

## **Minutes**

### **Section 208 Area-Wide Water Quality Advisory Board Meeting**

**March 18, 2014**

**1pm**

**Cape Cod Commission Conference Room**

**3225 Main Street, Barnstable, MA**

Present: Robin Wilkins, Robert Lawton, Virginia Valiela, Wendy Northcross, Bob Churchill, Paul Niedzwiecki, Andrew Gottlieb, Kristy Senatori, Erin Perry, Patty Daley, Mark Abrahams, Matt Abrahams, Tom Parece, Bob Ciolek

### **Executive Directors Update**

Paul Niedzwiecki provided an executive directors update:

Completed first round of subregional workshops on March 4 in the Mid Cape

AECOM and the Abrahams Group met with the Massachusetts Water Pollution Abatement Trust to discuss SRF modeling as part of the development of the Cost/Rate Model for the Cape Cod Commission 208 Plan on March 6

Met with the Finance Subcommittee on March 12 to review the Financial Model Prototype

Updated the Chamber of Commerce Wastewater Task Force on 208 progress on March 13

Updated the Sandwich Board of Selectmen on 208 progress on March 13

Continued working with the Consensus Building Institute on subregional meeting 2 material – meetings start on Tuesday March 25

### **Financial Model Prototype**

Tom Parece, from AECOM, provided background on the model development. He explained that it takes inputs from a lot of sources and the idea is to end up with a tool that the communities can use to evaluate scenarios, whether they be traditional or non traditional in nature or designed for a town or a watershed.

Mark Abrahams, from the Abrahams Group, walked through a presentation describing the model. He explained the presentation shows highlights of the prototype, which has several modules and includes costs from the technologies matrix for several alternatives in a watershed.

Wendy Northcross asked if there is any consideration to business affordability.

Mark replied that the criteria are residential right now, but we are talking with the Commission about what to do with commercial, seasonal, etc.

The presentation is attached, which provides more details on the scope of the model and the various modules.

Wendy asked if USDA funding is primarily only available to outer Cape towns. Mark replied that USDA funds are for rural communities with fewer than 10,000 people (towns or districts)

Tom Parece said that each watershed has a calculator to determine feasible options for alternatives to sewerage.

Virginia Valiela asked who is calculating the controllable nitrogen load for shared watersheds.

Tom replied that the loads are from the MEP reports and in watersheds without MEP reports the Commission has developed assumptions.

Virginia asked if the nitrogen upstream gets a 50% reduction

Paul Niedzwiecki replied yes and said that when determining allocations we need to decide if we want to use MEP numbers or updated information based on flow.

Virginia pointed out that she believes that the 50% attenuation number is an assumption that hasn't been measured. Potentially, it could be higher.

Paul said that communities have a number of options - every community could go alone and suggest their own numbers, or we could provide a model.

Virginia suggested doing some verification of groundwater coming from ponds

Wendy asked if the community at large would pay for the solutions.

Mark replied that the model has the capability to have this paid by users, all watershed properties, etc.

Paul added that the model can handle it however you want to allocate the costs.

Matt Abrahams, from the Abrahams Group, reviewed the outputs and reports generated by the model.

Wendy asked why a community would ever choose the highest cost scenario.

Mark replied that we want to give all the options and the ability to argue for federal and state funding if the solutions are unaffordable.

Virginia asked what the revenue inputs are.

Mark explained that the federal inputs are limited, but state funds, like the SRF, are included.

Paul added that we are making progress on this with the infrastructure bill, and the environmental bond bill to fund alternatives. On the federal side, the Southeast New

England Coastal Watershed Restoration Program will be providing about \$500,000 for projects.

Bob Ciolek said that we haven't yet ramped up a sustained campaign on this issue.

Tom said that we can add funding sources as they come up and are available and Paul added that new vehicles will be available in future.

Virginia asked if almost all of these sources are prospective, as opposed to existing.

Paul replied yes.

Wendy added that the Governor put a short term rental tax in the budget.

Bob Ciolek asked if it was to be decided on by towns and Wendy said she would need to check.

Wendy asked who is using the financial model.

Paul replied that towns, watershed associations, two towns in one watershed all could use it. It is flexible to consider many political jurisdictions.

Paul said we will be meeting with EPA early in April on the issue of affordability.

Bob said he is interested in hearing them describe where they think policy will evolve to and if there are any examples of where they have done more than what they have typically done in the past.

Wendy said she hopes that consideration is given to commercial/industrial properties on affordability.

Virginia said that the governing pieces become very complicated and Bob said there are models (ex. 40N) that can be used to create water or sewer districts.

The next meeting is scheduled for April 15.

# Cape Cod Commission 208 Water Quality Management Plan Update

## Cost / Rate Model

Advisory Board Meeting

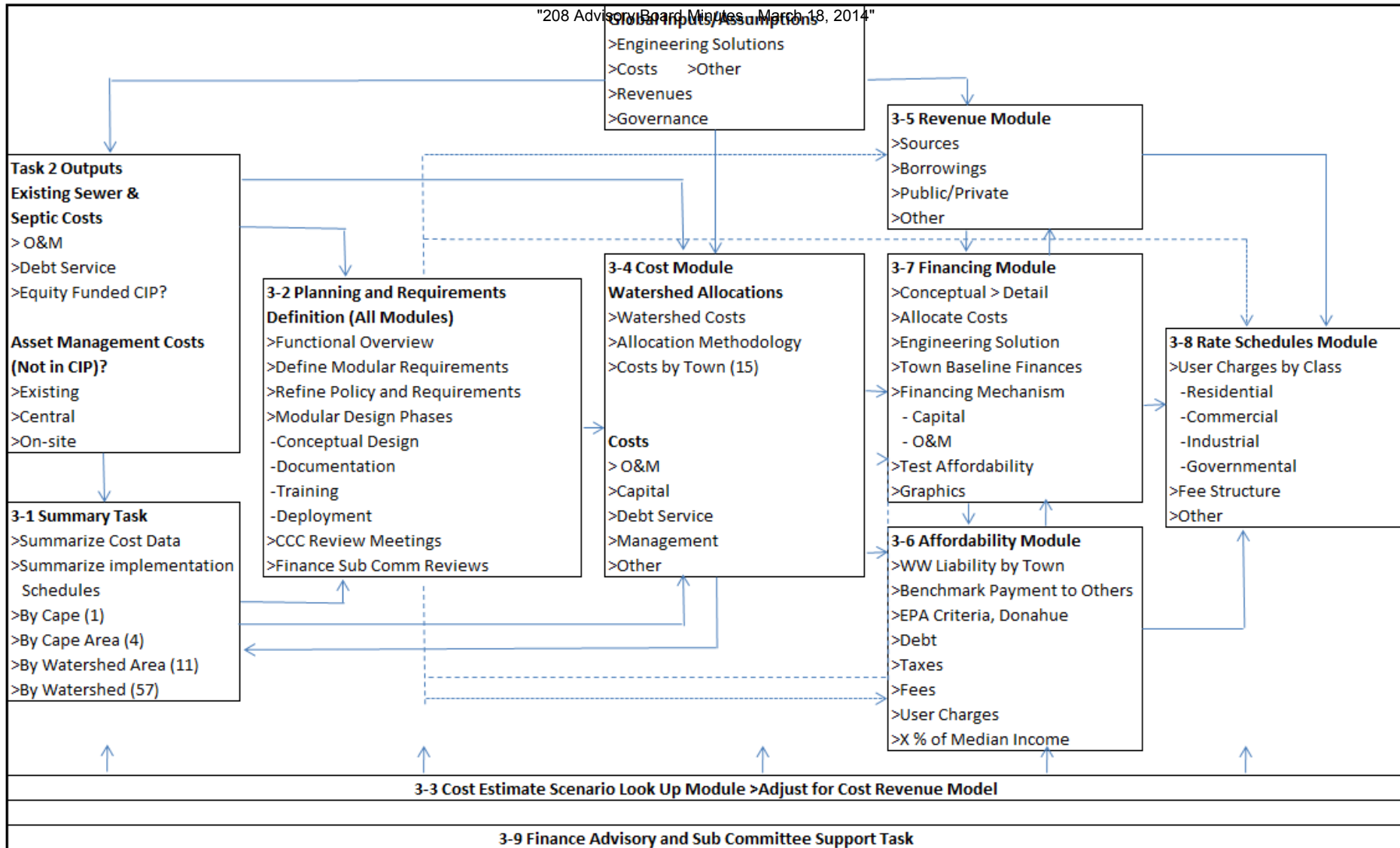
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# Agenda

- Scope
- Modules
- Cost Module
- Revenue Module
- Financing Module
- Affordability and Financial Capability
- Outputs
- Questions

## Scope

- Using Existing Financial Tools Developed by the Commission
- Prepare a Conceptual “User Rates Model” that Combines Alternative Future Cost and Revenue Projections and Allocates Costs Based on Cost-causative Factors across a Range of Key, User Defined Categories to Predict Results
- Assist the Commission in Planning, Designing, Testing, Documenting, and Deploying the Cost/Rate Model, Consisting of Several Modules, including:
  - Defining Requirements
  - Modifying the Requirements and Model Based on Changing Policies
  - Providing User Training on the Model



# Modules

- Cost
- Revenue
- Financing
- Affordability and Financial Capability



## Cost Module

- Provide the Capability to Look up Three 208 Cost Scenarios by Watershed - Highest Cost, Lowest Cost, and Hybrid
- Present Data from the 208 Technology Matrix and Calculator for the Three Cost Scenarios
- Allocate 208 Watershed Costs to One or More Towns Based on Nitrogen Load
- Provide the Capability to Phase the 208 Construction Costs over a Period of up to 50 Years
- Provide the Capability to Finance 208 Local Share through Various Borrowing Mechanisms (SRF, USDA, and Conventional Financing)

**Nitrogen Reduction Calculator  
(MEP Watershed)**

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MEP Targets and Goals	Name of Estuary kg/year	Wachusett Bay kg/day	Nitrogen (kg/vr)
Present Total Nitrogen Load		90.9	33,166
<b>Controllable Nitrogen Load</b>			
Wastewater	23,412	64.1	
Fertilizer	4,682	12.8	
Stormwater	5,072	13.9	
Target Nitrogen Load		42.3	15,455
Nitrogen Removal Required		48.5	17,711
Total Number of Properties	7,171		

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<b>Other Wastewater Management Needs</b>	<b>Ponds</b>	<b>Title 5 Problem Areas</b>	<b>Growth Management</b>
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<u>Low Barrier to Implementation</u>	<u>Percent of Total Removed</u>	<u>Reduction by Technology (Kg/vr)</u>	<u>Remaining to Meet Target (Kg/vr)</u>	<u>Average Life Cycle Cost (\$/kg N)</u>	<u>Total Cost</u>
A) Fertilizer Management	50	2,341	15,370	\$139	\$326,000
B) Stormwater Mitigation	50	2,536	12,834	\$1,538	\$3,900,000

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<u>Watershed/Embayment Options</u>	<u>Quantity</u>	<u>Reduction by Technology (Kg/vr)</u>	<u>Remaining to Meet Target (Kg/vr)</u>	<u>Average Life Cycle Cost (\$/kg N)</u>	<u>Total Cost</u>
A) Permeable Reactive Barrier (PRB)	879 homes	2,804	10,030	\$70	\$3,925,614
B) Constructed Wetlands (No Collection)	0 acres	0	10,030	\$80	\$0
C) Constructed Wetlands (With Collection)	0 acres	0	10,030	\$0	\$0
D) Phytoirrigation	0 acres	0	10,030	\$2,000	\$0
E) Phytobuffers	0 acres	0	10,030	\$1,070	\$0
F) Fertigation - Turf	25 acres	100	9,930	\$1,380	\$2,760,000
G) Fertigation - Cranberry Bogs	15 acres	180	9,750	\$530	\$1,908,000
H) Surface Water Remediation Wetland	0 acres	0	9,750	\$1,025	\$0
I) Dredging/Inlet Widening	0 cu. yard	0	9,750	\$0	\$0
J) Phytoremediation	0 acres	0	9,750	\$80	\$0
K) Aquaculture/Oyster Beds	12 acres	3,000	6,750	\$80	\$4,800,000
L) Coastal Habitat Restoration	0 acres	0	6,750	\$120	\$0
M) Floating Constructed Wetlands	3,000 cu feet	1,200	5,550	\$10	\$240,000

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<u>Alternative On-Site Options</u>	<u>Quantity</u>	<u>Reduction by Technology (Kg/vr)</u>	<u>Remaining to Meet Target (Kg/vr)</u>	<u>Average Life Cycle Cost (\$/kg N)</u>	<u>Total Cost</u>
A) Ecotoilets (UD & Compost)	50 homes	300	5,250	\$125	\$750,000
B) UD School or Public Facility	0 people	0	5,250	\$25	\$0
C) I & A Systems	450 homes	2,250	3,000	\$475	\$21,375,000
D) Enhanced I & A Systems	200 homes	1,200	1,800	\$695	\$16,680,000

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<u>Conventional Option</u>	<u>Quantity</u>	<u>Reduction by Technology (Kg/vr)</u>	<u>Remaining to Meet Target (Kg/vr)</u>	<u>Average Life Cycle Cost (\$/kg N)</u>	<u>Total Cost</u>
A) Sewering and Treatment	409 homes	1,800	0	\$8,833	\$15,900,000

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Costs Using Non-Traditional Method	\$205	\$72,564,614
Costs Using Targeted Conventional Sewering	\$6,211	\$110,000,000

## Revenue Module

- Provide the Capability to Input Revenues to Finance the 208 Capital and Operating Costs
  - Federal
  - State
  - Local

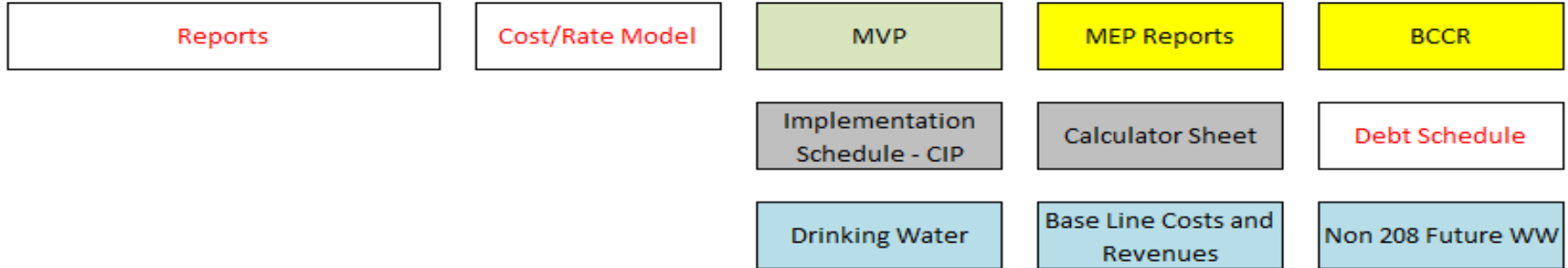
## Financing Module

- Provide the Capability to Capture 208 and Existing (baseline) Wastewater Costs
- Provide the Capability to Capture Existing (baseline) Wastewater Revenues and 208 Revenue Sources
- Provide the Capability to Develop 208 and Existing Wastewater Costs' Financing Plans for Multiple Years by Watershed(s) and Town(s)
- Provide the Capability to Finance Capital and Operating Costs from Multiple Revenue Sources by Watershed(s) and Town(s)
- Provide the Capability to Allocate Watershed(s) and Town(s) Costs to Several Payers (taxpayers, ratepayers, and the like)

## Affordability and Financial Capability Module

- Provide the Capability to Layer 208 Costs, Existing Wastewater Costs, Stormwater Costs, Drinking Water, and Other Costs
- Provide the Capability to Compute Cost per Household, Median Household Income, and Residential Indicators to Test against EPA's Affordability Benchmark(s) at the Town(s) Level to Fund the 208 Plan and Other Related Costs
- Provide the Capability to Compute Several EPA Secondary Financial Capability Indicators at the Town(s) Level to Fund the 208 Plan and Other Related Costs
- Provide Guidance to Run Alternative Scenarios to Provide More Affordable Financing Plan(s) When EPA Affordability Benchmarks are Not Met (Select lower-cost engineering solution, Select alternative revenue sources, Phase project costs over a longer time period, and Provide secondary financial capability analyses)

# Cost/Rate Model



####

Data generated by the Cost/Rate model based on hard links to other files/documents and user inputs.

####

Data sources will are hard linked into the Cost/Rate Model.

####

Data generated by the CCC and downloaded into a Excel document which will be hard linked into the Cost/Rate Model.

####

Data generated by various methods by the CCC and generated into Excel spreadsheet documents which will be hard linked into the Cost/Rate Model.

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Data from sources which is used by other files/documents but will not be hard linked to the other files/documents.

####

Data obtained from the 15 Cape Towns by the CCC and generated into Excel spreadsheet documents which will be hard linked into the Cost/Rate Model.

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Data created by the 15 Cape Towns and generated into Excel spreadsheet documents which will be hard linked into the Cost/Rate Model.

The image shows a software window titled "WATERSHED SELECTION FORM". Inside the window, there is a label "Watershed" followed by a text box containing "Waquoit Bay" and a small arrow icon on the right side of the box. Below the text box are two rectangular buttons: "Create Workbook" on the left and "Cancel" on the right.

Use the **Watershed** drop-down box to select a watershed.

Clicking the Create Workbook button creates a separate file to be used to run scenarios for the watershed selected. Only one workbook for each watershed should exist. This workbook will have a standard data sheet populated with data needed for the scenario runs.

Clicking Cancel closes the form.

Watershed: Waquoit Bay

Engineering Solutions:

HIGHEST COST

LOWEST COST

HYBRID

**SOLUTION**

Display Summary Data about Engineering Solution

Total Capital Costs

Total Operating Costs

Watershed costs allocated to town

View #1

View #2

View #3

Remove #1

Remove #2

Remove #3

**BORROWING INPUTS**

For each project to be funded via borrowing...

Select debt inputs, including:

**Summary of Borrowing Inputs****Other Scenarios For Reference**

#1

#2

#3

type of borrowing (SRF, conventional)

term (years)

interest rate

start year and length of phases

BAN interest rate

option for &gt;1 borrowings per project

**REVENUE INPUTS**

Select revenue inputs

**Summary of Revenue Inputs****Other Scenarios For Reference**

#1

#2

#3

Federal

State

Local

**OUTPUTS**

Display output data based on inputs above

**Summary of Outputs****Other Scenarios For Reference**

#1

#2

#3

Affordability Indicators

Financial Capability Indicators

Clear

Save

Print Reports

**Notes on Form Functionality****Tab Functionality**

Tabs at top used to toggle between engineering solutions

Borrowing/Revenue Inputs selected in other window

using Make Selections buttons and summarized here

Save button saves current selections for tracking purposes

View/Remove buttons allow user to view saved scenarios

and to remove them so other scenarios can be run

Clear button clears that tab

Print Reports prints outputs in user-friendly format

**Overall Form Functionality**

Clear All button clears all data from this form

Close button closes entire form

Clear All

Close



## Outputs

- Cost Module - Up to Three 208 Engineering Solutions for Highest Cost, Lowest Cost and Hybrid, Allocation of Watershed Costs to One or More Town
- Revenue Module - Federal, State and Local Sources to Fund Capital and Operating Costs
- Financing Module - Borrowing Options to Finance Local Capital Share, Financing Plans by Watershed(s) and Town(s) for Multiple Years
- Affordability Module - Layered Costs, Cost per Household, Median Household Income and Residential Indicators to Test Against EPA's Affordability Benchmarks for the Town(s) to Fund the 208 Plan and Other Related Costs
- Financial Capability Module - Several Financial Ratios to Provide Secondary Financial Analyses of a Town's/Towns' Ability to Fund the 208 Plan and Other Related Costs

# Cost / Rate Model Questions?