurrent projects has enabled INR to leverage information from each to mutually enrich the knowledge and context for both projects.

The current Bullitt Foundation research, *Local Ecosystem Services Marketplaces: Public Utilities as Development Drivers*, investigates institutional opportunities and constraints for public utility PES program development. The research focal point is EWEB's drinking water source protection program. The source water protection program manager is in the process of developing an innovative voluntary incentive program to maintain and restore healthy riparian forests along the McKenzie River. EWEB's envisioned PES program is a distinct departure from typical restoration and PES models in that it gives highest payment—or dividend—priority to those properties with intact, healthy riparian forests. It can be a model for other utilities, which could duplicate or adapt the program in part or in full depending on variables such as watershed ownership patterns, governing body authorizations for such programs, potential partners, and other features.

## **B. Influence of Prior Bullitt Project**

As a result of its prior Bullitt Foundation research, INR gained significant perspective important to future ecosystem services marketplace direction. The project provided improved understanding that the current emphasis on credit trading within theoretical markets might be misplaced. In particular, and in contrast to much of the prevailing thinking at the time regarding the need for regional, national and international markets, INR theorized that localized marketplace activities involving one-time transactions are likely to be considerably less intricate, more cost-effective and more rapidly productive for landowners and for ecosystem restoration.

As a logical next step, INR proposed examining policy and program needs that would best facilitate and support local and regional marketplaces, servicing multiple forms of payments for ecosystem services, rather than more narrowly conceived credit markets. Because of INR's wide-ranging involvement in PES, emerging discussions among PES academics and professionals regarding utilities' use of PES for regulatory compliance, and the compelling

potential for PES to serve as a cost avoidance and risk mitigation strategy for utilities, INR decided to look more closely at their role as PES marketplace drivers. In addition, public utilities literally “cover the map” and could potentially get stewardship and restoration programs in place more rapidly than approaches requiring either policy change, or inter-agency agreement.

### **C. Payments for Watershed Services**

Hydrological services, which include water filtration and purification, flow regulation, erosion and sediment control, and habitat provision, are some of the most socially and economically valuable services that watersheds provide (Postel and Thompson, Jr., 2005). A 2009 joint report to the Nature Conservancy which asked voters to rate the importance of various conservation goals and then rank importance found that seven out of the top ten issues involved water; and, further, that protecting drinking water was the top priority goal of those the firms surveyed (Fairbanks et al. 2009).

The concept of a watershed investment district may currently be novel, but special purpose districts generally are nothing new. There is a considerable history of formal political subdivisions at the local level for focused service provision such as soil and water conservation, fire response, irrigation and the like; however, an ecosystem services district, or watershed services district, is still an unusual concept. Some models of ecosystem services districts suggest legislative action for formal authority and taxing powers (Goldman et al., 2007; Heal et al., 2001). EWEB, as part of their source water protection efforts, envisions a district based on agreements that make use of existing authorities and programs rather than legislation establishing a new bureaucracy. The district will acquire funding from sources other than taxes, such as a ratepayer increase, which links beneficiaries to upstream providers, and sponsorship by institutional and business interests.

Utilities providing drinking water must meet federal standards under the Safe Drinking Water Act. If water supply is impaired by pollutants, water utilities must take steps to reduce the pollution to meet federal and state drinking water quality standards. Initial construction, annual operating costs and modifications for treatment plants are characteristically expensive. Watershed services protection activities utilizing green infrastructure – use of interconnected natural systems and ecological processes – are gaining attention among utilities as a cost-effective adjunct or replacement approach to traditional gray infrastructure, or bricks-and-mortar methods, for meeting regulations and infrastructure needs to protect water quality (e.g. Fletcher et al. 2005; Carpe Diem West 2011; Majanen et al. 2011; Postel and Thompson, Jr., 2005).

Watershed services protection and payment programs are still emergent though not unheard of. They will likely require some sort of formal or quasi-formal management structure such as a watershed investment district (WID). It may be a government entity that manages funding and

activities to enhance ecosystem services which maintain and/or improve the condition of a defined area's natural environment. It may range from agreements for information generation and/or coordination among different entities working within district boundaries to formal taxation and land use powers (Heal et al. 2001). More specifically, watershed investment programs, "...raise money from downstream water users to help fund the management of upstream watersheds" (Carpe Diem West 2011: 4). These structures have the potential to increase efficiencies for utilities and partner agencies while enhancing landowner participation through payments for water quality related ecosystem services such as water purification.

Most programs are opportunistic: restoration, conservation and other stewardship actions are undertaken on a project-by-project basis. This is not the optimal approach for services such as water purification and quantity. Such services will likely require a significant geographic area that crosses political boundaries and involves multiple entities and levels of government. A dedicated investment district has the advantage of combining authorities, programs and incentives to manage ecosystem services at the landscape, or regional, scale.

Ideally, the governmental and non-governmental entities working within a watershed can pool technical, scientific, financial and other resources to reduce redundancy and share competencies over a potentially wider landscape and client base. A coordinated approach that takes advantage of different agencies and non-profit strengths could shift restoration and conservation from an opportunistic, project-by-project strategy to a more coordinated and efficient landscape scheme. It also has the potential to reduce transaction costs and increase participation incentives for landowners within the district.

Landowner payments must be high enough to cover their transaction costs and provide enough monetary incentive to participate. Majanen et al. (2011) found that direct payments are often insufficient to motivate changes in behavior, particularly as payments tend to be small. Many landowners, however, have a significant stewardship ethic to begin with. In those instances, payments may be the key to implementing activities that would otherwise be unaffordable. Payment programs which provide bonus payments for cooperation—such as contiguous landowners cooperating to provide services—can enhance landscape-level stewardship. Importantly, they can lower transactions costs for property owners and program administrators alike, assuming there are not multiple districts for different ecosystem services (Goldman et al. 2007).

Consistent with INR's perspectives and reasoning for proposing this research, the foregoing suggests that there are multiple institutional factors that need to be taken into account for the design of effective PES programs to build local marketplaces for water-related ecosystem services.

## **D. Utilities as Potential Watershed Services Marketplace Drivers**

One of the attributes necessary for viable long-term payment for watershed services programs is, “robust, long-term demand for watershed services from entities seeking lower cost ways to meet regulatory standards or from beneficiaries whose bottom line is enhanced by improved water quality” (Talberth et al. 2012:2). There is not yet a substantial body of literature regarding the role of utilities in PES programs, although it is expanding. There are now several case studies of water utilities utilizing green infrastructure through ecosystem services programs. For example, several publications highlight New York City’s Source Water Protection Program, one of the best known examples of a water utility initiated PES program (Ernst 2004; Postel and Thompson, Jr., 2005; Greenwalt and McGrath 2009; Majanen et al. 2011). A commonly cited publication from the Trust for Public Land also provides several short descriptions of green infrastructure examples from across the country and includes an analysis of the increased treatment costs associated with decreasing forest cover in source watersheds (Ernst 2004). PES initiatives by Denver Water and the City of Santa Fe, in which utility rate payer funds are used to reduce the risk of a catastrophic forest fire in source watersheds, are also briefly described in several publications (Greenwalt and McGrath 2009; Carpe Diem West 2011; Majanen et al. 2011). Additionally, several reports from the World Resources Institute explore potential drivers of utility-based PES programs in the U.S. South and Maine (e.g., Hanson et al. 2011; Talberth et al. 2012). Such cases still represent a small minority, but the public utility universe nevertheless represents significant unrealized potential for innovative conservation and restoration approaches. However, it requires comprehensive understanding of incentives and barriers in order to foster utility driven PES program development.

Water utilities can play a dual role of both ecosystem service providers and purchasers. They are in the unique position of providing a service which has no substitute—water—thereby ensuring a steady demand. Utilities must meet regulatory requirements under the Safe Drinking Water Act. Increasingly, bonding and insurance companies are demanding that utilities demonstrate they are building climate change strategies into their long-term planning. Utilities can therefore become beneficiaries of PES programs as risk management and cost avoidance strategies.

With universally increasing pressure on water systems, water quality and supply will require investments, whether for engineered or ecosystem based solutions. Utilities are therefore in a position to make the case to commercial and residential users that up-front watershed services investments are likely to reduce more expensive future construction and/or operational costs for technical solutions that must be passed on to ratepayers. And, of course, water utilities are ubiquitous in the United States. They are therefore uniquely positioned to benefit from PES program development and implementation and to carry forward goals of climate adaptation, conservation, and restoration.

## **II. Project Components and Methodology**

The project has two main components which build on information from the case study developed primarily for the NIFA grant project. The first is a series of interviews with potential watershed investment district partners. The second is two focus groups with representatives of drinking water utilities – one in Oregon and one in Washington.

INR conducted interviews with potential watershed investment district partners. The overall purpose of engaging with the partners was to help inform design and management of the EWEB partnership and add to understanding of the concept for other utilities that are or may become interested in developing a similar program and partnership. The objectives were to acquire insights on opportunities and constraints, the possible ways in which a watershed investment district could add to efficiencies for partners, and listen to concerns and suggestions.

For each of the focus groups, Karl Morgenstern, EWEB's Drinking Water Source Protection coordinator, provided a presentation which covered EWEB's history, service area, source water threats, and PES program components. After the presentation, INR facilitated the meeting using open ended questions to prompt discussion among participants. Focus groups lasted approximately 2½ hours.

## **III. The EWEB Model Watershed Investment Program**

### **A. The Eugene Water and Electric Board<sup>3</sup>**

The Eugene Water and Electric Board (EWEB) is the largest customer-owned utility in Oregon. It was founded in 1911 after a typhoid outbreak was tracked to a private water company that had already been the focus of dissatisfaction regarding its level of service. Citizens subsequently voted to buy the system and establish a publicly owned utility. EWEB currently provides drinking water to nearly 200,000 people through approximately 53,000 customer accounts, electricity to nearly 87,000 consumers and steam to 75 customers in Eugene and nearby areas. Customers comprise residences, businesses, schools and other institutions.<sup>4</sup> It has a five-member Board of Commissioners elected by Eugene residents to staggered four-year terms. EWEB's service area is approximately 235.6 square miles (see Figure 1). In 1927, it shifted from the Willamette to the McKenzie River as its drinking water source. The McKenzie River has long been known for its water quality, and EWEB continues to expand its source protection programs to try and ensure the river's ongoing high quality.

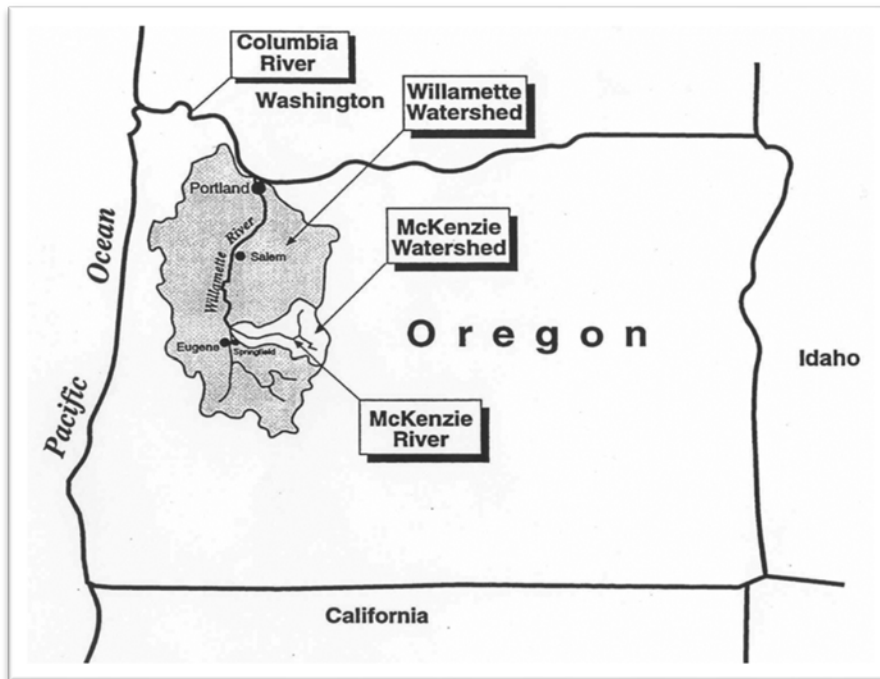
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<sup>3</sup> This section is adapted from INR's EWEB case study, which will be made available on the Oregon Explorer's *Land Use Explorer* in late May 2012.

<sup>4</sup> <http://www.eweb.org/who>

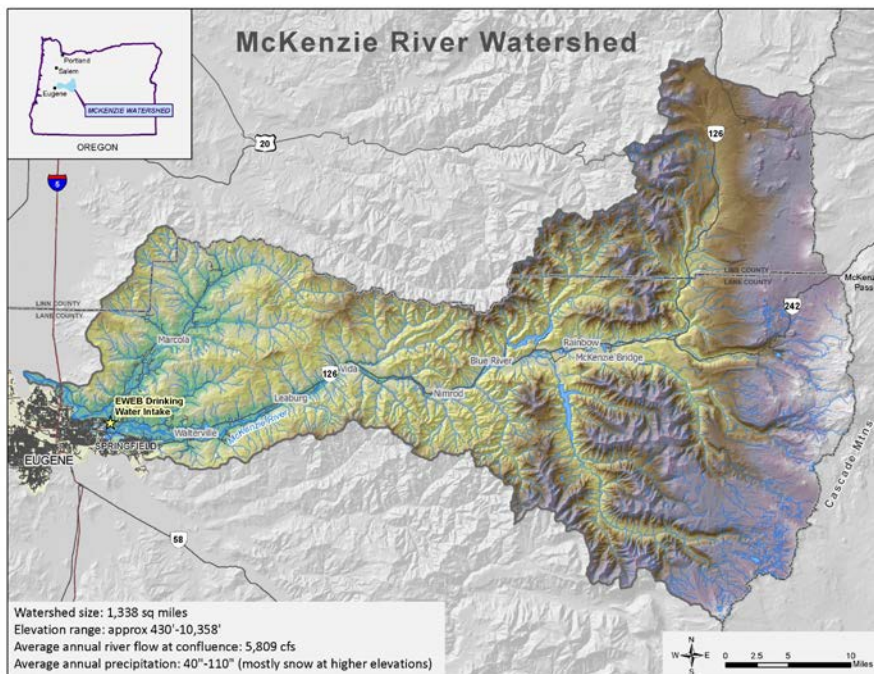


**Figure 1: Willamette and McKenzie Watersheds**



Source: EWEB

**Figure 2: McKenzie Watershed Details**

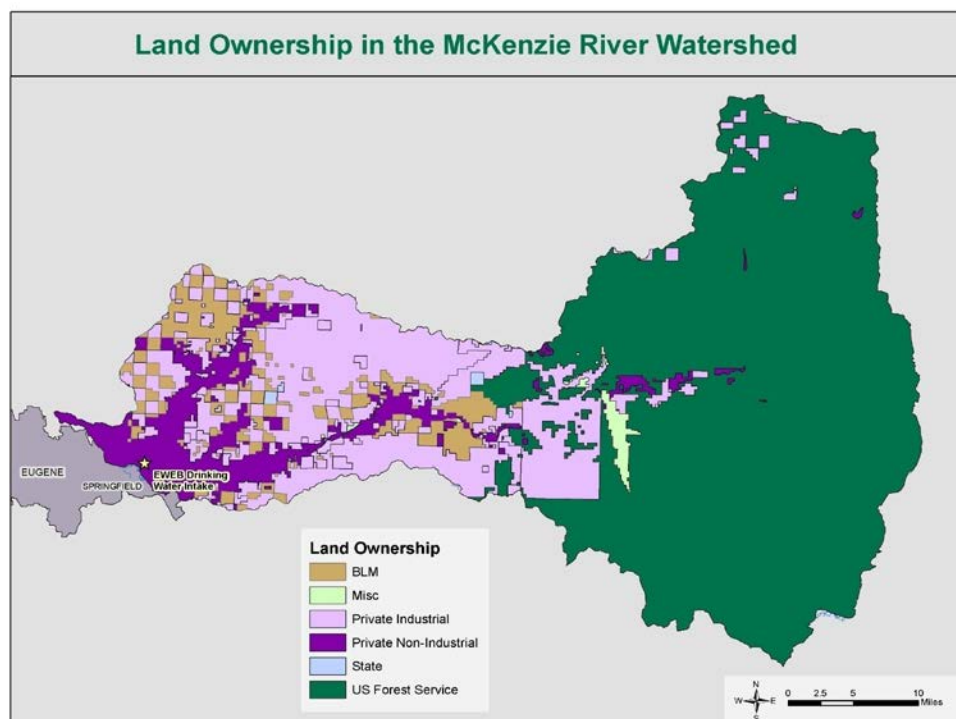


Source: EWEB

Since its founding in 1911, EWEB has come to rely on the McKenzie River watershed for power generation from its electric facilities at Carmen-Smith, Leaburg, and Walterville and as a sole source of drinking water for the City of Eugene. EWEB maintains infrastructure in the McKenzie River watershed that consists of dams, canals, lakes, power generation facilities, tunnels, roads, buildings, electric transmission lines, dikes, fences, and transformer substations. EWEB also owns property in the watershed associated with its electric generation facilities as well as islands, riparian areas, and upland properties. The McKenzie River is the sole source of drinking water for the City of Eugene, and protection of this watershed is therefore vital to the community.

In August 2000, EWEB completed a plan to protect the McKenzie River. EWEB began development of a source protection program in May 2001 to address the various threats to water quality and long-term viability of the McKenzie River as a drinking water source. The utility is currently working closely and developing long-term partnerships with over 40 agencies and watershed stakeholders as part of this program.

**Figure 3: Land Ownership in McKenzie River Watershed**



Source: EWEB

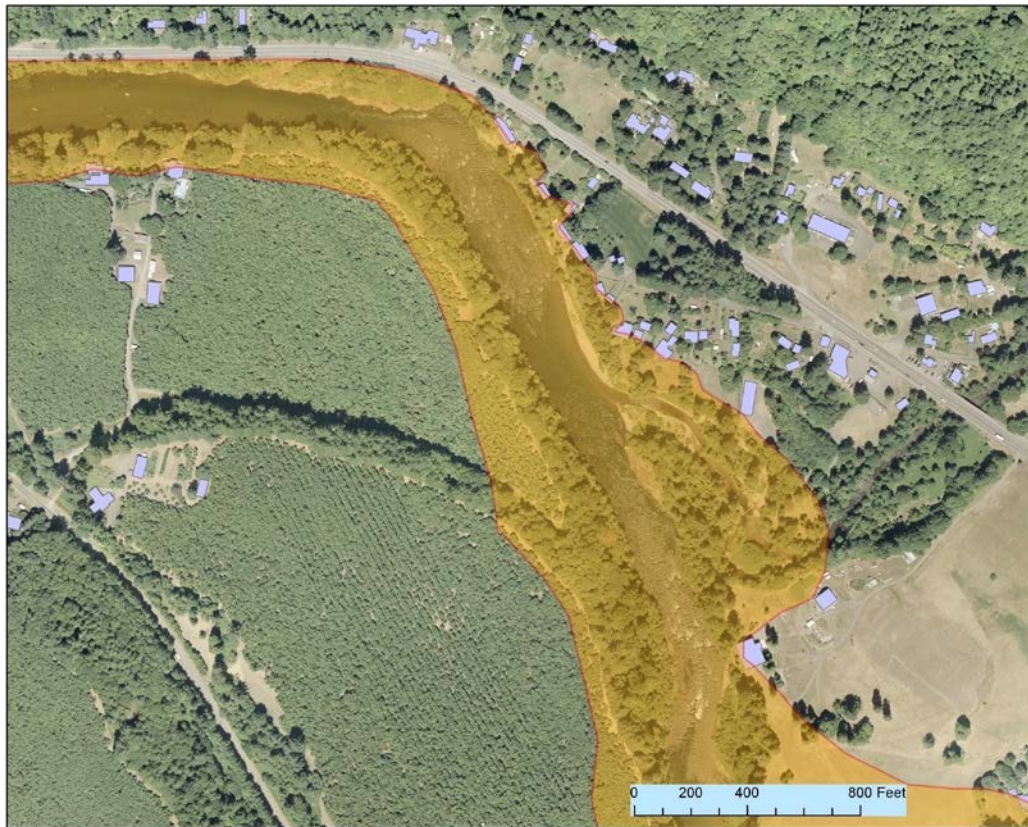
The overall concept of source protection is to maintain the balance between watershed health and human use over time and implement actions that sustain exceptional water quality. This requires not only being aware of all the different human activities going on within the watershed, but also understanding the limits of what the river can handle and still maintain a high level of water quality.

## **B. EWEB's Voluntary Incentives Program (VIP)**

EWEB plans to develop an investment mechanism that compensates landowners for the ecosystem services their properties provide as a way to maintain and improve water quality within the McKenzie River Watershed. The public name for this concept is the Voluntary Incentives Program (VIP). Under the envisioned VIP, landowners with property meeting standards for high quality riparian habitat would qualify to receive annual payments, or dividends. The annual dividends would reward outstanding land stewardship benefiting riparian health and, by association, would benefit EWEB and its ratepayers over the long term. A fund with sustainable financing would be established to support the dividends to participating landowners and the infrastructure necessary to operate the VIP. Financing will come from a variety of sources but would be initially endowed by existing water funds or through a moderate rate increase in water user fees (approximately \$0.35 to \$0.45 per month for the average residential water user). It is also possible that another utility funding mechanism will be used depending on the state of the economy and other water funding priorities. Additional possible funding sources include corporations, a voter approved bond measure, development impact fees, and existing or new state and federal mitigation programs. Through its NIFA grant, INR is beginning to explore how businesses might be motivated to provide sponsorship in various forms for EWEB's VIP program. One example EWEB is already working on is brewshed sponsorship: Eugene has several microbreweries that rely on good water quality for their products, and some have already designed mutually beneficial programs to provide funding for EWEB's source water protection program. There are likely other incentives different businesses would respond to, and INR is conducting interviews with multiple enterprises to find out what those incentives would be.

EWEB will establish a stewardship boundary identifying riparian forests and floodplains that are eligible to enroll in the VIP. Participation is open to private landowners, local governments, and non-profit organizations that own land within the designated boundary. Industrial landowners may be included at a later date. Based on EWEB's preliminary analysis, an estimated 6,500 acres of riparian and floodplain areas along the McKenzie and major tributaries are eligible to enroll. Land within the stewardship boundary will need to meet a threshold in order to receive payments. This threshold will be determined by adapting existing riparian forest and wetland habitat standards and definitions from Natural Resources Conservation Service, Forest Service, Defenders of Wildlife and other entities to establish the criteria for participation in the VIP.

**Figure 4: Example of Marketplace Boundary**



Source: EWEB

On a recent survey conducted by the University of Oregon for the NIFA grant, ratepayers were asked how much trust they had in different local agencies and organizations to implement new programs aimed at protecting the McKenzie River Watershed. Results indicated that the level of trust for EWEB is relatively high when measured against other local institutions: only local non-profits are more trusted. Education regarding the need and advantage of a PES marketplace is essential, and trust is likely to help create program receptiveness.

EWEB estimates 20-30 percent of funds generated would be necessary to support VIP infrastructure. A larger short-term investment of funds will be needed to build the tools and capacity for partner organizations to operate the various components of the necessary infrastructure. The remaining 70-80 percent of funding will be used to make direct payments to landowners participating in the VIP. The idea is that these payments represent a form of dividend from the natural capital ecosystem processes provide to downstream water users and society.



A simplified calculation for estimating the per-acre dividend payment is the total funding available (minus infrastructure costs) divided by the total number of acres in the VIP boundary. The actual per-acre dividend payment will vary based on the type and length of the landowner agreement.

**Figure 5: Dividend Payment Formula**

<p style="text-align: center;"><b><u>Calculation of Dividend Payments</u></b></p> <p style="text-align: center;"><b>Per acre annual dividend = <math>\frac{(\text{Total Funds} - \text{Infrastructure Costs})}{\text{Total Acres in VIP Boundary}}</math></b></p>
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**Table 1: Example of How the Marketplace Would Work Over Time**

Year	Dividend Calculation <sup>1</sup>	Acres Enrolled <sup>2</sup>	Total VIP Payout <sup>3</sup>
1	\$250,000/6,463 acres = \$38.68/acre	300	\$11,604
2	\$488,396/6,463 acres = \$75.56/acre	600	\$45,341
3	\$693,055/6,463 acres = \$107.23	1,000	\$107,230
4	\$835,825/6,464 acres = \$129.32/acre	???	???

<sup>1</sup> Sustained financing adds a new \$250,000 investment each year.

<sup>2</sup> Based on initial LiDAR analysis it is estimated that 100% eligible acre enrollment would be approximately 2,800 acres.

<sup>3</sup> Balance of annual investment (\$250,000) minus payout equals the amount of funds rolled over into next year.

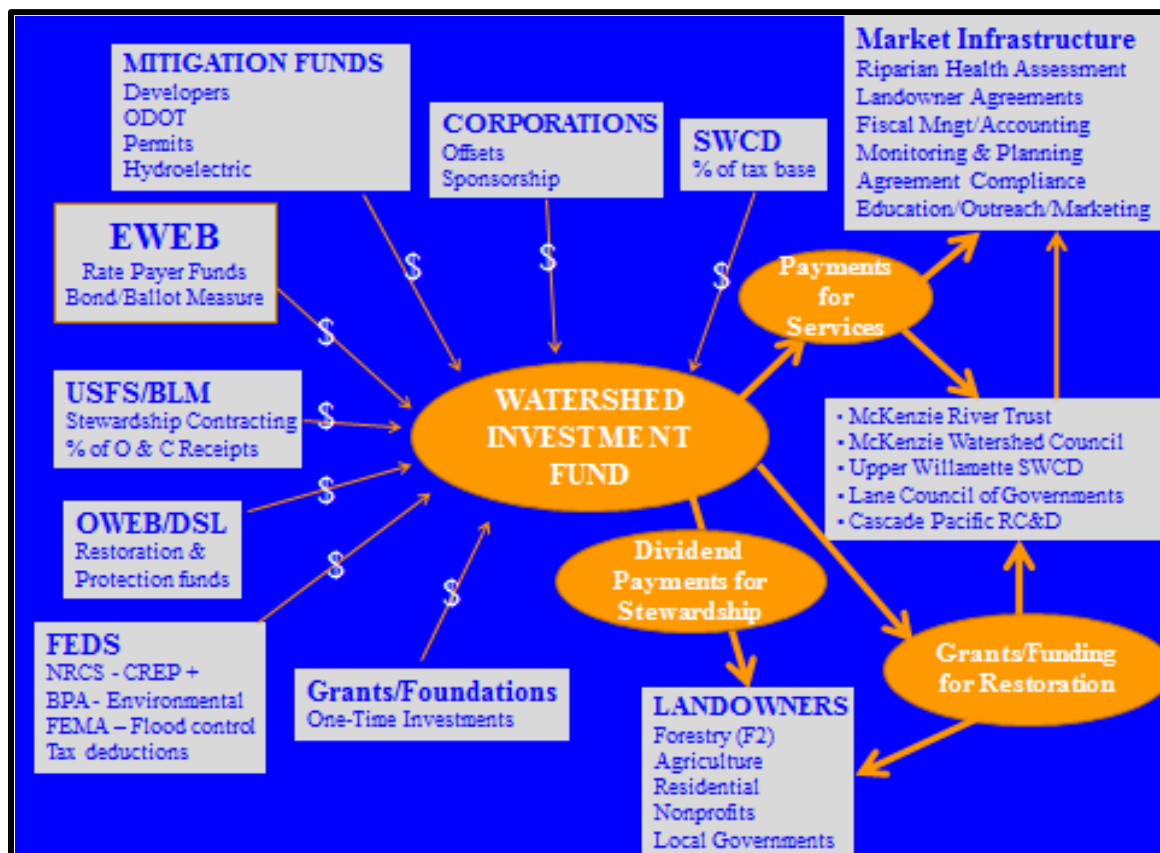
## C. EWEB's Watershed Investment District/Partnership

Appropriate infrastructure is essential to implementing and running the incentives program: critical tasks include managing the fund, paying dividends to VIP participants, assessing the

quality of land enrolled, negotiating agreements, monitoring properties and verifying compliance, and educating and communicating with the community.

EWEB's vision for a watershed investment partnership structure relies on existing resources and capacities of various entities in EWEB's service district, including technical skills and program offerings. It eliminates the need for any new entities, which would have low political and administrative feasibility. The conceptual PES marketplace will rely on cooperative agreements with existing entities for its structure, an approach that can lower transaction costs for landowners and organizations. Because these entities have already built trust within the watershed, they will be better equipped to coordinate water quality protection and enhancement activities at the landscape scale.

**Figure 6: Existing and Potential Sources for Financing the Marketplace Fund / Watershed Investment District**



Source: EWEB

As mentioned elsewhere, EWEB estimates that 20-30 percent of generated funds will be necessary to support VIP infrastructure. The following entities will likely be involved, and are already contributing to planning discussions:

1. Lane Council of Governments (LCOG)
2. Cascade Pacific Resource Conservation and Development (CPRC&D)
3. Upper Willamette Soil and Water Conservation District (SWCD)
4. McKenzie River Trust (MRT)
5. McKenzie Watershed Council (MWC)

Based on EWEB's needs and vision, partners would share skills and resources for the following needs:

- Determining criteria for 'healthy' lands and for priority areas. This is currently being pursued through the McKenzie Collaborative which also includes the Willamette National Forest.
- Creating and maintaining a web-based dashboard that landowners could use to make preliminary determinations about their eligibility and that others could use for information on the program (LCOG)
- Field verification of land eligibility or restoration needs to bring property up to eligibility standards (SWCD and MWC)
- Case management and responsibility for negotiating conservation easements or other legal instruments such as rental contracts with specifications for property management to maintain payment status (MRT and SWCD)
- Fiscal management and accounting (CPRC&D)
- Monitoring (MRT, SWCD and MWC)
- Agreement auditing (as yet undecided)
- Education, outreach and marketing (as yet undecided, but most likely all partners)

#### **D. McKenzie Collaborative/Market Partnership**

Information from interviews and focus groups, discussed in greater detail in following sections, validated the importance of good partnerships for source protection programs. Most of the utilities in the focus groups were accustomed to working with other organizations for a variety of reasons; however, collaborative governance for a watershed investment district involving a larger number of partners appears to be a somewhat atypical model.

The U.S. Forest Service (Forest Service) is often a headwaters landowner, particularly in western states. From focus group discussions it appeared that there had not historically been much exchange regarding source water protection between attending utilities and the Forest Service. In contrast, EWEB has had a good relationship with the Willamette National Forest (WNF) going back several years. Much of this appears to be based on EWEB's willingness to help with spill responses and partnering with the WNF on safety and upkeep concerning river recreation opportunities in the McKenzie.

This relationship likely played a part in formation of the EWEB-WNF McKenzie Collaborative in late 2011 to share information and proactively coordinate management activities. Other institutional factors also provided incentives to form the partnership. The Forest Service released its Watershed Condition Framework (WCF) in mid-2011. The WCF is designed to improve USFS watershed restoration activities. A key feature is the emphasis on a watershed approach to planning and management. In addition, the regional forester has indicated an interest in having forests form partnerships for water protection planning and management.

Meetings of the Collaborative are currently being held on a monthly basis. Generally, meetings include those organizations which will comprise the watershed investment partnership along with several WNF personnel and staff from the USFS regional office in Portland. Meetings cover various aspects of the VIP program such as determining defensible criteria and definitions for healthy riparian lands, the role of LiDAR<sup>5</sup> for tracking land condition status in the defined marketplace boundary and beyond, valuation of McKenzie River Watershed lands to help determine dividend values for the program, and the potential to tie the WCF with sub-basin wide collaborative restoration. In addition to covering already established topics, it is anticipated that the collaborative group will surface additional issues for discussion and coordination as EWEB program design and implementation moves forward.

#### **IV. Exploring Institutional Issues**

In order to understand the relevant institutional issues – the formal and informal ‘rules of the game’ such as laws, property rights and liabilities, socio-political context — this project explored opportunities and barriers regarding formation of a watershed investment district as well as details of the program itself.

Interviews with the potential watershed investment district partners informed inquiry into the watershed investment district concept.

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<sup>5</sup> LiDAR (Light Detection And Ranging) is the acronym for a method of optical remote sensing technology for digital elevation data gathering.



## **A. Opportunities and Barriers: Partners and the Investment District Concept**

As discussed elsewhere, a watershed investment district is a variation on the special purpose district that takes many forms such as school districts, irrigation districts and the like.

A number of entities operate in the McKenzie River Watershed, as in the majority of watersheds, with missions and objectives concerning water quality and water supply. Some states have political cultures and contexts which provide more opportunities for creating districts with administrative and taxing authorities.<sup>6</sup> Oregon is not such a state. Potential partners to the marketplace and others we spoke to agree that any attempt to create new formal entities are likely to be met with hostility by both the general public and the legislature as creating more bureaucracy. In addition, Oregon's weak economic climate further reduces any potential to create a mechanism with taxing authority. When discussing challenges, one of the EWEB partners, without being prompted, warned EWEB against referring to the entity as a district specifically because people are likely to react negatively to something that implies bureaucracy. The suggestion was to call it something such as a coordinating group. One partner added:

We need to be careful of the choice of words. The term "marketplace" can really turn off the landowners. And, if we say "marketplace" and it really is not, it can be confusing. Call it a watershed stewardship fund or something else. "Marketplace" conjures up notions of things that people may or may not support or understand.

While the term "marketplace" was used in a group discussion that prompted the above observation, EWEB has already labeled the PES approach a voluntary incentive program, precisely for the reasons cited: numerous aspects of the program need to be carefully labeled in order to create buy-in. Partners cited a number of other terms that need to be carefully thought through. Other suggestions included calling the contract an agreement or memorandum of agreement for rural conservation activities so that it wouldn't sound as formal and off-putting; using the term watershed coordinating group; and using the term agreement auditing or monitoring rather than enforcement.

None of the potential partners identified any legal or administrative restrictions with regard to participating. The biggest constraint facing some of the partners is financial resources needed to dedicate staff time to the partnership. EWEB's plans to earmark some of the funds for program infrastructure will help alleviate this constraint.

EWEB has not decided yet exactly how funds will be distributed to WID partners for program implementation. One possibility is providing block grants, thereby eliminating small individual

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<sup>6</sup> Washington State, for instance, has legislatively established Water Resource Inventory Areas (WRIAs). Legislation establishing watershed investment districts was drafted, though not introduced, in 2011.

grants. This would add to program efficiency. Generally, all of the organizations were positive regarding the potential for the district concept to create greater efficiencies. Commenting on how it could help the organization individually, one participant remarked:

Anything that enhances our mission and brings new funding sources, new mechanisms and new tools we can add to the conservation kit is a good thing.

Different partners will have different, and sometimes overlapping, responsibilities based on capacities and skill sets. For instance, CPRC&D, as a 501(c)(3) non-profit organization, which provides fiscal and administrative services to other organizations as one of its objectives, will be the fiscal manager for the funds. The program will be an evergreen fund, meaning that there will be ongoing infusions of capital; investing residual capital will likely be one of CPRC&D's fiscal management responsibilities. EWEB's arrangement with CPRC&D has multiple advantages. If foundations make strategic investments to the program, a non-profit entity must receive and hold the funds. It may also be politically more acceptable to stakeholders to have the program funds managed by a third party entity.

In other instances, partners have overlapping skills and authorities, and there will likely need to be discussion and negotiation around who is most suited to different tasks. The federal Conservation Reserve Program (CRP), which constitutes a time-limited form of property rental and restriction, has been suggested as a model for agreements. It is EWEB's position that CRP agreements are not binding enough as they can be terminated at will on an annual basis and are therefore not a justifiable use of ratepayer fees. The SWCD and the MRT both have the capacity and different authorities to execute and hold contracts and other instruments, and it may be that both entities are involved in executing legal instruments for different circumstances that meet EWEB program requirements. MRT has particular capacities for negotiating, holding and managing permanent easements and is likely to be the exclusive partner for such arrangements. Some properties may not be economically advantageous for MRT for the purpose of acquiring easements due to size or strategic importance relative to its mission. In those instances, it may be that MRT can provide different approaches or that SWCD is the logical entity to work with a landowner.

LCOG will be working with EWEB for LiDAR data gathering to determine baseline conditions within VIP boundaries and will be helping develop an online dashboard that landowners can use to find out what criteria constitute healthy riparian forest areas and make preliminary determinations regarding whether their properties qualify for program enrollment and dividend payments. MWC and SWCD both have the capacity to provide on-the-ground study verification. Again, it may be that, through discussion, common assessment criteria are developed and both entities may be involved depending upon already established relationships with landowners, partner organizations' program priorities, or other administrative or strategic reasons.

One of the partners brought up the necessity of having an appeals process in the event a landowner does not agree with a field survey to validate whether or not land qualifies for program enrollment. An appeals process will also be necessary in the event EWEB or the district partners decide to withhold dividend payment or revoke an agreement based on a landowner's failure to adhere to the terms of the agreement. Such a process has not yet been created.

Along with determining the elements for an appeals process, partners will also need to determine what a compliance auditing process will comprise, what sorts of actions will be taken in the event of compliance breaches, and who will be responsible for any necessary punitive actions. Some partners distinctly stated that they do not want to be responsible for enforcement as that would have a detrimental effect on their relationships with landowners. Others have existing strong relationships with their landowner clients regarding contract enforcement as a part of services they offer.

All of the potential partners agreed that working together would provide additional efficiencies as long as financing and human resource needs would be covered through reliable funding, which it is anticipated the program will provide. For some, the additional funding and work would increase organizational capacity and visibility. Efficiencies could be mutually beneficial for EWEB based on existing landowner relationships and trust that might help bring landowners into the program. One of the partners commented on the multiple benefits EWEB's program represents, observing:

Traditional programs target restoration of degraded areas as a form of triage. That often leaves out landowners that have maintained their property in good condition, so they get nothing for doing the right thing. EWEB's program is also a good idea as it ties actions to the landscape that supports the locals. It helps them identify where their water comes from and ties the actions of the residents to effects on their water supply.

The watershed presence of the WNF as the source headwaters landowner, acting in a different capacity than the watershed district partners, indicates that a utility may need to coordinate the activities or create more than one partnership in a nested structure. EWEB seems to have solved this issue by creating the McKenzie Collaborative. EWEB, the Willamette National Forest and the WID partners are currently meeting monthly to help sort out program details and align those with Forest Service management actions. At the same time, however, the Willamette National Forest will not be a formal member of the WID.

There is an added benefit to having a well-thought-out WID early in program design. EWEB has already been, and will continue to be, negotiating with foundations that may be interested in making strategic investments in its model program. Being able to demonstrate a range of

competencies and strengths for good program implementation and management is an important assurance for any potential investor.

As the interviews indicate, there are many parts to a WID that need to be carefully designed and implemented, regardless of whether it is created as a formal or informal entity. The story emerging around EWEB's program and district development provides important information for other utilities that may want to design similar programs to fit their particular needs.

## **B. Opportunities and Barriers: Other Utilities and the VIP Concept**

In order to advance local watershed services marketplaces and encourage more utilities to participate, it is important to explore the adaptability of the EWEB model and how different operating contexts affect interest, opportunities and constraints. To begin to answer this question, INR held two focus groups representing different water utilities, one in Oregon and the other in Washington State. The focus groups allowed INR to compare similarities and differences across different political boundaries and socio-political cultures.

### **1. Oregon Public Utilities**

The Salem, Oregon, focus group met on February 15, 2012. The group comprised eight participants representing six different water providers. Utilities represented principally urban/residential providers, while several represented predominantly industrial/commercial and agricultural users. Providers included single entities as well as multi-jurisdictional collaboratives.

The utilities had a number of programs related to conservation and water protection. None of them, however, had a program of the sort EWEB is designing to reward landowners for land that already meets criteria for healthy riparian forest, and there were many questions regarding its components. Areas of inquiry and discussion included, among other topics, how to structure fees and develop funding, how to create buy-in from both rate payers and those with the authority to approve development of such a program, the potential efficiencies and advantages for entities involved in a watershed investment partnership, what incentives would be needed to get landowners to participate, how to measure success, and the watershed investment partnership structure and decision making authority.

Participants indicated that land use types and ownership within the source water area would affect how a similar program was designed and administered; however, it was generally agreed that the program is flexible enough to be adapted fairly readily.

Three significant challenges to creating similar programs appeared to be educating the public, managers and boards about the value of such an approach; resource constraints including funding, staff and technical support; and sufficient knowledge to design similar programs.

During the discussion, one participant noted that most utilities represented were “one person shops” and suggested creating a learning network to help utilities adopt EWEB’s approach. As of the date of this report, EWEB has taken preliminary steps to help create the network with those who attended the focus group. The knowledge network is currently in the design stage. Current plans are for the group to meet quarterly.

## **2. Washington State Public Utilities**

The Tumwater, Washington, focus group, held on March 8<sup>th</sup>, 2012, included 11 utility participants representing eight water providers along with two representatives from the Washington State Department of Health and one representative from the Washington State Department of Natural Resources. Unlike the Oregon group, the Washington group included groundwater sources and, in one instance, source water coming from across state lines.

One participant explained interest in PES as coming from multiple sources: landowners looking for income from conservation-oriented land management; non-governmental organizations that see such approaches as a way to encourage conservation without being adversarial; and regulated entities, including utilities, which are looking for ways to reduce resource degradation from threats such as climate change, development and other changes in land uses.

The Washington group raised and discussed many of the issues which surfaced in the Oregon focus groups and also brought up issues such as tribal water rights and working with tribes on salmon restoration. As with Oregon, ownership of source water areas was determined to play a large role in whether and how the EWEB program could be adopted, along with education.

The Washington group seemed to be further along in looking at the use of PES, possibly due to more developed programs at the state policy level, including two PES pilot projects in response to 2010 state legislation concerning forested lands.<sup>7</sup> For both groups, however, figuring out how to incorporate ecosystem services into protection programs is still at the nascent stage; and in both groups, participants expressed an interest in the EWEB program as a model for learning.

## **3. Themes and Findings**

### ***a. Education is Essential***

Participants reported that buy-in, or social acceptability, would be essential for all entities involved in the proposed PES marketplace. A viable program will require good inreach as well as outreach to the full range of program participants: ratepayers, landowners, those with

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<sup>7</sup>ESHB 2541. The bill can be found at <http://apps.leg.wa.gov/documents/billdocs/2009-10/Pdf/Bills/Session%20Law%202010/2541-S.SL.pdf>

authority to approve program design and implementation, and potential WID partners. Those with the authority to approve such programs need to be convinced of the cost-savings potential in particular, since this could be a key selling point. Because the concept of PES is still new, however, there is not yet a sizeable set of examples, although it is growing. The current state of knowledge and acceptance prompted one participant to remark:

Overall, I think the concept is a great idea...I think it could work. But I think we would definitely have a huge task to tackle as far as getting it through.

Those who will be asked to fund the program need to know more about how PES and green or living infrastructure helps the utility avoid the costs of more expensive technical treatment solutions and that savings are passed along to ratepayers. They also need to know how living infrastructure helps maintain water quality while providing additional benefits such as habitat and carbon sequestration.

Another aspect of education involves helping ratepayers understand the urban-rural connection. One participant offered:

You've got to get the urban dwellers to understand where the water's coming from and what affects the quality of it and when we're dealing with source protection.

A stronger urban-rural connection through a PES program can benefit rural landowners beyond monetary rewards. Through effective education campaigns, urban water users will better understand how their rural neighbors can provide ecosystem services that protect everyone's water quality. A focus group member talked about a common rural landowner perception:

What I'm hearing from the ag landowners is hey, we're good land stewards, too. You look at us as just the bad guys for our water quality impacts, and the fact that we don't always have the most riparian buffers. But we're not against that...So find a way to recognize and incentivize those things, because we're willing to do that.

The concept of avoided costs and green or living infrastructure is beginning to make its way into thinking among utilities, but it is unclear to what extent the general public understands the concepts, especially in relation to drinking water source protection. Water quality is, however, generally a priority. One focus group member talked about the difference in educational needs between those with program approval authority and the public:

Your boards and what not are the ones that are allowing you or not allowing you to go forward with this kind of thing, so you need these numbers. But in your public education, it is common sense, right? People go, "Oh, yeah, I get that."...It trickles down to those powers that be.

It suggests that an education campaign needs to be designed differently for internal and external interests but that public acceptance and subsequent demand can be effective for diminishing internal reluctance to try a PES approach.

***b. Source Area Land Ownership Affects Program Applicability***

Some of the represented utilities own all of their source water lands. For them, there is no need for a payment program as they actively manage lands for protection. They nonetheless indicated interest in PES as a way to think about and account for protection activities. For other utilities, there was high variation in the percent of non-utility owned lands and the types of landowners, both of which, according to participants, affect program design, acceptance and viability.

In some instances, other state agencies are landowners. Assuming those agencies are land management oriented, this would not likely create conflicts and would probably help utilities meet source protection goals.

For some utilities, there is little residential development and low probability of future development. This would mean a program similar to EWEB's might not be viable. In many of those instances, however, landowners tend to be agricultural and industrial/commercial landowners with larger acreages, such as timber companies. In such cases, different incentives and ways to engage these landowners might be needed, and it's not known yet what the incentives and engagement process would need to be.

Ownership and operation of dams in the source water area, as well as road system management, are also issues. In many instances, dams and road systems may be predominantly federally owned and controlled, and would thus require coordination and relationship building for source protection activities. Some utilities reported good relationships while others indicated better communication is probably called for.

In the West, the Forest Service is a major headwaters landowner; the WNF is a large upstream landowner in the McKenzie River Watershed, for example. Several other utilities indicated the Forest Service is either a significant or a dominant landowner in their source water areas. One focus group member talked about the significance of road system management in watershed areas. Another member pointed to the possibility that landslides on Forest Service lands could have large impacts on downstream program activities.

While some utilities have good relationships with the Forest Service, others have little interaction, and still others are suspicious that, once the Forest Service starts assigning value to upstream watershed filtration, the agency may move to extract payments from utilities to fund management activities. Further discussion on the subject suggests that this would be unlikely. The Forest Service has management plans – and its original enabling legislation – that require it to protect watersheds, and it would likely not demand payment for activities it is charged with

carrying out. In addition, INR and EWEB noted that the Forest Service, at least in Oregon and Washington, is looking to partner with utilities on watershed protection. Furthermore, if EWEB's relationship with the WNF is any indication, both parties acknowledge that working together can help both entities leverage funds and align priorities to better meet management objectives.

***c. Utility Size Affects Program Design and Implementation Capacity***

The size range of utilities participating in the focus groups suggests broad interest among drinking water utilities in using PES and living infrastructure. To replicate and adapt EWEB's proposed program, however, will take financial, technical and human resources. A participant pointed out that, although smaller utilities represent fewer ratepayers in terms of overall population, they represent the greatest number of water providers. Participants also commented that smaller utilities generally have greater resource constraints than the larger utilities. One focus group member explained:

A lot of times the water system operator is also the sewer operator and the roads operator and they just don't have the capacity.

Another focus group member representing a small utility confirmed resource issues:

We're definitely underfunded and we're definitely understaffed for doing the jobs that we need to do. And each one of us can't develop a program like this from scratch. It's too much work.

The same participant remarked that having such limited capacity means that smaller utilities tend to be reactive rather than proactive based on circumstances, further underscoring the challenge for small utilities to be able to benefit from the potential cost avoidance PES represents. Another focus group member observed that economies of scale are not there for smaller utilities. They may already have higher operating costs that get passed on to ratepayers as a consequence of having a small customer base. Morgenstern explained that EWEB's source watershed includes 11 small water systems. EWEB will be working with those systems and asking that they make a program contribution of some sort in order to signal some degree of ownership in the concept and program. In return, they will have EWEB's support and will be covered by the program. This is a mutually beneficial set of partnerships as it helps EWEB expand the marketplace: the smaller utilities have direct connections and relationships with a population of landowners in the McKenzie that EWEB does not have.

Another focus group participant confirmed that it is in larger utilities' interests to reach out to smaller utilities in their jurisdictions since, if those utilities can't sustain themselves, the larger utilities will need to take on added responsibilities. Collectively, these observations suggest that there are opportunities for larger utilities to partner with smaller ones to develop PES programs and that doing so is a form of enlightened self-interest for all involved.



Finally, small utilities are not the only ones with potential resource constraints. Having adequate data or LiDAR capability were cited as challenges for utilities of all sizes.

***d. Finding the Right Price Point for Participation is Important***

One of the factors affecting marketplace startup and viability is finding the right price to motivate landowners to participate. The non-regulatory marketplace EWEB's program represents is still emergent. As a result, there is not a long, well-established ecosystem services valuation history to go on, although data for this purpose are increasing. Furthermore, market prices are likely to be highly localized. EWEB contracted with Earth Economics of Tacoma, Washington to produce a valuation report for the ecosystem services in the McKenzie River Watershed. The report was completed in May 2012 and will help inform marketplace development. The Executive Summary is included in this report as Appendix B.<sup>8</sup>

Members of both focus groups asked how EWEB will establish a dividend value as some have already had experiences with trying to establish an incentive price point on other conservation actions. One of the members reported, for instance, that the utility has had difficulty motivating ratepayers to install more efficient toilets, probably because the rebate price is too low. There was not any further discussion about what could be done to rectify the issue; rather, it was offered as validation that establishing a sufficiently attractive value for EWEB's PES dividend will be important. This is consistent with one of the potential WID partners cautioning that price is something that will need to be tested before program roll-out.

An issue that will influence the incentive price for PES programs is the potential price for alternative land use decisions. Different members of the Washington focus group indicated that, where development pressures are high, particularly on private forested lands, PES payments may not be sufficient to override the financial incentives to sell land for development. It is unclear how much the same potential can affect Oregon programs based on Oregon's land use laws, but it is an institutional factor that needs to be examined when utilities are contemplating PES programs.

Finding the right incentive to motivate industrial agricultural or forest landowners to add or maintain riparian buffers when development is not a likely business decision, is yet another marketplace price point that needs to be determined. Establishing the right value to attract industrial/large-scale forest landowners is also only part of the equation. For that particular landowner class, it will also be important to ensure that such enterprises don't take advantage of enrollment and payments up to the point of crop maturity and then exit the program in order to harvest trees in the buffered areas.

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<sup>8</sup> The full report is available at [Nature's Value in the McKenzie Watershed: A Rapid Ecosystem Service Valuation](#).

Some focus group members asked if using PES might be a less expensive alternative to acquisition. Further discussion indicated that a PES payment program may indeed be less expensive than acquisition and that it may be best to integrate it with acquisition programs where they exist. Acquisition dollars can continue to be reserved for high priority areas while adding more lands to protection status, thereby stretching protection program funds. Additionally, a PES program provides those landowners who would probably not sell an easement, an alternative which would still compensate them for stewardship.

It may also be that PES programs can offer non-monetary incentives. As discussed elsewhere, while many rural landowners like the idea of being compensated for ecosystem services which previously had no monetary value, some are less interested in payments than in something such as a decal that indicates they are good land stewards. The idea prompted a focus group member to remark

When it comes to ecosystem services, we're all obviously thinking in terms of dollars. But part of ecosystem services is recognizing non-dollar value...On the one hand, we're always saying where's the money going to come from? But there might be different kinds of currency that we haven't really thought of yet.

This indicates that, particularly for smaller utilities which may find it difficult to justify rate increases or may not have the resources to create a program similar to the one EWEB is developing, there may be additional ways to motivate landowners to enroll in ecosystem services based programs. This, of course, does not exclude larger utilities from also developing non-monetary incentives. It was pointed out that landowners who are not as concerned with payments may want to donate PES proceeds back to the program. EWEB also is exploring the potential to have dividends used to offset local taxes so that landowners have that option as well.

#### ***e. Integrating PES with Other Programs can Expand Benefits***

The foregoing section included a discussion of the potential to integrate a PES program with an acquisition program in order to stretch utilities' source protection dollars. Responses from focus group participants indicate that utilities can benefit from integrating PES with a range of internal and external programs.

Some focus group participants indicated that one of the reasons they might run into difficulties selling an EWEB-like program to their managers and others with approval authority, is that they may already have funds committed to other programs such as rebates for water-efficient appliances, pesticide reduction campaigns and other restoration programs. In response, Morgenstern advised the groups that designing a PES program is a multi-year process. The best approach may be to move forward with program design before funding is secured, as EWEB is doing. The program will then have enough definition and structure so that program designers and managers will be better able to answer concerns when funding does become available or when

there is an opportunity to request that managers and external partners consider adding it to existing restoration and protection tools.

The WID concept can be helpful with respect to integrating PES with other external programs. A WID can create efficiencies for all partners, leveraging their program funding by aligning objectives and adding capacity through the portion of funding set aside for infrastructure and administration.

Potential WID partners can also expand the network of programs where PES can play a role. For instance, one focus group member talked about the potential for an EWEB-like PES program to complement PG&E's shading program. Such a case suggests exploring whether private-sector entities with complementary programs might be interested in contributing to a utility's PES program in order for both organizations to achieve greater and/or more efficient program outcomes. Another focus group participant mentioned that watershed management and land use planning are not yet integrated. Working with local and county governments may also create resource efficiencies for all involved and help achieve existing sustainability objectives or be a catalyst to developing or refining such objectives.

Many utilities at this point have relationships with other utilities along with other watershed based organizations. Developing a networked PES program might add benefits for involved utilities as a result of developing a comprehensive set of objective while spreading program development costs across the network.

#### ***f. A Watershed Investment District can Increase Efficiency and Capacity***

Many participants agreed that various types of federal, state and local funding are likely to be in permanent decline. One of the advantages of a WID would be its ability to stretch financial, technical and staffing resources. For example, EWEB will use program funds to contract with the Lane Council of Government (LCOG), which has LiDAR capabilities, for program monitoring purposes. EWEB will have the advantage of a suitable program for auditing compliance to PES agreements, and LCOG will have the advantage of added funding to acquire data in the McKenzie River Watershed. Similarly, EWEB will dedicate program funds to CPRC&D for fiscal management. Again, both entities will realize resource efficiencies from the partnership.

Participants in both focus groups liked the idea of a watershed investment district, or partnership. In most cases, the utilities represented already have relationships with a variety of government agencies and NGOs. It appeared, however, that the relationships tended to be based on helping one another carry out various restoration and other programs particular to one organization or another without the benefit of some larger vision. The WID, in contrast, would provide a structure for multiple entities to align goals, skill sets and funding to add capacity for carrying out individual and collective program objectives.

Focus group members had various questions regarding WID structural and procedural details such as decision making authority, initial and long-term funding and the like. Morgenstern indicated that many of these issues are yet to be worked out as it has been important to stay at the conceptual level initially and not get “down in the weeds” before partners can agree that the overall structure makes sense.

## **V. Institutional Findings Discussion**

There is clearly an awareness in, and curiosity about, PES programs based on the interest across those utilities represented at the focus groups. There was an effort to limit invitations to utilities utilizing surface water and those which did not own their source water lands; however, focus groups included some exceptions. This suggests that interest may well run beyond utilities with service needs similar to EWEB.

A well-developed education campaign is essential for program buy-in. It must include all PES interest groups inside and outside of utilities: those with authority to approve program design and implementation, ratepayers as obligatory funders and businesses as voluntary contributors, ecosystem services landowners/sellers, and potential watershed investment district partners. It is unlikely that a single message will work equally well for all interests; however, two items that cut across groups are the potential for green or living infrastructure through PES to be a cost-avoidance strategy and PES as a means of protecting drinking water quality. For utility managers and others with the authority to approve such programs, cost avoidance will be a priority consideration, although the message will obviously need to be backed up by cost-benefit calculations. Fortunately, the number of case studies that can provide some examples and guidance is growing.

For ratepayers and others, the message may be better presented primarily from a health and sustainability angle. It should, however, include PES’ importance as a potentially less costly financial tradeoff, since increased treatment and annual operating costs from engineered solutions will have to be recouped through rate increases that may be more expensive than increases to cover program initiation and maintenance. In addition, living infrastructure includes multiple benefits that engineered solutions do not. For example, natural systems can filter pollutants that engineered infrastructure cannot, and they provide additional benefits such as fish and wildlife habitat.

Establishing a realistic but appealing dividend value is critical to attracting PES sellers. In addition, the amounts and types of incentives will vary by PES seller groups. Working with those who have knowledge about ecosystem services accounting and experience with valuation, as EWEB has done, can help establish general values for area ecosystem assets, but the utility will need to explore what price point will bring sellers into the program. Sellers in different groups are likely to respond differently to incentives. For some rural landowners, dividends may

be less important than sort of recognition such as a certificate or a decal that can be displayed on a mailbox or other property that indicates validation as a good land steward. It is unclear, but also less likely, that industrial agricultural or forest owners will be similarly motivated. Additionally, they are likely to require a higher payment than non-industrial private owners.

Motivating landowners to enroll is one hurdle. PES agreements will also need to have the right set of disincentives to keep landowners from exiting the program too readily and liquidating the ecosystem services through extractive activities. This is likely to require a delicate balancing act: offering enough monetary and other incentives, along with assurances, to move landowners to enroll, matched by practical and enforceable disincentives for leaving the program so that ratepayers' and other funders' monies are well spent.

The language to be used for education, enrollment and enforcement needs to be carefully crafted. For instance, although the term *watershed investment district* was used to describe the collaborative partnership among utilities and other watershed based organizations, several people from both the WID interviews and the focus groups pointed out that the term *district* connotes an entity with taxing authority, which an EWEB-like program does not have. To give potential supporters and ES sellers the impression that a WID would have formal authority is likely to backfire; few people are likely to support what may appear to be another bureaucracy that can levy taxes. Those who are designing a program need to keep this in mind and work closely with colleagues and perhaps hold focus groups to determine acceptable terminology.

Having a voluntary PES program can improve government and utility relationships with rural landowners. A focus group member, talking about rural landowners' objections to a regulatory approach to protecting water quality, characterized the perception as being required to protect water that the downstream utility or government gets for free and then charges to deliver. The assumption that there is no cost for treatment and delivery infrastructure and operations is irrelevant: upstream landowners object to the punitive nature of regulations, especially in instances where landowners are already using ecologically desirable land use practices. Morgenstern mentioned that, for some landowners, the money from a program such as the one EWEB is considering is less important than having a program decal or other indicator that they are good land stewards.

EWEB is focusing on forested riparian lands; however, there is variation in landowner and land use types within source water areas as well as variation in utility size and drinking water sources. In some instances, a PES program is not applicable, and there may be other conditions under which such a program is not viable. At the same time, however, utilities with different land types, such as primarily agricultural, were able to begin thinking about how such a program might work for them.

## **VI. Recommendations**

There appear to be ample opportunities for a range of utilities, in terms of ratepayer base, source water type and source water land ownership types, to use PES programs as an adjunct to existing protection and restoration activities. The greatest barriers are resource related: smaller utilities have significant budget, ratepayer base, human and technical constraints. For all utilities, the significant challenges are likely to be buy-in across the range of stakeholders due to the newness of PES and green infrastructure concepts, timing for introduction of planning cycles, and lack of technical support. The following recommendations speak to those opportunities and barriers.

EWEB's program, while still in the design stage, offers a streamlined model for non-regulatory PES source water protection. It does not require complicated transaction and additional valuation techniques. Similar models have been used in other contexts as noted in some of the materials in Appendix A. Utilities would do well to familiarize themselves with the various models as a way to think creatively about how to design a program that will meet their specific needs.

Knowledge regarding how to design a PES program is a resource. Although many utilities may have heard about PES and green or living infrastructure, staff may not know where to turn for help and information. Creating an online knowledge and practice network, as Oregon utilities are beginning to do, would help utilities at different stages of design and implementation share information and experiences to guide others.

Buy-in from multiple stakeholders will be essential to program funding and support. Utilities need to design comprehensive but differentiated education campaigns for inreach as well as outreach. Those with the authority to approve programs will need to know more about the potential for PES and investment in living infrastructure as cost avoidance strategies, and program designers should be prepared to show cost-benefit numbers to back up the claim. The reports and literature cited in Appendix A provide some materials that may be of help.

Strategies to educate ratepayers should include discussion of the importance of source water protection activities, what constitutes green or living infrastructure and the role ecosystem services play, how utilizing natural filtration can help delay or offset engineered solutions and associated costs which must be passed on to ratepayers, and the added benefits over and above technical solutions that living infrastructure provides. A combination of the above approaches can be used to educate possible corporate sponsors along with a discussion of the public relations and business sustainability benefits of supporting local clean water efforts.

Potential program partners need to hear about how such a program can add capacity and efficiencies through participation in a watershed investment district or partnership. This can be achieved by aligning objectives so that the partnership and the individual organizations benefit through sharing existing authorities and competencies. Program funding should be a fairly stable

and sustainable source to maintain administrative and project support. Although some areas may want and be able to take advantage of establishing legislative authority for such an entity, there are also advantages to using less formal institutional approaches and utilizing existing authorities, competencies, and trust levels among partner organizations. There will be multiple responsibilities that need to be determined and negotiated such as data collection and storage, field verification of land qualifications for program enrollment, fiscal administration, monitoring, agreement enforcement and appeals.

Utilities might also benefit from expanding the partnership concept to other organizations and agencies that might not be part of the watershed investment district or partnership. Some, such as the Forest Service, may be owners within the source water area. In other cases, there may be private firms that could have an interest in collaborating on complementary activities if approached. Other utilities may also want to collaborate in a networked fashion to share resources and objectives in order to put PES to work on a larger geographic scale. Doing so might accelerate any needed institutional and social acceptability changes that would push PES and living infrastructure past the novel stage so that its use and concomitant benefits become the norm.

All utilities potentially face different resource constraints such as technical support or funding. Smaller utilities lack the staff, ratepayer base and budget to jump into a model like EWEB's. They can benefit from the knowledge network mentioned elsewhere, but they could also benefit from having larger neighboring utilities share resources and act as mentors for designing and implementing PES programs. Working with and mentoring the smaller systems can provide comprehensive program ownership and subsequent source protection awareness and actions. Additional benefits can flow both ways: if smaller utilities can reap the benefits of PES programs in ways that help them remain viable, the larger utilities are protected from having to take on added responsibilities.

Regardless of partnership opportunities, utilities and other organizations should think about how PES might be integrated into other programs. Although it has the potential to be a stand-alone program, it has a greater potential to be a strategy that can be linked to other activities in ways that can leverage dollars and activities.

Waiting for funding to begin program design may be putting priorities in the wrong order. If utilities pursue funding as the first step, they may be less likely to find the support they need. The better approach may be to design the program first in concert with landowners and potential partners and follow that with stakeholder education. This should be done with a view toward having the program substantially defined and understood in order to better take advantage of funding opportunities as they arise since many specifics will have already been determined.

Finding the right price point as well as other potential non-monetary incentives to encourage participation is a variable that will be area-specific and will differ among landowner types and

available alternatives. Utilities will need to work with the various landowners to establish what incentives will be sufficient to promote program enrollment.

Perhaps one of the biggest challenges at this stage is acquiring realistic valuation of the ecosystem services the program will use. There are consultants who can help establish watershed land/ecosystem services values and help utilities determine how best to use the information.

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# **Nature's Value in the McKenzie Watershed**

## A Rapid Ecosystem Service Valuation

May 2012

EARTH  
ECONOMICS 

**Authors:** Rowan Schmidt and David Batker

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## Executive Summary

An essential asset to both economic development and quality of life is “natural capital,” the ecosystems, nutrient cycles, water, geology, climate and topography that provide an abundance of goods and services for all of us. This study contains a rapid assessment of the economic value provided by natural capital in the McKenzie Watershed.

The McKenzie Watershed spans forests, rivers, lakes, wetlands, grasslands, shrub, snowpack and agricultural lands that provide economically valuable goods and services. Goods include fish, timber, drinking water and agricultural products. Services include flood protection, hydroelectric power, drinking water filtration, pollination, local weather and climate stability, natural beauty and recreation.

For this assessment, the McKenzie Watershed was divided into 10 land cover types using Geographical Information Systems data: Agricultural Lands, Pasture, Forest (five age groups), Riparian Buffer, Urban Green Space, Grassland, Shrub/Scrub, Lakes/Rivers, Wetlands and Other. Each natural land cover across the McKenzie Watershed produces a unique suite of up to 23 ecosystem services.

Ecosystem services were identified for nine of the land cover types and a subset of these services were assigned dollar values using benefit transfer methodology. This is an accepted economic methodology that utilizes previous valuation studies of similar goods or services in comparable locations. These valuation studies use one of eight valuation techniques, including market pricing, cost avoidance, travel cost and contingent valuation.

The ecosystem services examined include climate stability, flood protection, water filtration and supply, wildlife habitat, pollination, soil erosion control, soil formation, biological control, nutrient cycling, aesthetic and recreational value. Results show that

by providing a range of benefits, **McKenzie Watershed ecosystems provide between \$248 million and \$2.4 billion in benefits to the regional economy each year.**

This large range in values represents an appraisal of the McKenzie Watershed’s natural capital, similar to a house or business appraisal. This appraisal replaces the default value zero for the economic value of ecosystems in the McKenzie Watershed. The range is wide, but will narrow with more detailed analysis of key ecosystem services and land cover types, and as spatial mapping of the watershed’s ecosystem services is completed.

At present, the low end of the range can be considered a baseline value and an underestimate, of the true value because while up to twenty known valuable ecosystem services for each land cover were identified, only between 5 and 19 were actually valued for each land cover type. Some highly valuable ecosystem services were not valued due to a lack of valuation studies. The storage value of ice and snowpack, for example, critically valuable for both water supply and energy generation, is not included. The McKenzie Watershed’s ice and snowpack stores water in the wet winter and releases it in the late spring and early summer, providing value for drinking, agricultural and industrial water, hydroelectric power, flood control, recreation and salmon habitat. This study did not place a dollar value on the water storage value of snow pack.

Treating natural capital similarly to an economic asset that provides a stream of benefits over time, such as bridges, apartment buildings, roads or other built infrastructure provides an estimate of the asset value of natural capital. This is similar to using apartment rental payments (flow of value) to estimate the total value of an apartment building (asset value). Natural systems are different than built capital because whole watersheds are seldom bought or sold. Based on the ecosystem services examined, and

treated like an asset with a lifespan of 100 years, **the asset value of the McKenzie Watershed is between \$6 billion and \$58 billion at a 4% discount rate.** Unlike built capital systems, which seldom have a 100-year lifespan, natural systems are self-maintaining and have far longer productive lifespans. Thus, these estimates are conservative.

Using a 0% discount rate, which recognizes the renewable nature of natural capital and assuming that people 100 years from now will enjoy the same level of benefits (a more likely scenario for natural capital), the McKenzie Watershed has an asset value of between \$25 billion and \$235 billion. The analysis of natural capital value is relatively new, but well accepted and increasingly used by large private companies, federal agencies and policy makers. These figures are based on cutting-edge economic analysis tools that were developed, in part, with a United States National Science Foundation grant.

### Summary of Recommendations

The following steps are recommended based on the study findings:

- **Invest in natural capital.** The conservation and the restoration of McKenzie Watershed ecosystems should be included as a key asset and investment opportunity for promoting economic prosperity. This appraisal of value is legally defensible and applicable to decision-making at every jurisdictional level.
- **Conduct detailed valuation, mapping and modeling of key ecosystem services.** This study provides a baseline valuation of ecosystem services in the McKenzie Watershed and identifies key local benefits provided. More detailed valuation studies on these benefits can be used to make more cost-effective investments across the landscape. Value can be mapped and modeled across the watershed from water provisioning to flood risk reduction.
- **Review institutional options for managing natural assets.** An ecosystem services framework can be used to achieve multiple economic goals while minimizing trade-offs. Policymakers in the McKenzie Watershed should facilitate discussions about institutional improvements that facilitate the coordination of watershed activities including drinking water quality, flood risk reduction, salmon habitat restoration, climate adaptation, recreation, stormwater conveyance and forest stewardship.
- **Use ecosystem services to advance rural economic development.** By including agriculture, sustainable forestry, and access to quality outdoor recreation in economic development planning, long-term and sustainable jobs can continue to be identified, quantified and secured in the McKenzie Watershed. Restoration projects can and should be effectively linked to economic advancement, sustainability and long-term job creation.
- **Include ecosystem service valuation in accounting and decision-making tools.** Ecosystem service valuation can provide governments, organizations, and private landowners a way to calculate the rate of return on conservation and restoration investment. Beginning in late 2012, values in this report will be regularly updated using the Earth Economics' SERVES (Simple Effect Resource for Valuing Ecosystem Services) web-based tool.