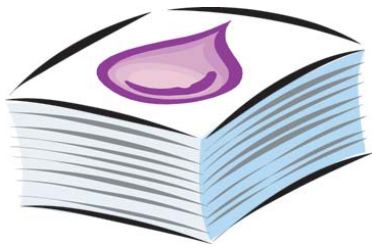


Identification of Potential Economic Benefits of Production and Use of Reclaimed Water

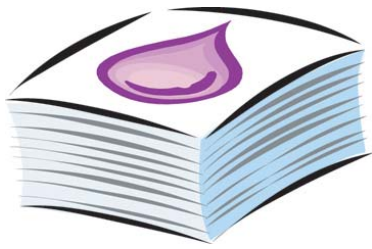
Ernie Niemi

ECONorthwest
ECONOMICS • FINANCE • PLANNING



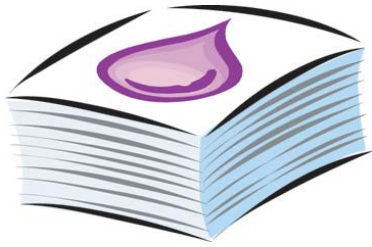
Background

- **ECONorthwest**
- **WaterReuse Foundation's Economic Framework**
- **Structure of the report**
 - **Overview of types of potential benefits**
 - **Process for identifying and describing the potential benefits**
 - **Descriptions of the potential benefits**



Types of Economic “Benefits”

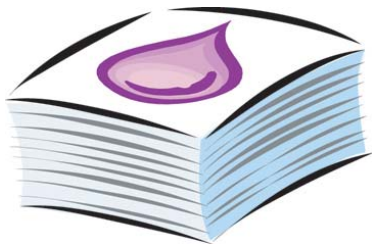
- I. **Improvements in the welfare of the county’s residents**
- II. **Increases in the county’s economic growth (jobs, incomes, etc.)**
- III. **Improvements in financial status**
 - **Agencies and utilities**
 - **Their customers**



Improvements in Welfare (I)

A. Efficiency and productivity gains

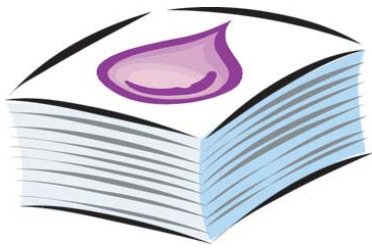
Utilities and others take advantage of long-run opportunities for improving the system's efficiency



Improvements in Welfare (II)

B. Increased value of ecosystem services

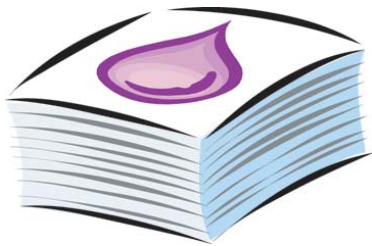
- **Reverse actions that diminish some goods and services**
- **Increase the supply of some goods and services**



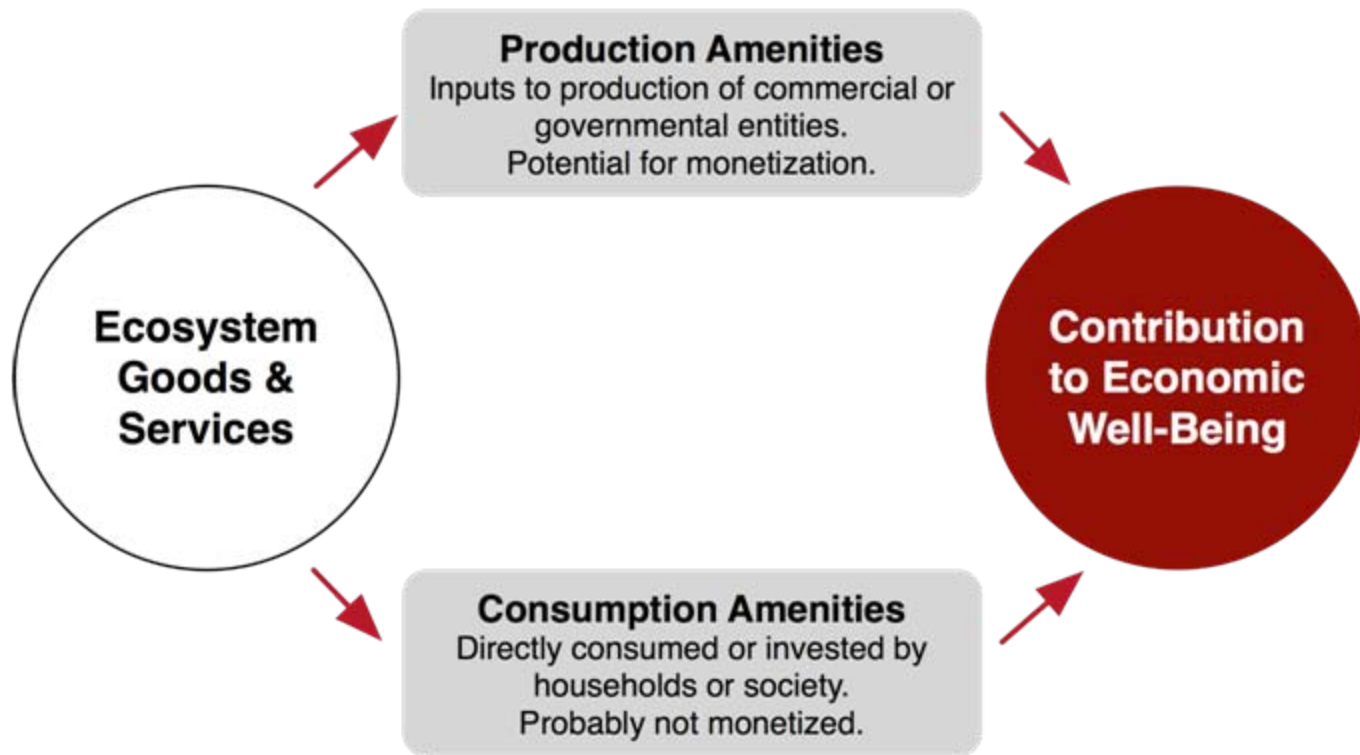
Ecosystem Goods & Services

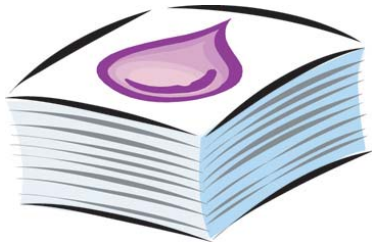
(I)

Production & regulation of water	Production of food for humans	Production of aesthetic resources
Formation & retention of soil	Production of raw materials for industry	Production of recreational resources
Regulation of atmosphere & climate	Pollination of wild plants and agricultural crops	Production of spiritual, historic & cultural resources
Regulation of floods & other disturbances	Biological control of pests & diseases	Production of scientific & educational resources
Regulation of nutrients & pollution	Production of genetic & medicinal resources	
Provision of fish & wildlife habitat	Production of ornamental resources	



Ecosystem Goods & Services (II)

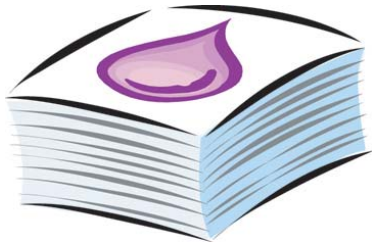




Improvements in Welfare (III)

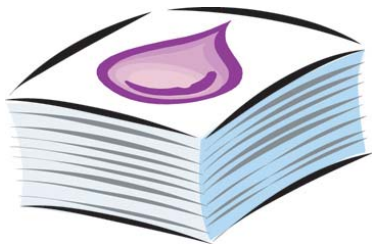
C. Reduced uncertainty and risk

- How the reclaimed water system will evolve
- Environmental impacts of urbanization and climate change
- Reduce the potential impact of a water supply shortage



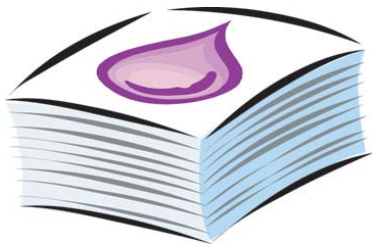
Improvements in Welfare (IV)

D. Improvement in perceived fairness



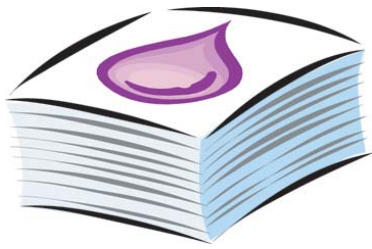
Increase Economic Growth

- **For those who believe growth is a good thing**
- **But often tradeoffs**
 - **Place to place**
 - **Landowners & tenants**
 - **Workers & employers**
 - **Etc.**



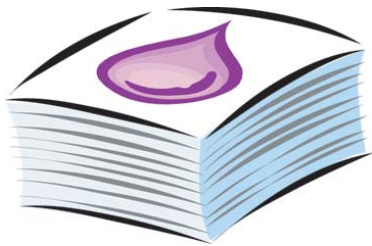
Financial Benefits

- ❑ **Lower the expenditures associated with a given level of service**
- ❑ **Increase revenues from outside sources**
- ❑ **Not: increase in payments from customers to an agency**



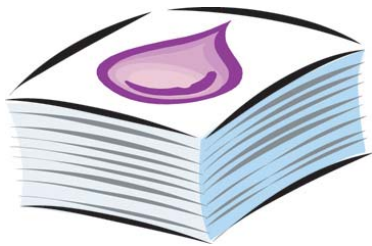
Identifying Potential Benefits

- A. Develop an initial list**
- B. Screen and categorize**
- C. Describe all potential benefits**
- D. Estimate unit values if there is sufficient information**



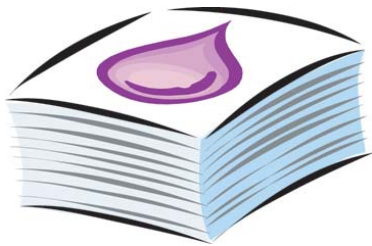
Benefit Categories

- **Direct benefits: to utilities & customers**
- **Indirect benefits: to society at large or other stakeholders**
 - **Environmental benefits**
 - **Recreation benefits**
 - **Human health benefits**
 - **Economic & social benefits**



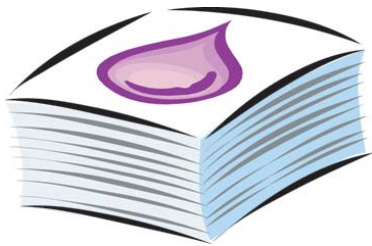
A. Develop Initial List (Table A-1)

- ❑ **Take broad approach**
- ❑ **Begin with and adjust list from WateReuse Foundation**
- ❑ **Add others through consultation with WTD**
- ❑ **Adjust as plan is developed and implemented in the context of specific actions**



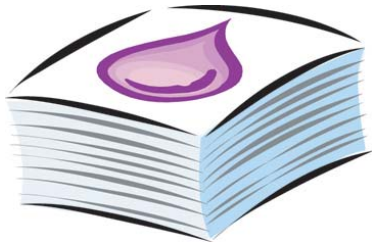
B. Screen and Categorize (Table A-2)

- Eliminate those that appear to be inconsequential**
- Eliminate those being captured by other programs**
- Separate remainder**
 - Information for full or partial valuation**
 - Information for qualitative assessment only**



C. Estimate Unit Values (Table A-3)

- **Description**
 - Type, likely beneficiaries
 - Quantity (to be determined)
- **Unit value**
 - What it means, source, quality, applicability
 - Market or non-market
 - Directly applicable or transfer from other setting



D. Describe Unquantifiable Benefits (Table A-4)

- Not necessarily less or more important than those whose values can be described in quantitative terms**
- Both quantifiable and unquantifiable benefits must be considered to have complete picture**