



**Developing an Economic Indicator for  
Watershed Counts**  
December 19, 2011 at Save the Bay  
10:00 AM - noon

**Workshop Goals:**

- 1) To agree upon a long range vision for economic metric(s) that will connect investments in environmental protection and clean water infrastructure to economic benefits for the citizens of RI.
- 2) To agree upon indicator(s) that can be gleaned from existing studies and developed in the near term.

**Attendees:**

Ames Colt, Tim Hennessey, Hal Walker, Dave Newton, Nick Wildman, Lauren Russo, Amie Parris, Rick Pace, Greg Gerritt, Meg Kerr, Donald Pryor, Q Kellogg, Judith Swift, Topher Hamblett, Susan Shim Gorelick, Denise Poyer, Walter Berry, Richard Ribb, Kathy Crawley, Ken Burke, Jane Austin, Danielle Fournier, Margherita Pryor, Jonathan Stone, James Latimer, Lauren Carson

**Presentations:**

**Economic Indicators for Systems-Level Planning and Management for Our waters, Watersheds, and Their Human Uses**

*Ames Colt, Bays, RI Rivers and Watersheds Coordination Team Chair*

Rhode Island’s economy has many linkages to Narragansett Bay and its watershed including ocean and coastal tourism, port management, maritime and defense industries. Freshwater recreational resources are also important but often neglected, most especially for rivers in urban communities, which in turn impact the health of the watershed.

The Bays, Rivers and Watershed Coordination Team (BRWCT) is charged with integrating environmental and economic considerations as it coordinates activities of seven state agencies. A major accomplishment was the completion and approval of the legislatively required Systems Level Plan (SLP) plan in 2008 for the 2009 – 13 timeframe. The plan was designed with common goals and strategies and includes on-going and comprehensive evaluation with the goal of increasing capacities of agencies and stakeholders.

The BRWCT Economic Monitoring Collaborative was actively led by the Economic Policy Council, which developed comprehensive reports in 2007 and 2008. The 2007 report presented a scorecard model with 28 indicators for RI’s water cluster. The analysis looked at three sectors – water-dependent, water-related, watershed (which captures those economic activities that rely on access to large quantities of freshwater such as industry, e.g., Amgen, as well as textiles and agriculture).

The indicator scorecard had four categories – economic, activity, capacity and conflict indicators (identifying where there is a potential for overuse and where activities may conflict with each other).

Some of the economic activity indicators based on 2006/7 data include:

- Water cluster employment – 37,000 jobs: \$1.8 billion

- Navy employment – 7,382 jobs: \$523 million
- Water dependent industries rate of change index: (2001 – 2005) 2.26
- Seasonal effect of summer community food and beverage sales: \$104 million
- Commercial fish landings value: \$91 million (recent study has been done that could be used for comparison)

Note: newer marine trade data seem to suggest a continuing employment and revenue decline in that sector versus tourism, education, and other activities not directly tied to freshwater uses.

Some of the Activity Indicators included number of registered events, commercial vessel transit, coastal residential sales as percentage of total home sales, recreation participation rates and boating usage days.

Capacity indicators included:

- Permitted slips and moorings: 14,000
- Registered boats: 43,961
- Transient slips: 4,250

Conflict indicators included:

- Registered boats to slips and moorings: 3.12
- Residential coastal land value to industrial coastal land value: 3.12
- Boating density (recreational only): 2.16 registered boats per acre of bay

The 2008 Economic Monitoring Collaborative report focused on peak season tourism and the economic linkages between the marine trades and the rest of RI's economy. Some examples include:

- Percentage of out of state ownership by boat length -- (41% large boats (40 – 49 feet) had out of state owners.
- Estimated accommodation capacity slots (parking, marina, camping, hospitality, vacation rentals)
- Ocean racing – explored on-shore infrastructure needed to support.

Indicators developed by the BRWCT are designed to help state/federal/local agencies develop policy. The CT has articulated the need for the EDC to move forward with re-evaluating these indicators.

New initiatives

- RI Ports – Opportunities for Growth (April 2011)
- Proposal to DOA Planning Challenge Grants – short sea shipping assessment and port marking collaborative
- RI EDC- large marine events benefit assessment

### Discussion

Judith Swift mentioned that there is a 19<sup>th</sup> century study for Newport looking at cost/benefits of day-trippers that can be viewed at the Newport Historical Society and Peacedale Library. The study is interestingly complete and in-line with the discussion of economic metrics. It points out that we should be considering the costs as well as the benefits.

## **Economic Indicators for Watershed Counts**

*Marisa J. Mazzotta, Ph.D., Environmental & Natural Resource Economist*

The indicator(s) we are exploring should help answer the question, “Why spend money to improve water quality in the Bay and watershed?” We are exploring how to answer that question in economic terms.

One way is to look at the economic impacts and many of these were covered in the previous presentation. A tool to know about is the NOAA Coastal County snapshot which provides county by county data on ocean jobs by sector: (<http://www.csc.noaa.gov/digitalcoast/tools/snapshots/>) . The datasets from this site can be downloaded.

But there are many other benefits that should be considered when looking at return on investments for investments in environmental protection. These are called non-market benefits and reflect the values for things that are not bought and sold.

How do we measure non-market values? The studies examine the value to a person, over and above any actual costs. The Peconic Estuary Recreation Study is an example of a non-market value study looking at the value of clean water to users of the Peconic Estuary. Researchers surveyed over 1300 people at beaches throughout the area to estimate values for swimming, beach use, boating, fishing and shellfishing, wildlife and bird watching, and hunting. People were asked to estimate the number of times they did activities at different regions of the estuary. They were then to review the most recent recreation day. The distance people traveled to enjoy the estuary was included in the metric used to estimate the value.

Based on the survey data, the study estimated that there were approximately 1.4 million swimming days/year, which were valued at \$12.60 per person per day (in 2011 \$) for a total value per year for swimming in the Peconic Estuary of approximately \$17.8 million.

People were also asked to rank water quality and these subjective estimates of water quality were well correlated with measured water quality. Using the model, the researchers estimated the value of a change in water quality. They found that a 10% improvement in water quality over entire water body resulted in almost \$2 million per year.

The Peconic Study was complicated and expensive, but provided excellent data. Another approach would be to develop qualitative indicators of non-market benefits. The metrics should include measures of:

- Preferences – what do people want?  
Scarcity – is supply limited in a particular location, is it unique?
- Access and complimentary inputs – how easily can people use it?
- Risk – will it be maintained over time?
- Equity – who has access?

Another approach is to tell an economic story – adding economic measures to other metrics. For example, Watershed Counts could say, We decreased beach closure days by (perhaps) 100 days, at sites accessible to

1,000 households where 35% have children, 70 % have no other easy access to clean beaches in a community with few recreational options.

A final approach to consider I to develop measures focused on socio-economic targets. Examples would include

- Number of households with public beach access
- Swimmable beach conditions at beaches within x miles of y % of watershed residents for z% of summer days,
- Etc.

Both economic impacts and non-market “quality of life” benefits are important. Non-market benefits can be significant and they can be monetized or they can be measured qualitatively.

### **Q&A**

Margherita Pryor – do we ever use the license plate revenues as metric?

Marisa – I have seen donations to environmental groups used as metric. However, it is difficult to ascertain what benefit people are getting from this investment. For example, it might be that the donations make them feel good or it might be that they are investing in environmental improvement.

Jane Austin – were there income effects in Peconic study?

Marisa – The model does have income in it, so you could look at the effect of income. We have not done this analysis.

### **Discussion**

#### ***A. Indicator(s) that can be gleaned from existing studies and developed in the near term.***

Two types of indicators were discussed:

A) economic activity/development indicators developed by Bergstrom and Hively in '07 and '08 reports from the Economic Monitoring Collaborative, and 'predictive' economic development indicators such as those utilized in the 2011 Martin Assoc. Port Develop Opportunities Study and to be developed this spring/summer from large marine events by EDC; the latter two sets were touched on very briefly in Ames’s presentation.

B) non-market valuation indicators that provide credible estimates of how users value opportunities to recreate or in other ways enjoy/appreciate marine or other aquatic environments or resources.

The former are intended to influence/guide decisionmakers in economic development/investment decisions that private and public sector orgs make. So, the Marine Events model will help EDC evaluate multiple and/or competing event proposals; over time it should help EDC, DEM, and other RI public entities reach informed decisions about public infrastructure needs and investments that will enhance/expand/balance marine events in RI. Such indicators are intended to help managers make decisions for which they have discretionary authority.

The latter have more of an enlightenment and public education function/value. Water quality management decisions made by DEM or MA DEP are constrained significantly by CWA goals and regs. Instead such indicators would help to demonstrate, in scientifically credible terms, the (use and non-use) values the public places on or perceives with regard to access to or enjoyment of high quality aquatic environments and resources.

There would be differences too in how the two types are parameterized and implemented that would dictate the resources required to apply them over time

Potential indicators discussed:

Determine the total investment in Clean Water, Open Space, Water Supply for the NB Watershed. (Note –the NBEP Currents of Change includes state agency expenditures for natural resources in RI and MA through 2009 [http://www.nbep.org/currents\\_change/environmental\\_expenditures.html](http://www.nbep.org/currents_change/environmental_expenditures.html)).

Develop a qualitative story looking at beach closures.

Estimate jobs created/lost by water quality projects or beach closures.

# of visitors to RI for vacation purposes

***B. Long range vision for economic metric(s) that will connect investments in environmental protection and clean water infrastructure to economic benefits to citizens of RI and nearby MA.***

- Indicators should link to goals/targets that incorporate quality of life
- Goals should include the public sector investments in environmental improvement and promulgation of laws/regulations (public policy changes)
- Quality of life metrics connect to preferences (happiness, health, why do people choose to live in a particular area?)
- Calculate the monetary value associated with improvements in water quality
- Include freshwater and the MA portion of the watershed
- Use stories/case studies to put indicators in context (for example, impervious cover changes over time impact water quality. The changes in water quality impact uses of the water which has impacts on quality of life)
- Communicate in language that the public can understand. Understand consumers' language and priorities. Measure things that people care about.
- Coordination Team will stay focused on RI State Agencies examining the decisions that need to be made and the data needed for these decisions. For example, CRMC looks at permit applications on a case by case basis based on water classifications. Is there data that could be provided to facilitate these decisions, perhaps looking at total slips in the bay/carrying capacity?

**Additional Resources**

- Indicator studies in Washington and Oregon
- LA Beach study
- Urban Harbors Institute Study looking at boating in MA waters
- IMPLAN (<http://implan.com/V4/index.php>) and INVEST (<http://www.naturalcapitalproject.org/toolbox.html>) – over the counter products for economic analysis
- Long Island Sound social marketing study to understand values/preferences