

Sustainable Stormwater Funding for the Upper Charles River

Steering Committee Meeting #4
DoubleTree-Hilton, Milford, MA
June 29, 2011

Agenda

- 1:00-1:10** Welcome and Introduction (EPA)
- 1:10-1:40** Summarize cost of service assessments (HW).
- 1:40-2:20** Presentation (AMEC): Potential funding framework and preliminary analysis of stormwater utility options.
- 2:20-2:30** Discuss evaluation scenarios for alternative utility structures.
- 2:30-2:55** Open discussion to solicit input from potentially regulated DD property owners.
- 2:55-3:00** Next Steps and review of other activities.

Topics

- Existing program costs
- Future program and operational costs
- Comparison to other studies
- Context of RDA

Stormwater Program Cost Centers

- Administrative;
- Billing and Finance;
- Regulation/Enforcement;
- Engineering/Master Planning;
- Operations and Implementation;
- Monitoring

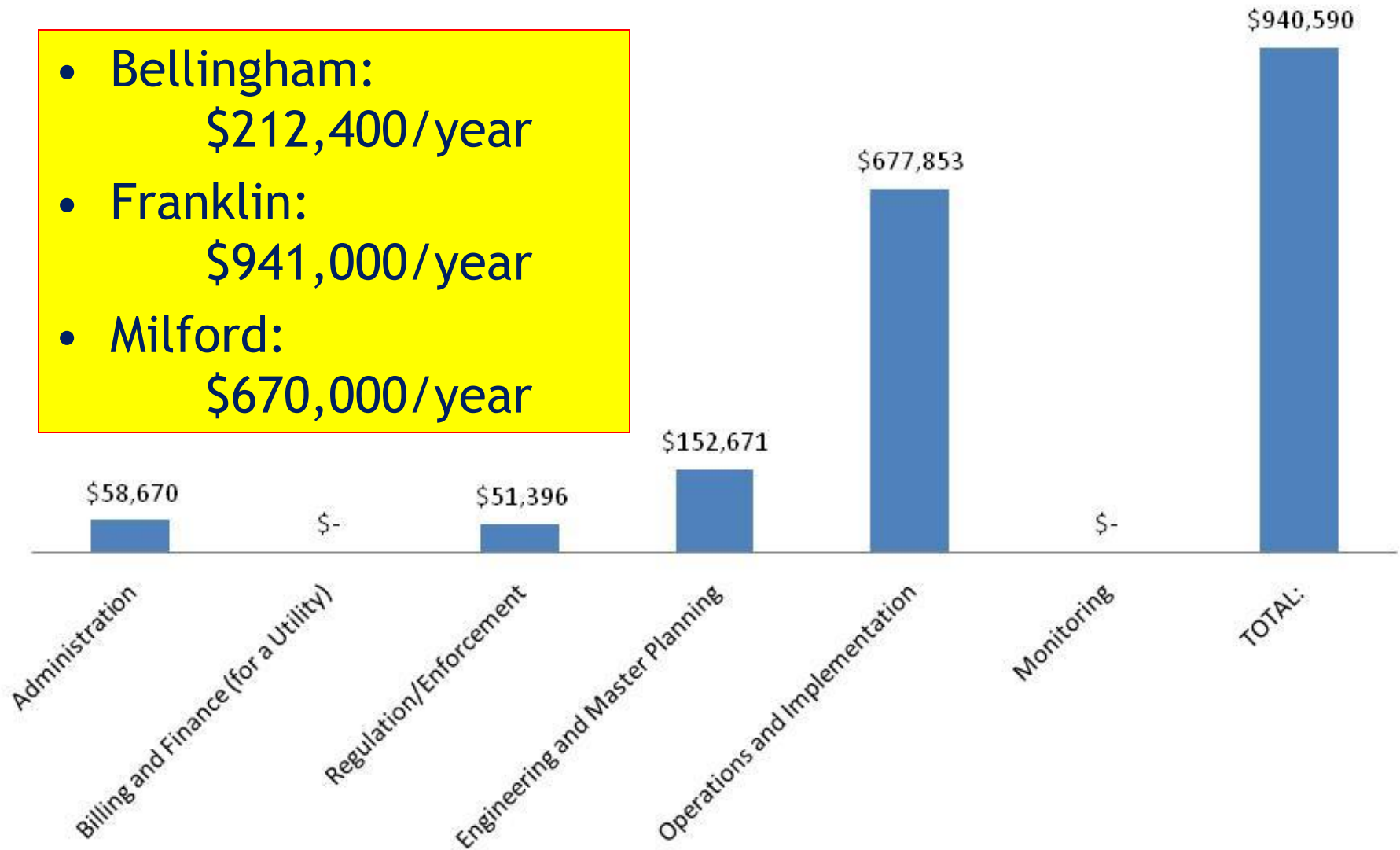
Operations and Implementation (for example)

<i>Operations and Maintenance Management</i>	construction oversight , project bidding, etc
<i>CIP/Infrastructure Implementation</i>	construction costs (design and engineering in previous section); could be % of large road project (for example)
<i>PCP implementation</i>	retrofitting
<i>Voluntary CMPP/RDA implementation</i>	retrofitting
<i>IDDE</i>	elimination of IDDEs
<i>Storm Sewer and Culvert Maintenance/Repair</i>	equipment, labor, transport and disposal
<i>Inlet, Catch Basin, and Manhole Cleaning</i>	equipment, labor, transport and disposal & repair
<i>Stormwater BMP Facility Maintenance</i>	equipment, materials, labor, transport and disposal associated with maintenance and repair
<i>Street Sweeping</i>	equipment, labor, transport and disposal
<i>Fall Leaf-pickup</i>	equipment, labor, transport and disposal
<i>Maintenance/Repair/Installation of ESC practices</i>	includes cleanup of sediment and repair of eroded areas
<i>Stream Restoration/Stabilization</i>	equipment, materials, labor, transport and disposal
<i>Ditch and Channel Maintenance</i>	equipment, labor, transport and disposal
<i>Waterfowl & Pet Waste Management Programs</i>	equipment, labor, materials
<i>Public Assistance Program</i>	equipment, labor, materials for rainbarrel, disconnection, raingarden programs
<i>Emergency Drainage Repairs</i>	allowance for unexpected repairs
<i>Land, Easement, and Rights Acquisition</i>	

Working Costs for Existing Programs

Franklin Existing Program Costs

- Bellingham:
\$212,400/year
- Franklin:
\$941,000/year
- Milford:
\$670,000/year



Future Cost Items

- Update written Stormwater Mgmt Plan;
- Increased reporting/record keeping on annual reports;
- Targeted public education (2 messages to 4 audiences) and report results;
- Illicit discharge priority catchment assessments (including SSOs);
- Detailed outfall monitoring for both dry and wet weather;
- Written IDDE program with mapping and prioritization of problem catchments;
- Complete stormwater system mapping (all pipes/manholes/inlets/structures. Catch basin inspection/cleaning/inspection data;

Future Cost Items (continued)

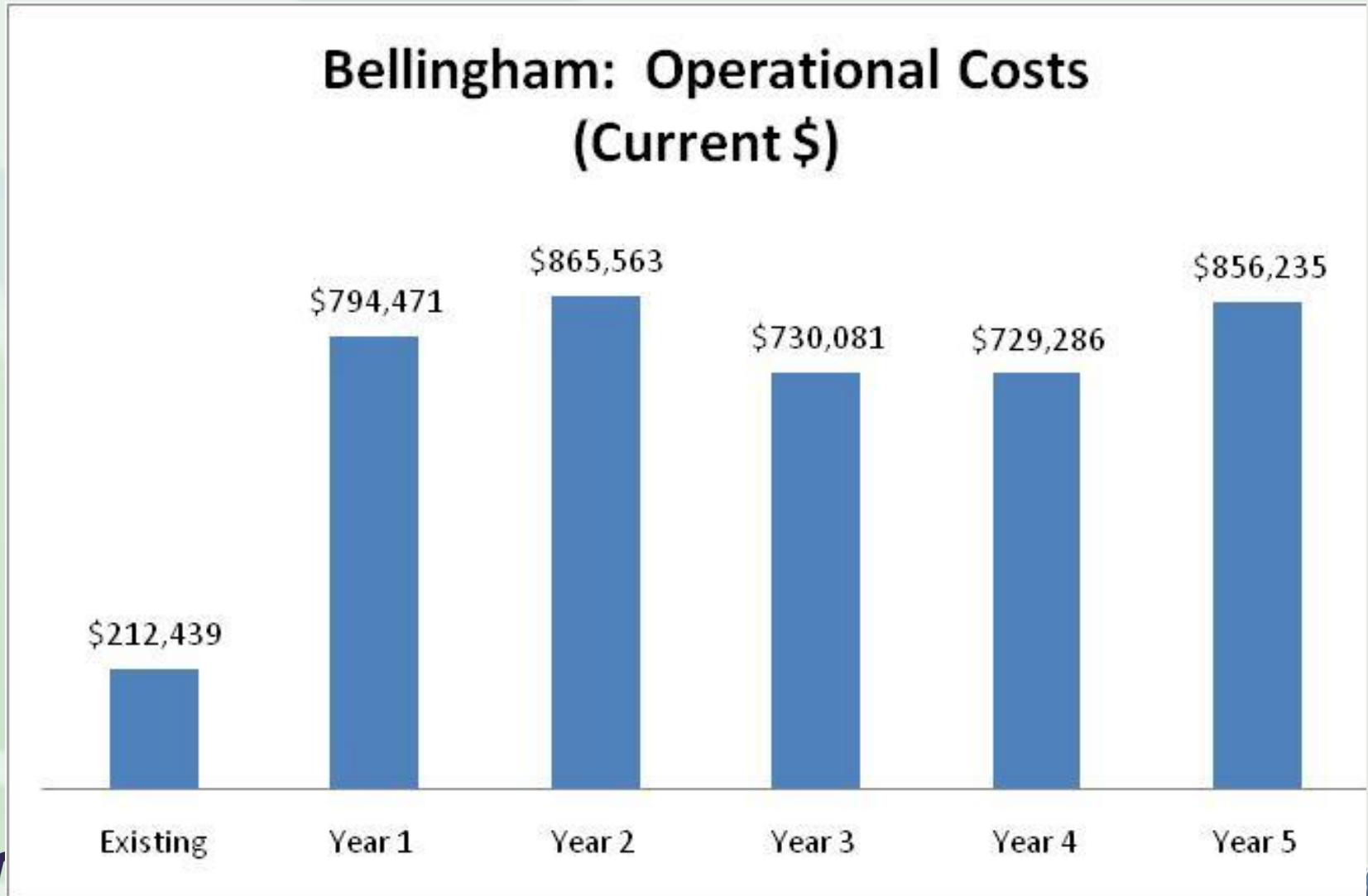
- Track # of site plan reviews, inspections, enforcement actions;
- ID/rank retrofit opportunities for municipally owned facilities;
- Develop a SWPPP for municipally owned facilities;
- Complete a code review and report;
- Impervious cover/DCIA tracking;
- Street sweeping optimization(2 times/yr);
- Written O&M procedures for municipal activities for trash, pet wastes, leaf litter control, fertilizer use & yard wastes;
- Pet waste & waterfowl mgmt plans;
- Phosphorus Load Reduction to comply with TMDL targets

Phosphorus Control Cost Items

- Phosphorus control plan (PCP);
- Phosphorus control mapping of priority areas;
- Off-site phosphorus management plan (CMPP); and
- Increased/targeted public education on phosphorus control and increased public involvement.

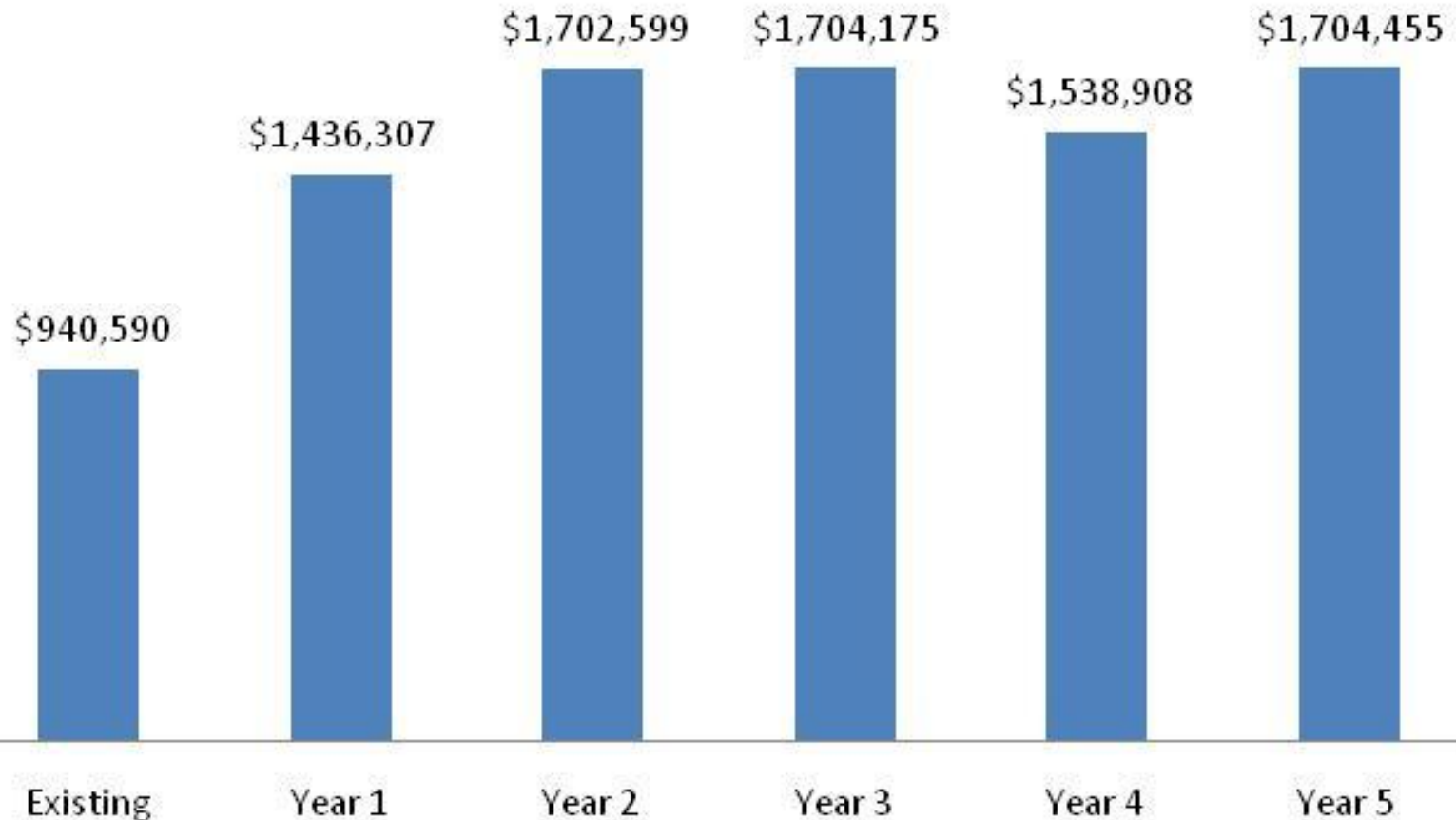
Both structural and non-structural practices can be used to achieve phosphorus reduction.

Draft Program Costs for Operational Expenses

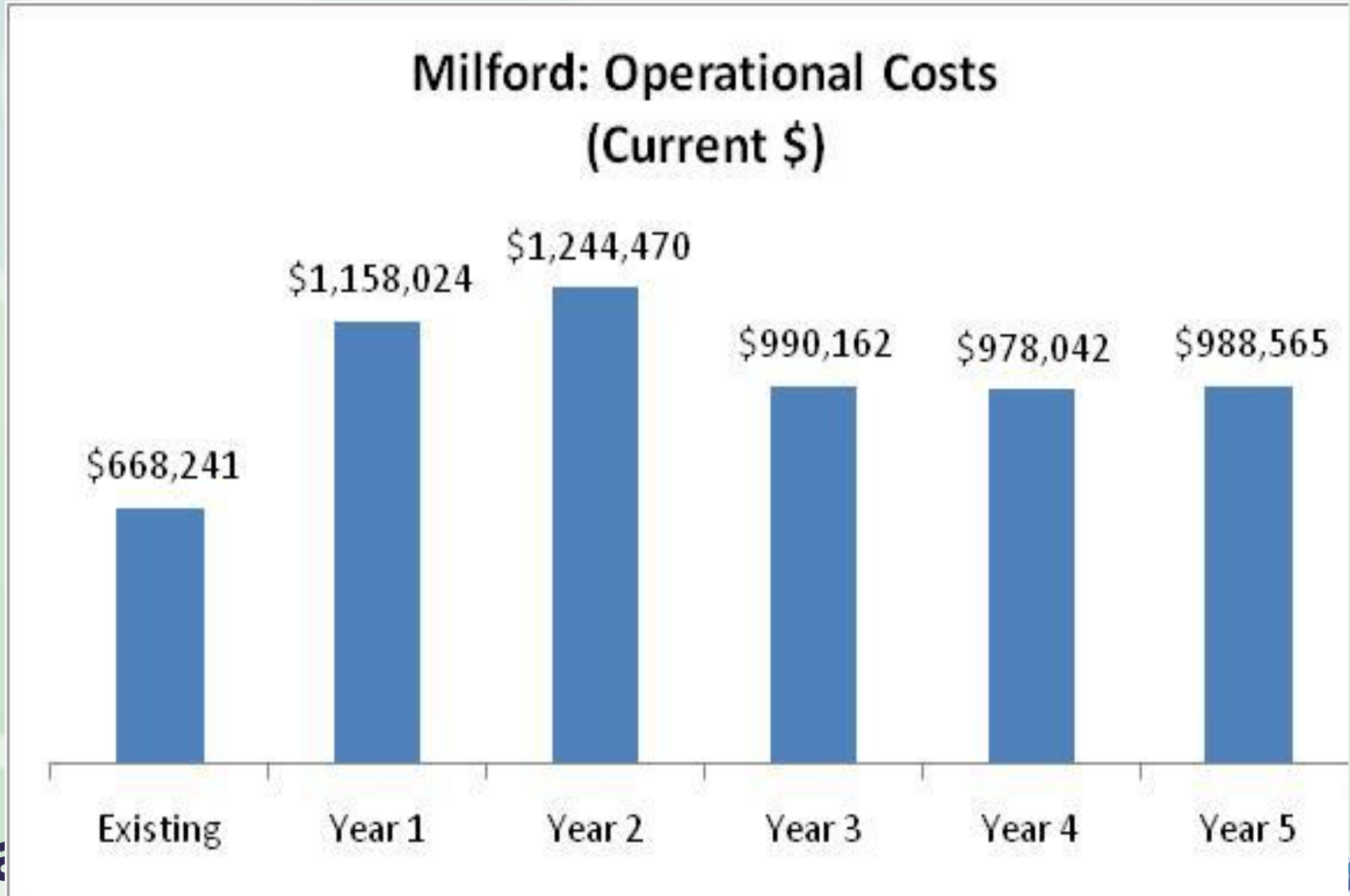


Draft Program Costs for Operational Expenses

Franklin: Operational Costs (Current \$)



Draft Program Costs for Operational Expenses



Costs for Phosphorus Reduction Per TMDL Targets

Phosphorus removal requirements:

- Bellingham = 52%
- Franklin = 52%
- Milford = 57%
- DD sites = 65%

Note: DD phosphorus removal is nested within MS4 total removal

PHOSPHORUS LOADING REQUIRED REDUCTION

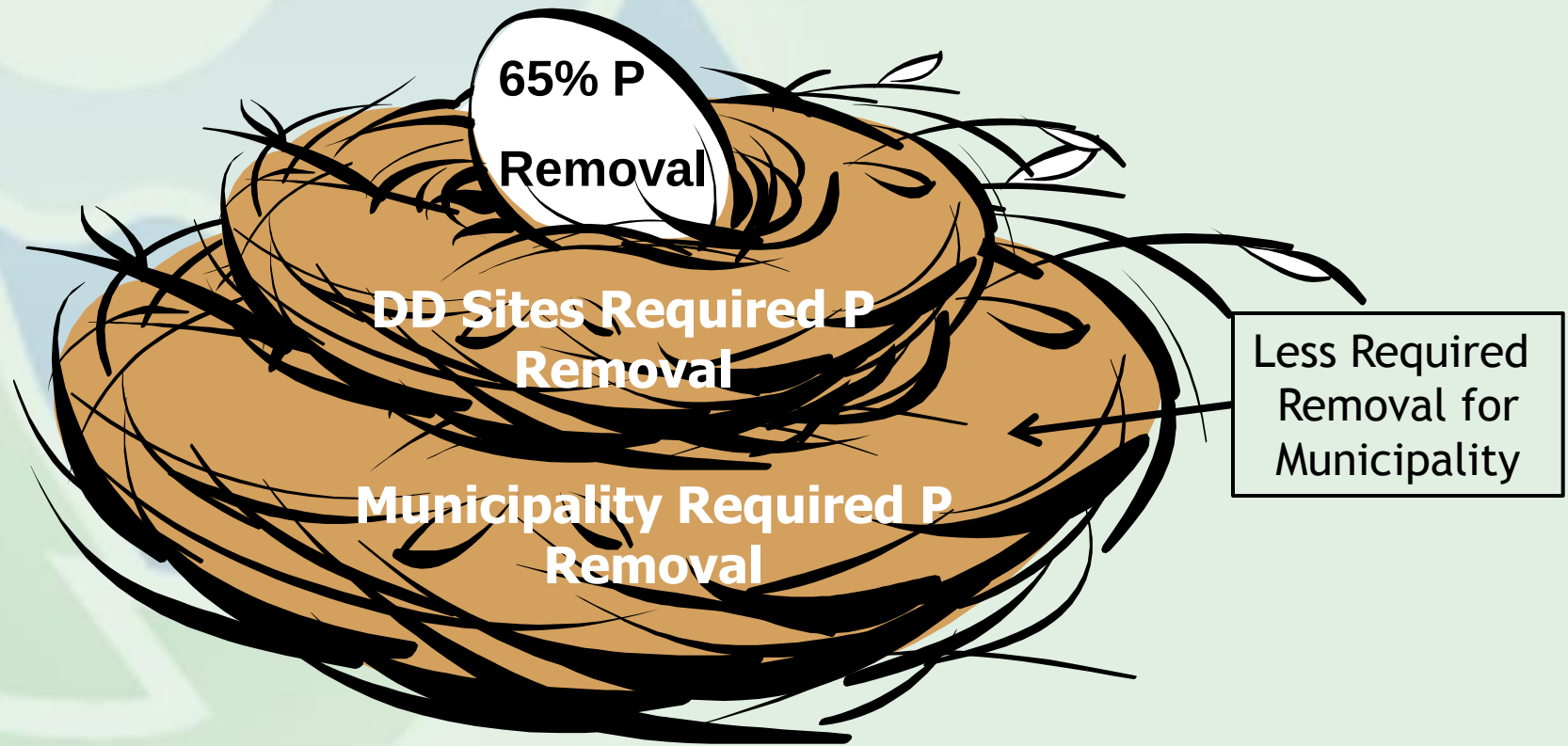
Town	Area (ac)(1)	Imp Area (ac)(2)	Existing Load (#/yr)	TMDL Allowable Load (#/yr)	Required Load Reduction (#/yr)
Bellingham	6116	918	2024	975	1049
Franklin	15539	2364	4650	2228	2422
Milford	8101	1662	3313	1426	1887

(1) From Attachment 3 to RDA Factsheet (Table 6)

(2) From Optimization Study Table 2-1



What do we mean by “Nested” within Municipality’s Required Reduction



Method to Estimate Cost for Phosphorus Reduction

Assume 15% of Total P Load Reduction achieved through non-structural measures:

- Enhanced street sweeping (3% - already accounted for in operational costs);
- Bi-annual catch basin cleaning (2% - also already accounted for in operational costs); and
- Phosphorus ban on fertilizers (10% - assumed to have no implementation cost).

Remaining P Reduction Through Structural Controls

- Bellingham and Franklin = 37% of P Load
- Milford = 42% of P Load
- Remember we looked at:
 - Optimization analysis from Tetra Tech studies (as modified by EPA/HW staff);
 - Published cost for P removal per lb;
 - Comparison to other studies/other regions/actual implementation plans.

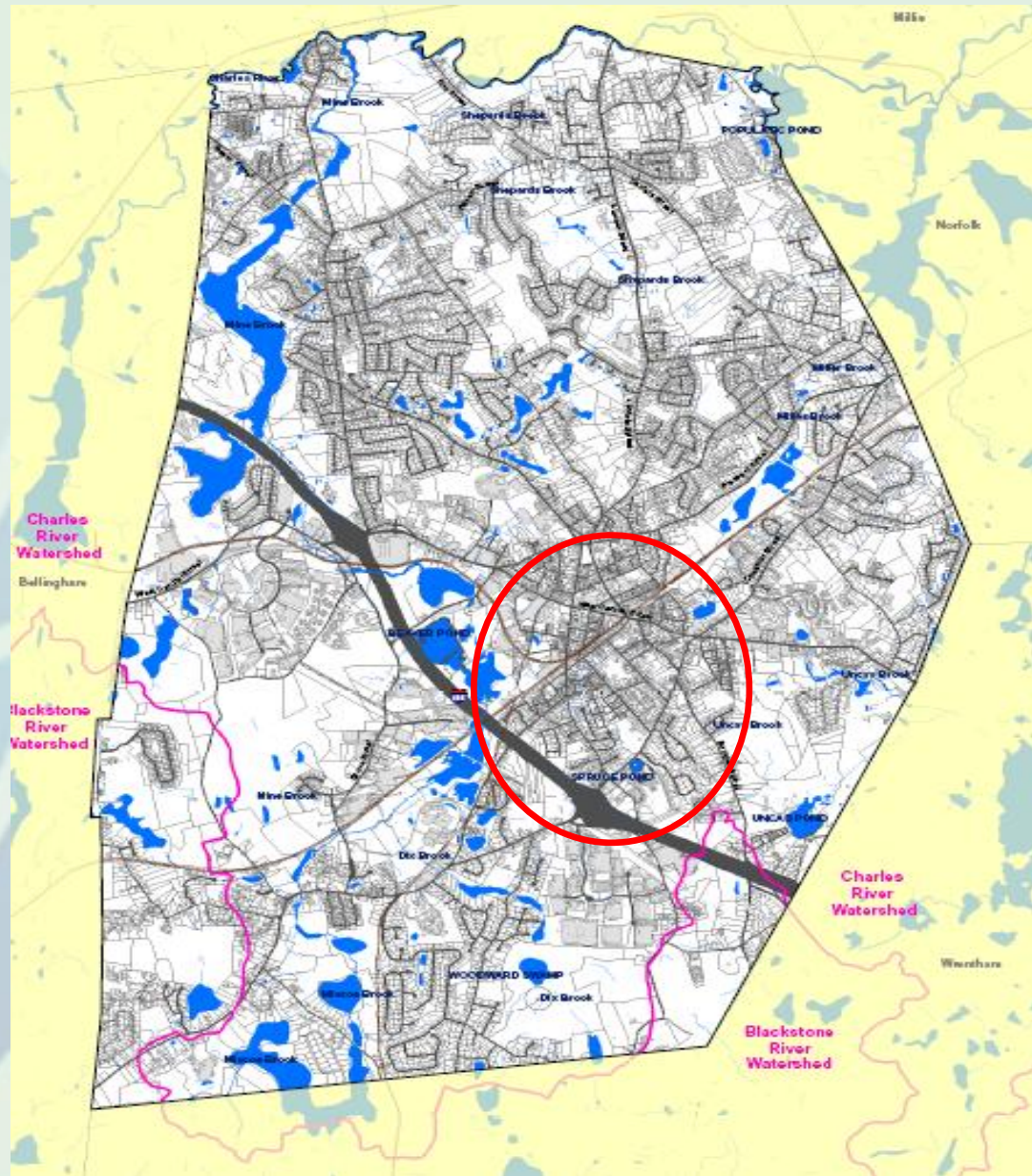
Spruce Pond Brook Franklin, MA

1.1 Square Mile Watershed;

Mix of land use is
representative of the
Upper Charles Watershed;

Estimated cost to
implement structural BMPs
to remove 42% of P =
\$4.92M (\$28,070/Imp Acre;
\$31,700/lb of P);

Results calibrated by land
use and soil type to scale-
up to entire Upper Charles
within the 3 communities.



Sub-watershed Drainage Areas



51 total drainage areas

DAs selected:

- (1) To capture RDA sites (2+ acres impervious cover)
- (2) Based on natural topography and existing stormwater infrastructure

Courtesy CRWA

Horsley Witten Group, Inc.



Land Use Distribution

Spruce Pond Brook vs Upper Charles

Land Use	Spruce Pond Brook	Upper Charles (3 Towns)
Commercial:	6.1%	4.1%
Industrial:	3.0%	4.2%
HDR:	7.0%	4.2%
MDR:	32.1%	16.5%
LDR:	10.9%	7.9%
Ag:	0.8%	1.7%
Forest:	36.9%	56.4%
Open Land:	8.8%	1.4%
Highway:	2.4%	2.1%



Treatment Costs/Acre

(calibrated from Spruce Pond Brook Watershed Plan)

Land Use & Soil Type	Cost/IA for 37% P Removal	Cost/IA for 42% P Removal
Agriculture A/B	\$8,000	\$12,000
Agriculture C/U	\$14,000	\$16,000
Commercial A/B	\$36,000	\$42,000
Commercial C/U	\$55,000	\$60,000
Freeway A/B	\$15,000	\$18,000
Freeway C/U	\$22,000	\$27,000
High_D_Res A/B	\$55,000	\$59,000
High_D_Res C/U	\$95,000	\$100,000
Industrial A/B	\$25,000	\$30,000
Industrial C/U	\$40,000	\$45,000
Low_D_Res A/B	\$15,000	\$18,000
Low_D_Res C/U	\$22,000	\$27,000
Medium_D_Res A/B	\$18,000	\$22,000
Medium_D_Res C/U	\$33,000	\$38,000

Comparison to Other Studies/Plans (\$/Imp Acre Treated)

- Mid-Atlantic Retrofit Costs: (Schueler, 2011)
 - On-Storage Retrofits = \$32,500
 - site LID Retrofits = \$191,000
- Long Creek Watershed, Maine (LCWM District - Tamara Lee Pinard)
 - Centralized Retrofits = \$34,000
 - Street-Level Retrofits = \$110,000
- 15 North Main Street ,Bellingham (HW, 2011 - 65% P removal)
 - On-site LID Retrofits = \$101,800
- Milford Library Vicinity, Milford (HW, 2011 - 57% P removal)
 - On-site LID Retrofits = \$150,000

Comparison to Actual Construction Projects (\$/Imp Acre Treated)

RECENT RETROFIT CAPITAL CONSTRUCTION COSTS

- Chestnut Hill Mall, Newton (HW design, 2006 - 60% P removal +/-)
 - On-site LID Retrofits = \$31,500 (with City labor)
- Billington Street Retrofit, Plymouth (HW 2009 - 60% P removal +/-)
 - Larger scale LID Retrofit = \$36,200
- East Chop Gravel Wetland, Oak Bluffs (HW 2010 - 45% P removal +/-)
 - Larger scale storage Retrofit = \$30,700
- Perkins Street Dry Swale, Peabody (HW 2010 - 60% P removal +/-)
 - On-site LID Street Retrofit = \$34,600
- Moran Shipping Parking Lot, Providence RI (HW 2009 - 98% P removal)
 - On-site LID with Infiltration of 10 yr storm = \$112,500
- Water Street LID Retrofit, Plymouth (HW 2009 - 60% P removal +/-)
 - Medium scale LID Retrofit = \$38,800

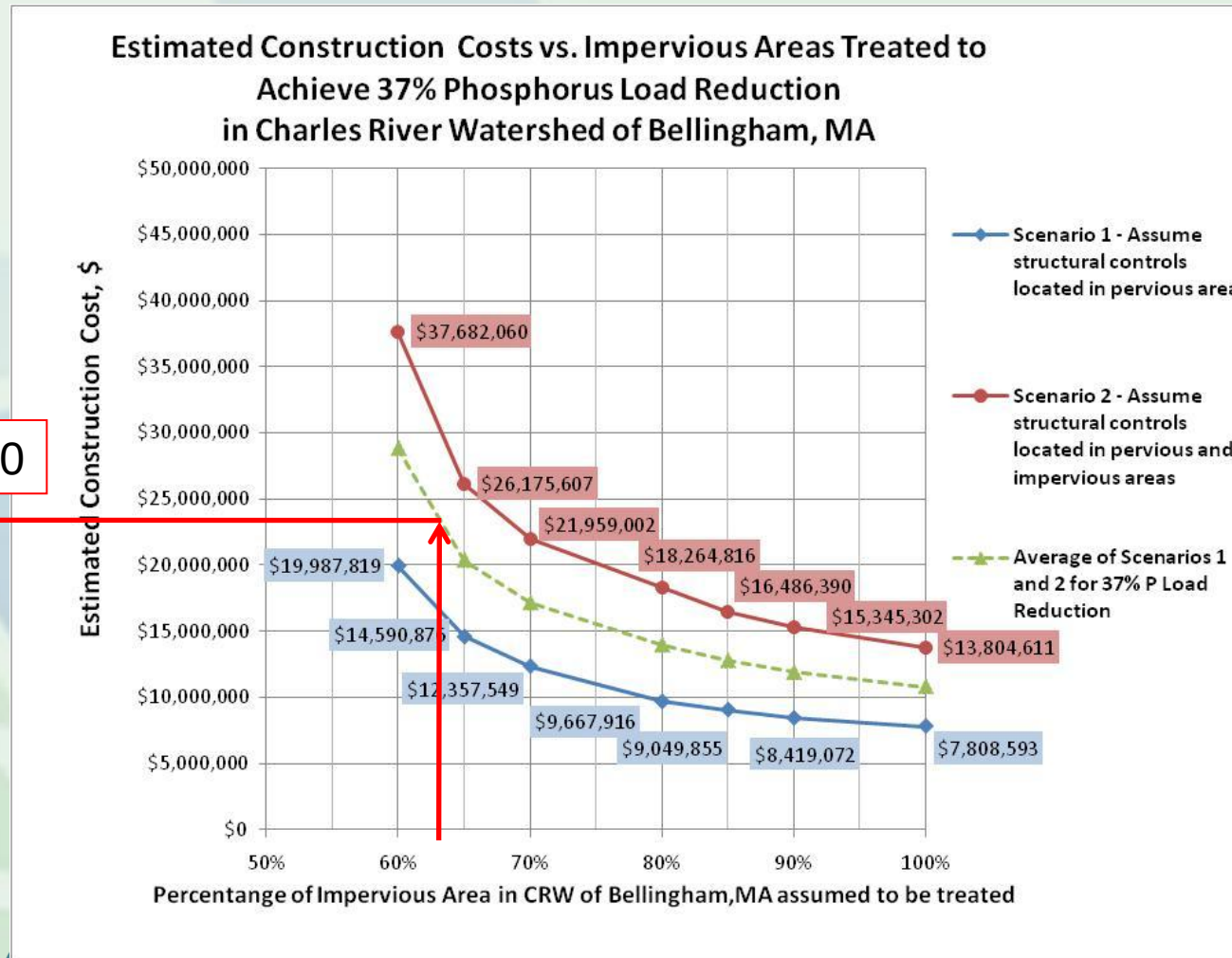
Summary of TMDL Compliance Capital Costs

(Based on Calibration against Spruce Pond Brook
Subwatershed)

Town	Target P Removal from Structural Controls	Capital Construction Costs in 2011 \$ ¹
Bellingham	37%	\$23,595,000
Franklin	37%	\$62,810,000
Milford	42%	\$67,363,000

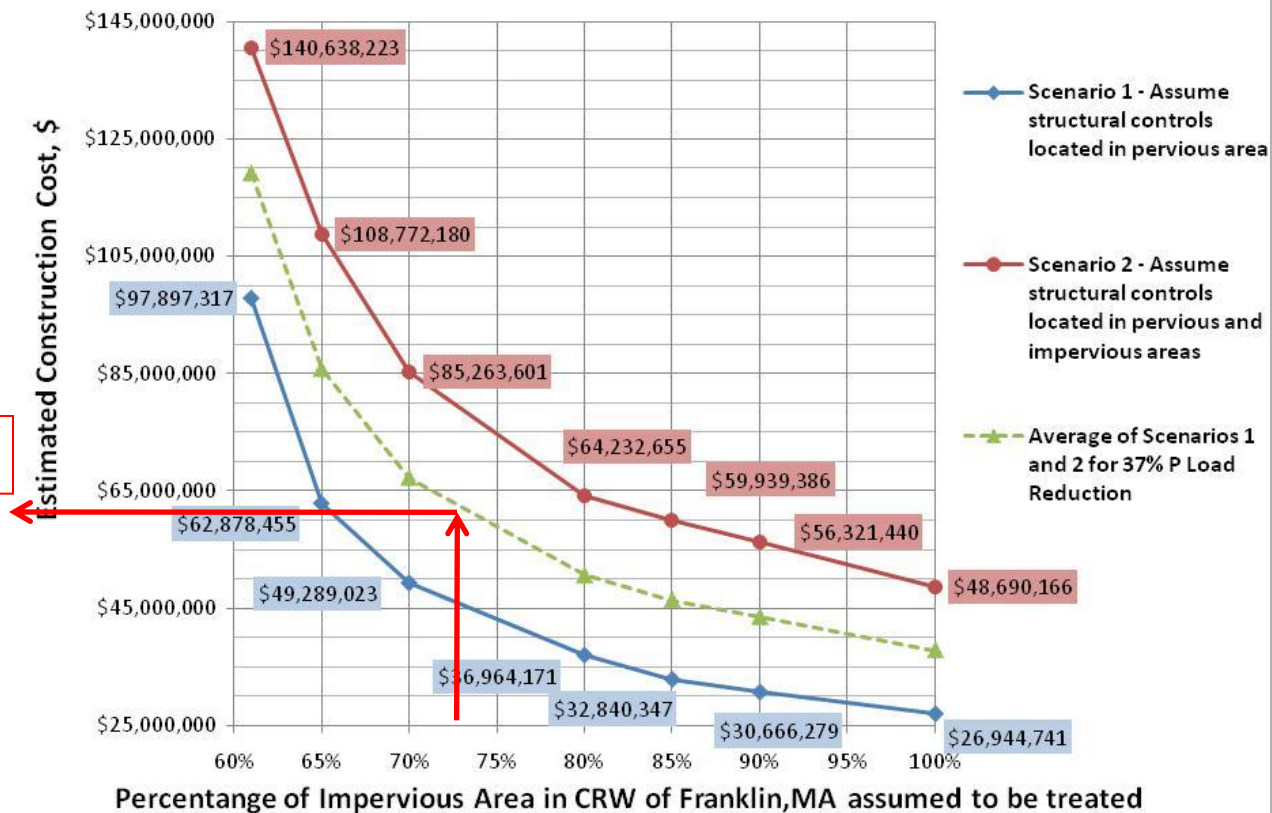
¹ Includes: Design and Permitting, but not land acquisition or legal costs

Comparison to Optimization Costs Bellingham



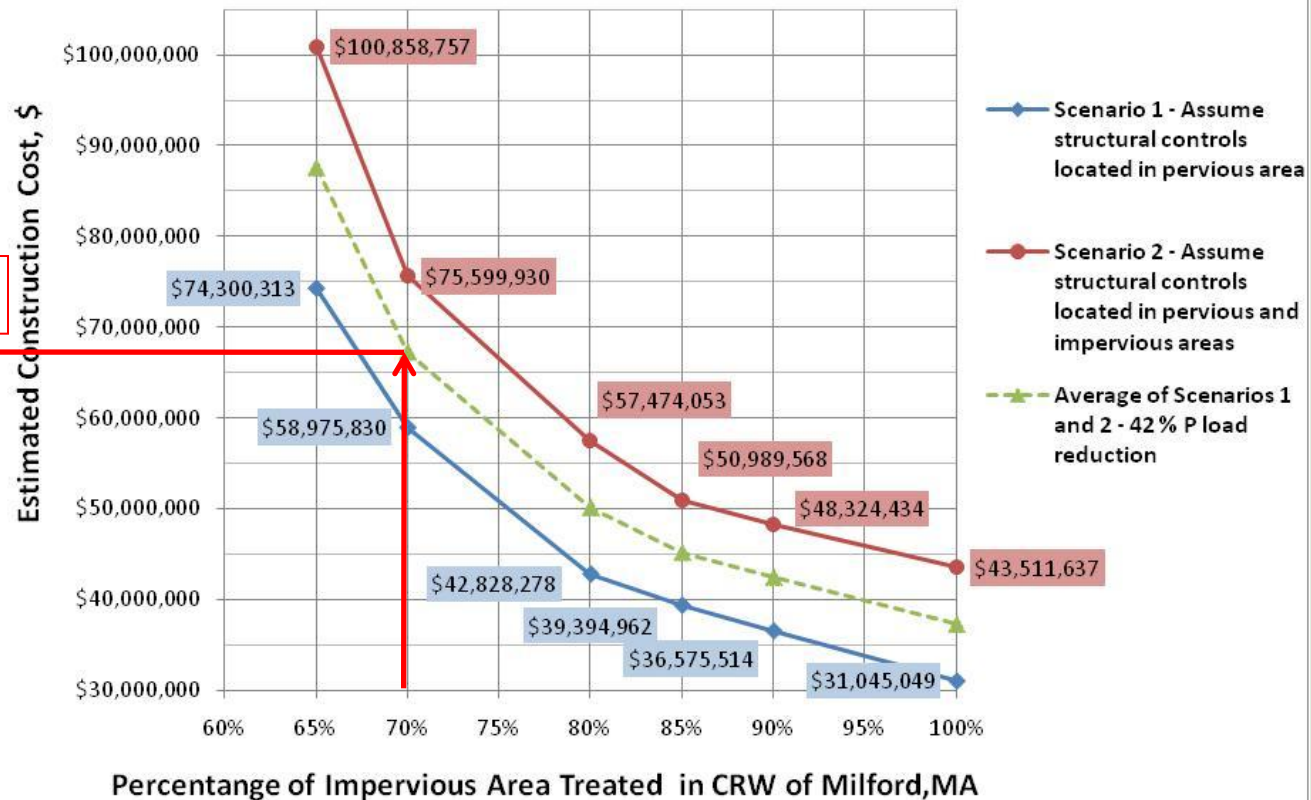
Comparison to Optimization Costs Franklin

Estimated Construction Costs vs. Impervious Areas Treated to
Achieve 37% Phosphorus Load Reduction
in Charles River Watershed of Franklin, MA



Comparison to Optimization Costs Milford

Estimated Construction Costs vs. Impervious Areas Treated to Achieve 42% Phosphorus Load Reduction in Charles River Watershed of Milford, MA



\$67,400,000



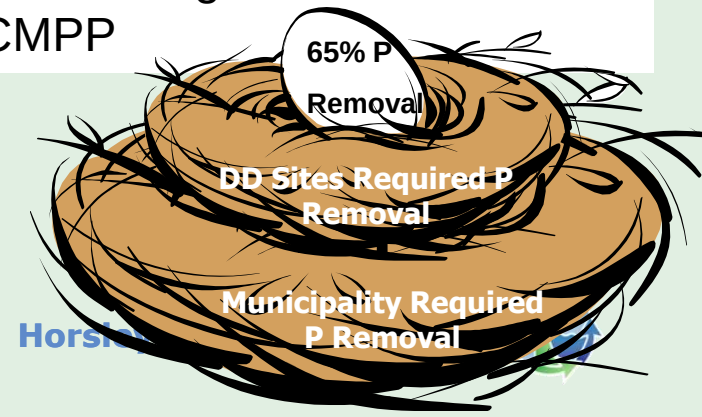
Municipal Costs in the Context of the RDA

Remember the “nested” topic?

Town	Target P Removal from Structural Controls	Municipal Capital Costs in 2011 \$ ¹	DD Capital Costs to Achieve 50% P Removal in 2011 \$ ²
Bellingham	37%	\$21,008,000	\$2,587,000
Franklin	37%	\$51,916,000	\$10,894,000
Milford	42%	\$56,247,000	\$11,116,000

¹ Includes: Design and Permitting, but not land acquisition or legal costs

² Assumes cost efficiencies through participation in a CMPP



Stormwater Utility Fee & Framework Analysis

Andy Reese
AMEC Environment & Infrastructure
Westford, MA

Double Tree Hotel, Milford MA
June 29th, 2011
1:30 - 2:15

Two main topics

- How do the costs translate into fees?
- What fee options might there be?

First a Quick Review

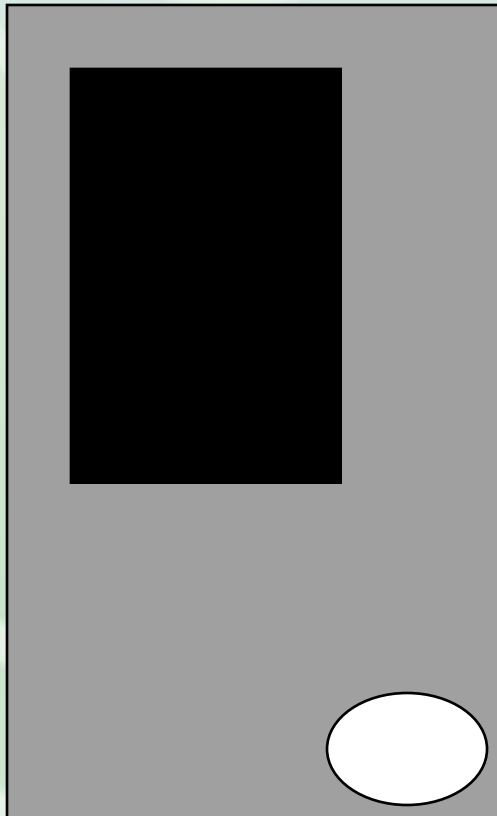
How a Fee is Calculated

“the more you pave the more you pay”

This idea directly matches the phosphorous loading calculations



= say a typical
house pays
\$10.00/mo and
is 3,200 SF IA



= is 96,000 SF IA
30 * \$10.00/mo
minus credit

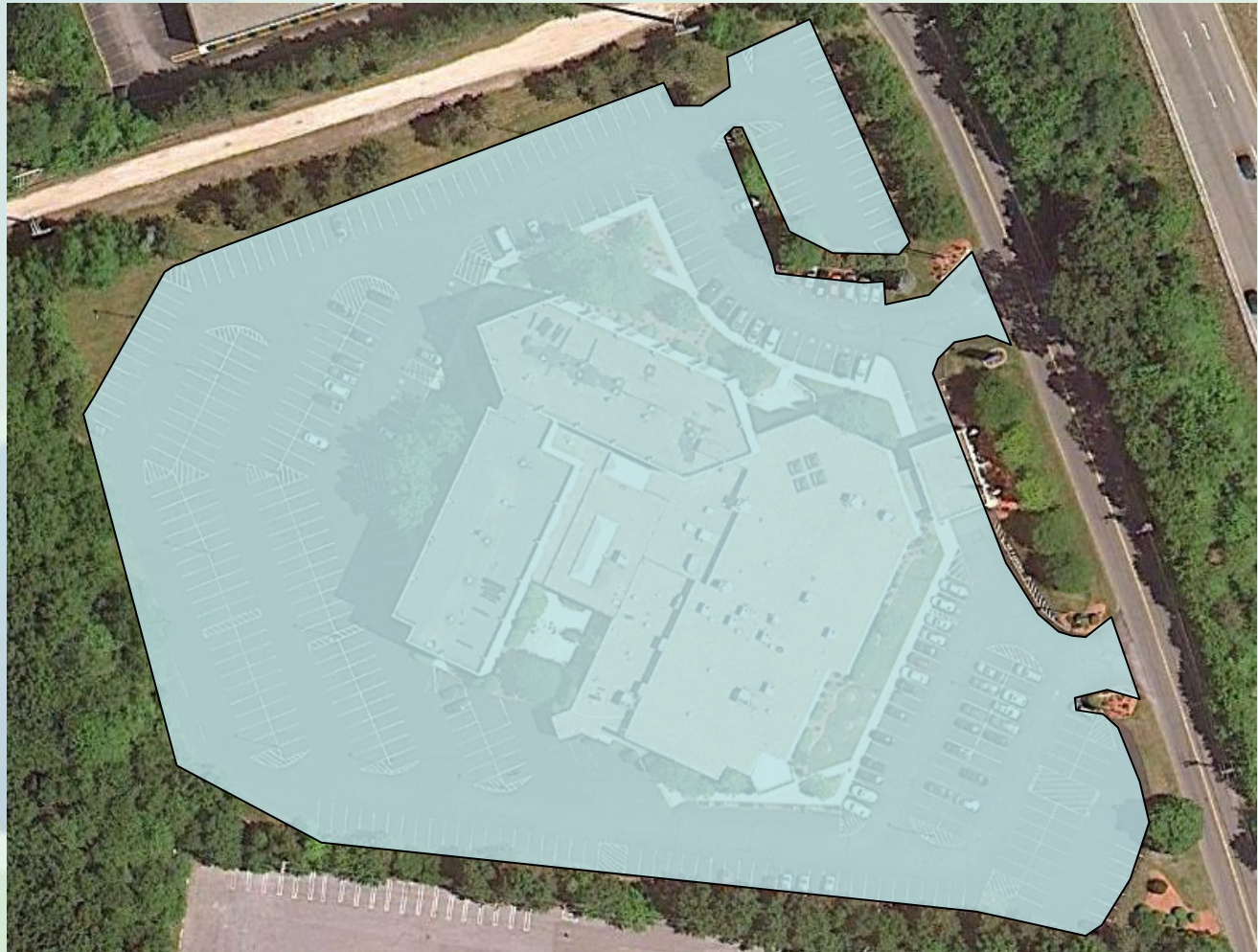


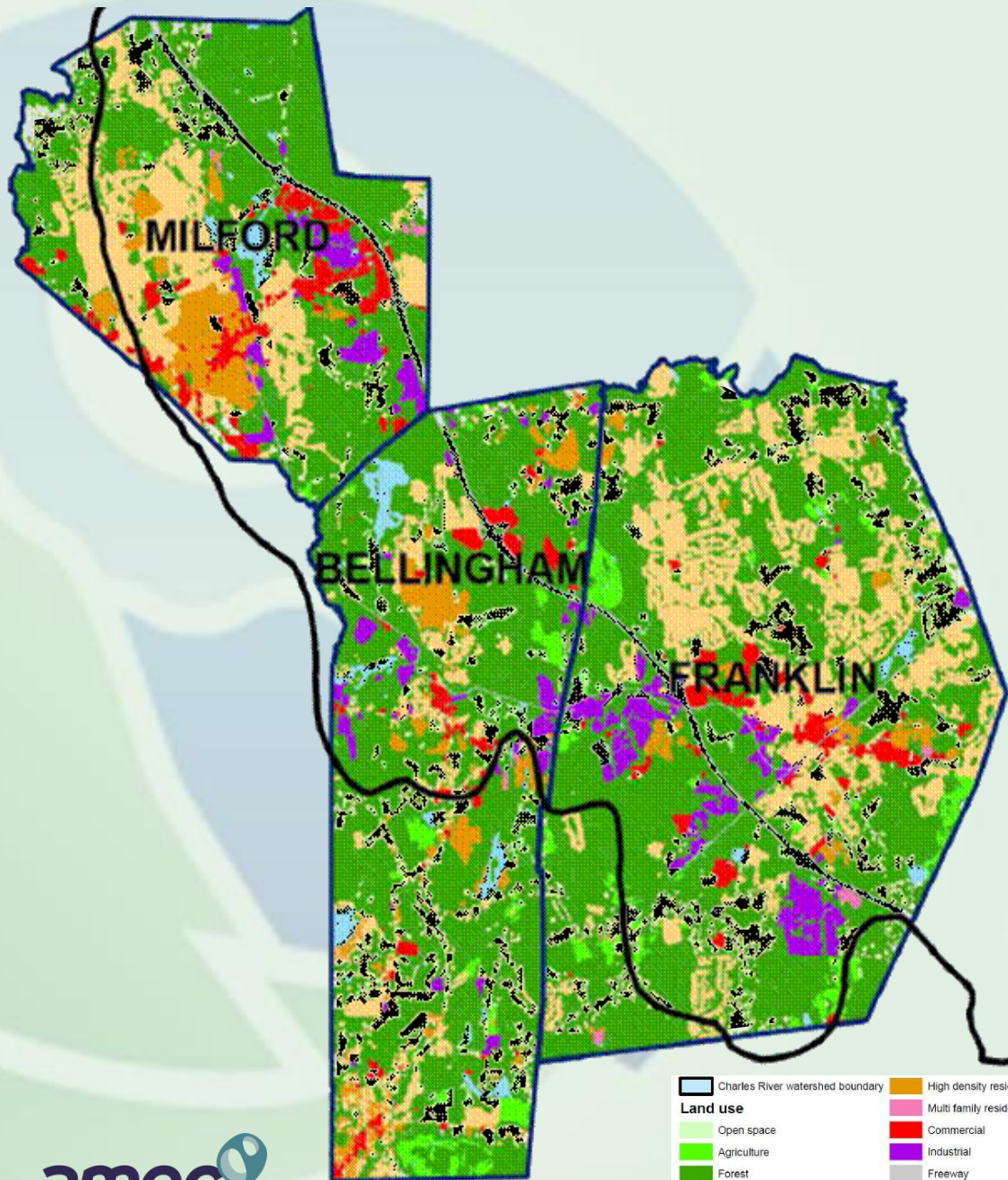
Random Example

266,000 sq feet =
84 ERU bucket

Fee = $84 * \$10.00$
= \$840.00/mo less
any credit

Assume ERU = 3,200 sf
Fee = \$10.00/ERU/mo



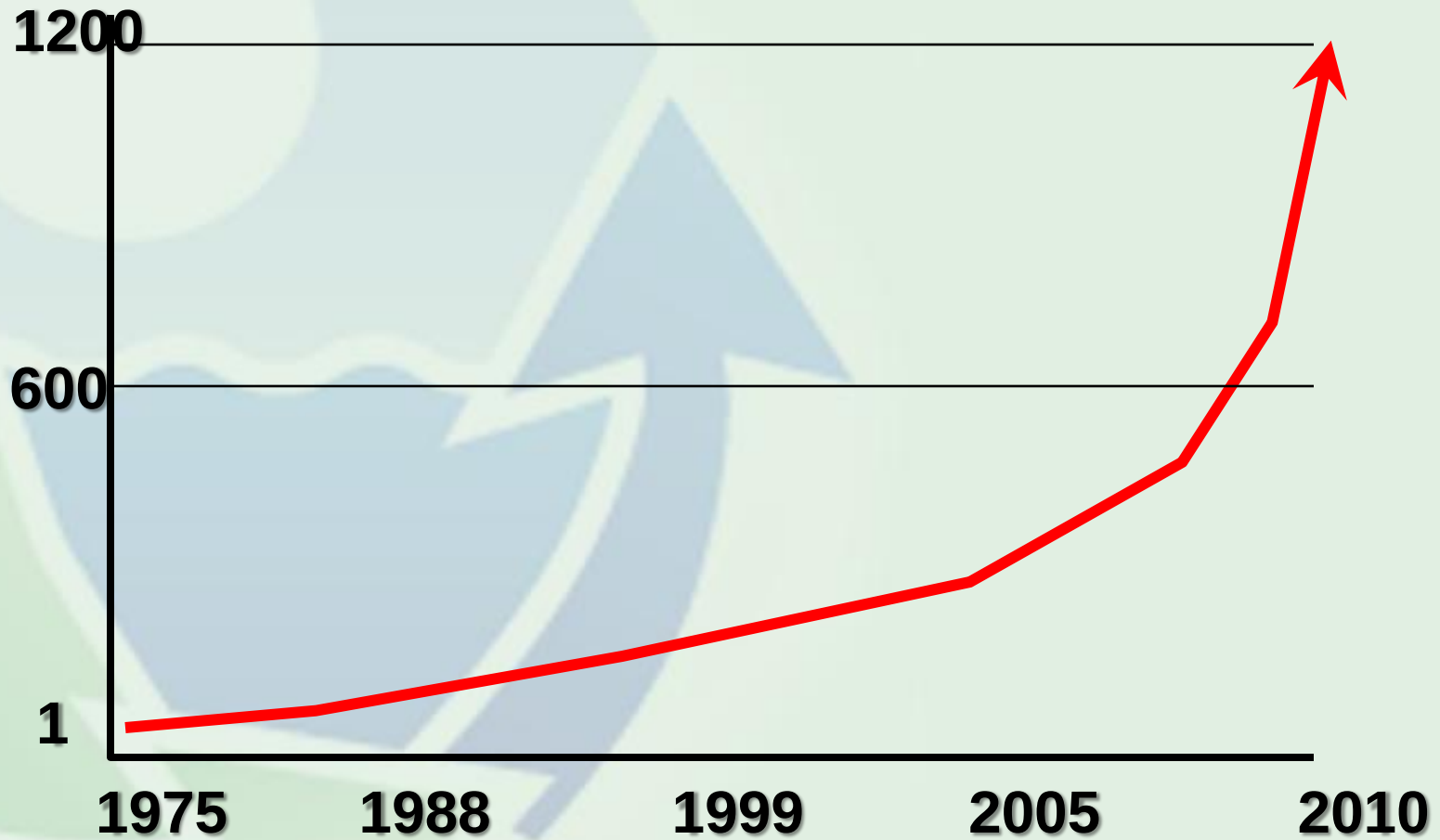


Every \$1/mo per ERU
generates

\$675,000 in annual
revenue

A \$10/mo fee generates
\$6.75M annually

Growth of Storm Water Utilities



What Led to SW Utility Popularity?



- Expansion of urban city's roles
- Shift away from general taxes to fees and demand-based funding
- Other prevailing priorities - police, schools, solid waste
- Proliferation of other enterprise funds - solid waste, waste water
- Changing stormwater programs
- Superior equity, stability, adequacy
- Failure of other methods



Advantages



- Match cost causation to revenue generation
- Primary source for the whole program - not just regulatory
- Credits to encourage good performance
- Can be geographically based
- Can have a number of bases - i.e. phosphorous load



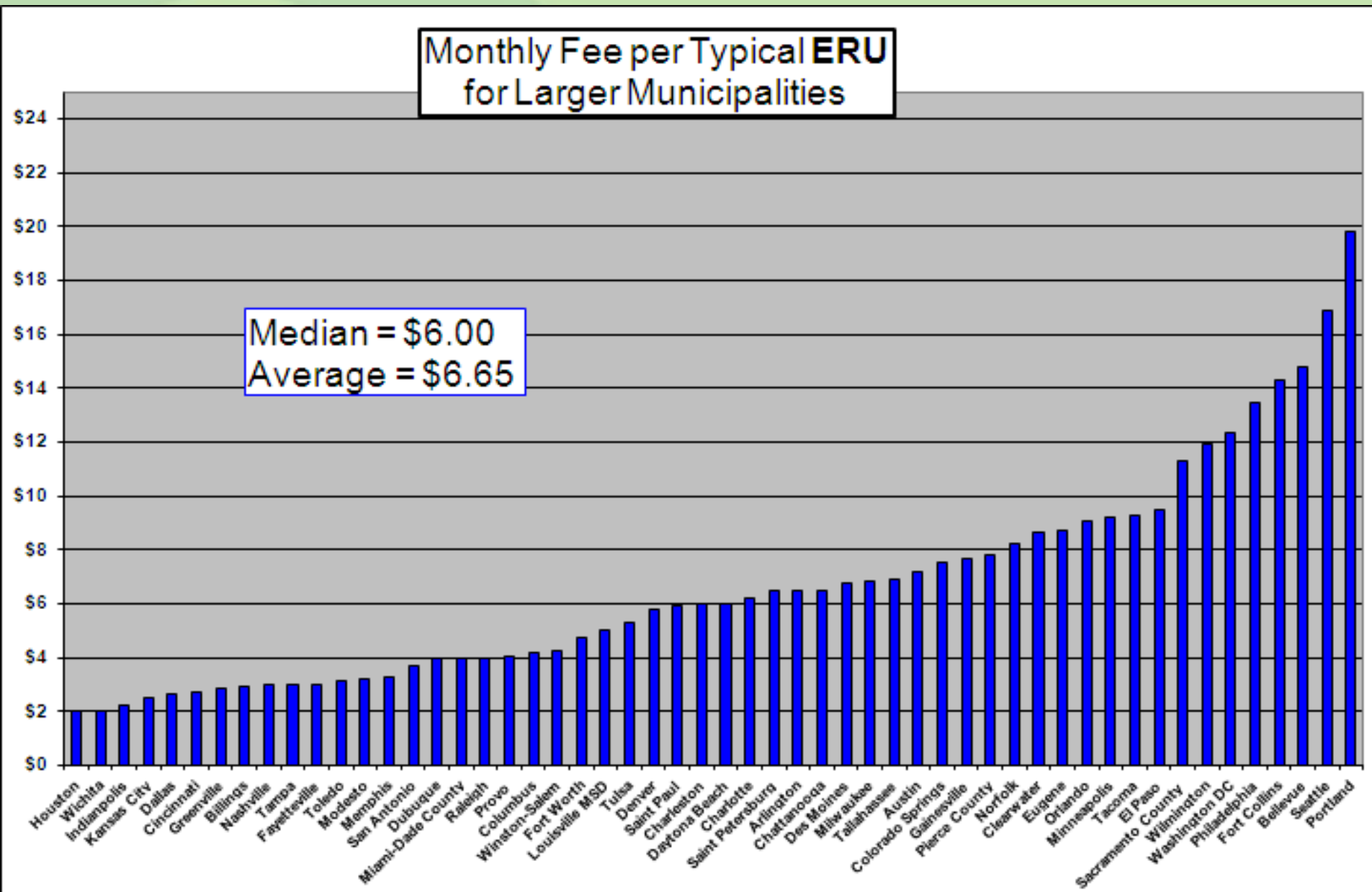
Disadvantages



- Has a billing cost and an initial set up cost
- Is “visible”
- May be perceived negatively - “rain tax”
- Must meet legal requirements not fully tested



For “pure” stormwater programs mostly



There are lots of policy options

- What costs should be paid for by the fee?
- Should DD's be part of our program?
- Uniform program or variable?
- How should we finance construction?
- Is rate basis IA or something else too?
- How often do we change the rate?
- What credits should we develop?
- How do we send the bill & how often?
- Customer service & admin costs?
- How should we be organized?
- How do we think about roads?
- And about 100 other things

**We are going to keep it fairly simple
and just look at the “big rocks” now**

Cost Components

1. “Normal” stormwater program costs

- What you currently do or told us about
- Increases for Draft Small MS4 General Permit

2. Capital construction for phosphorous control

- Assume bonding not pay as you go
- Maintenance costs begin in second year

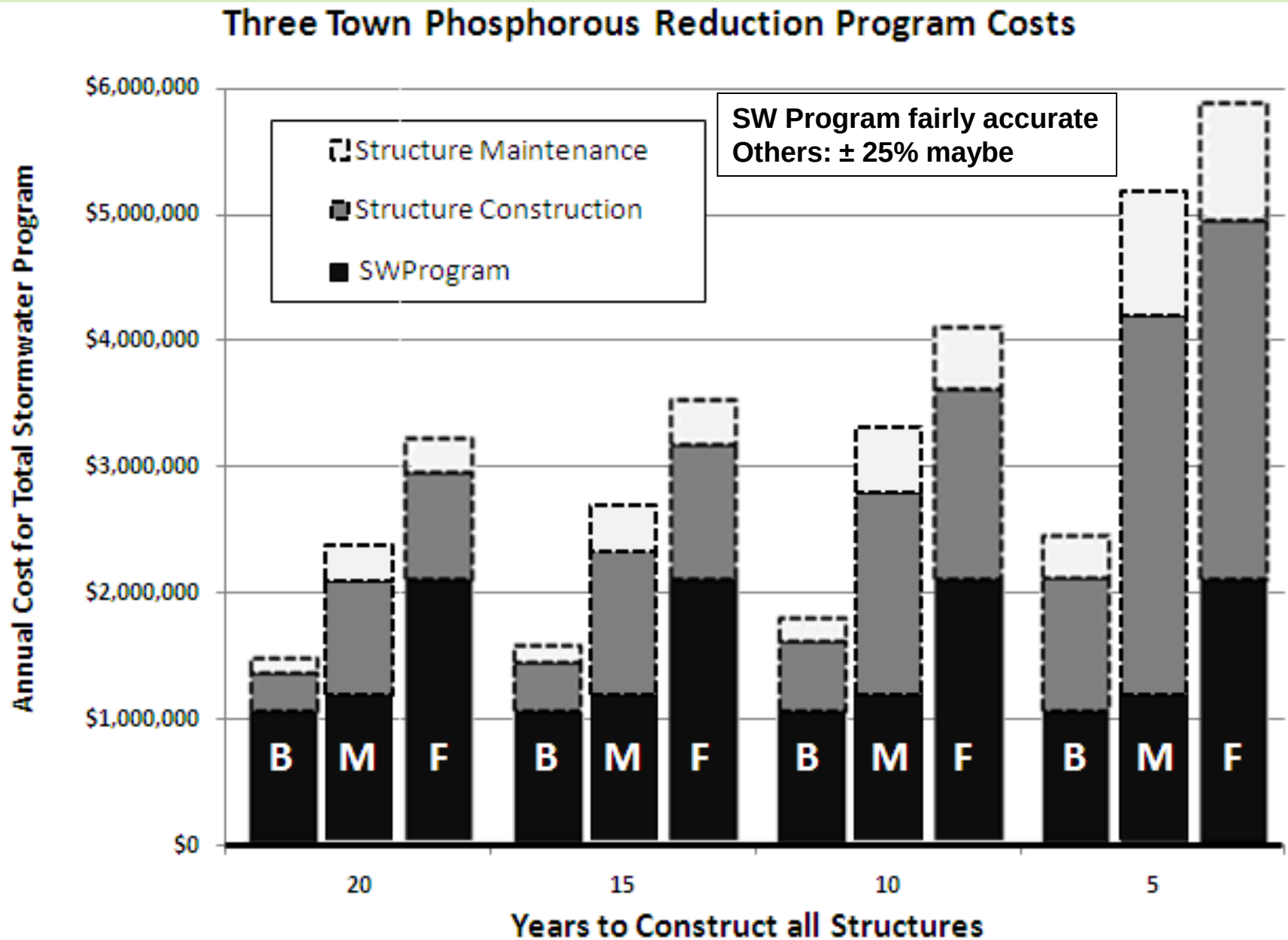
Options Presented

- Program Length:
 - 20, 15, 10 and 5 year program length options
- Program Expenditures:
 1. Uniform construction
 2. Back-end loaded
 3. RDA Designated Dischargers separate

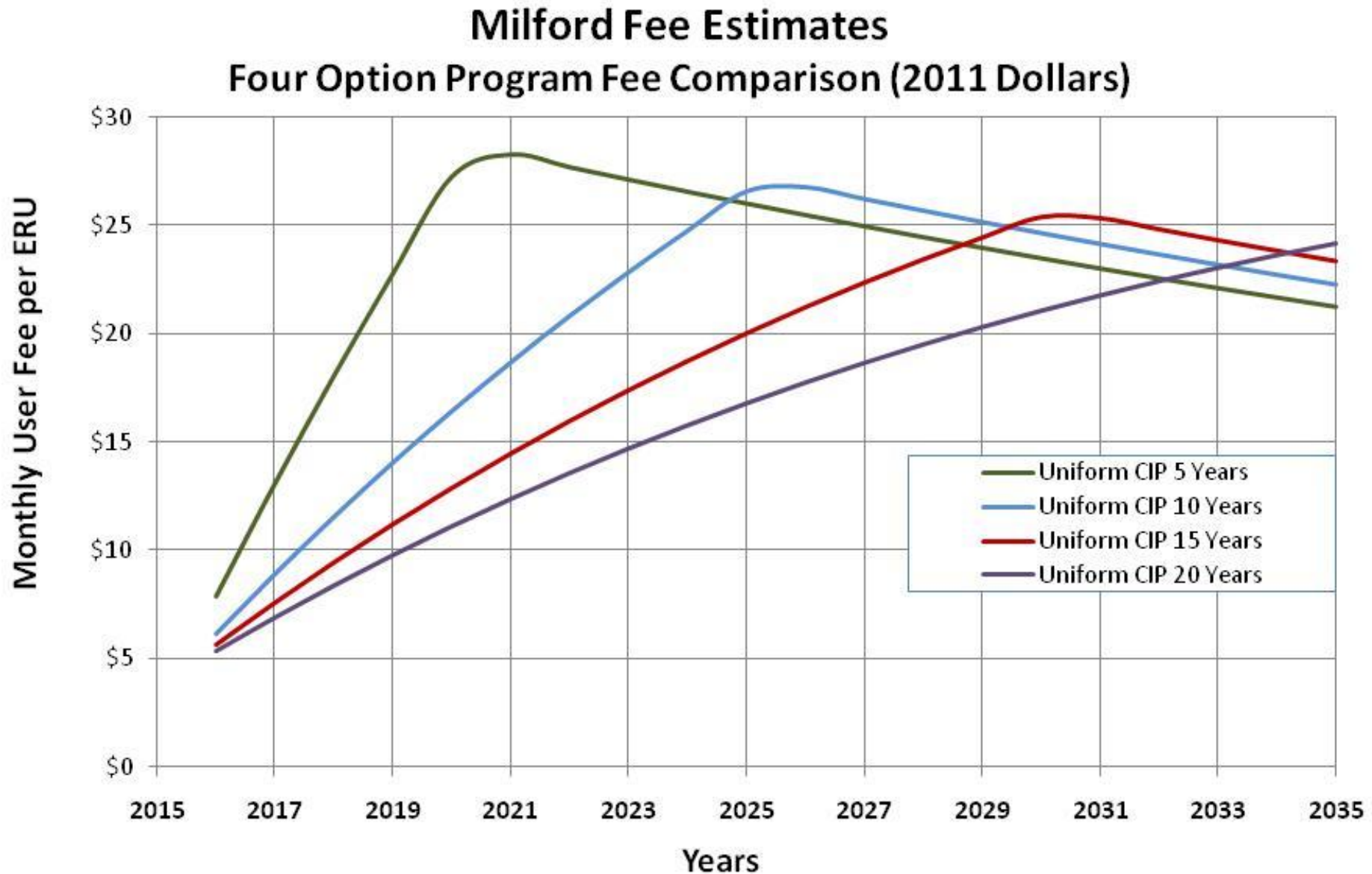
Program Length Options

- Change to shorter construction period radically changes the average user fee rate per ERU
- For example: 10-Year average rate increases over 20-year program length
 - 15% for 15-year program
 - 44% for 10-year program
 - 94% for 5-year program

Three Town Annual Costs - Uniform CIP

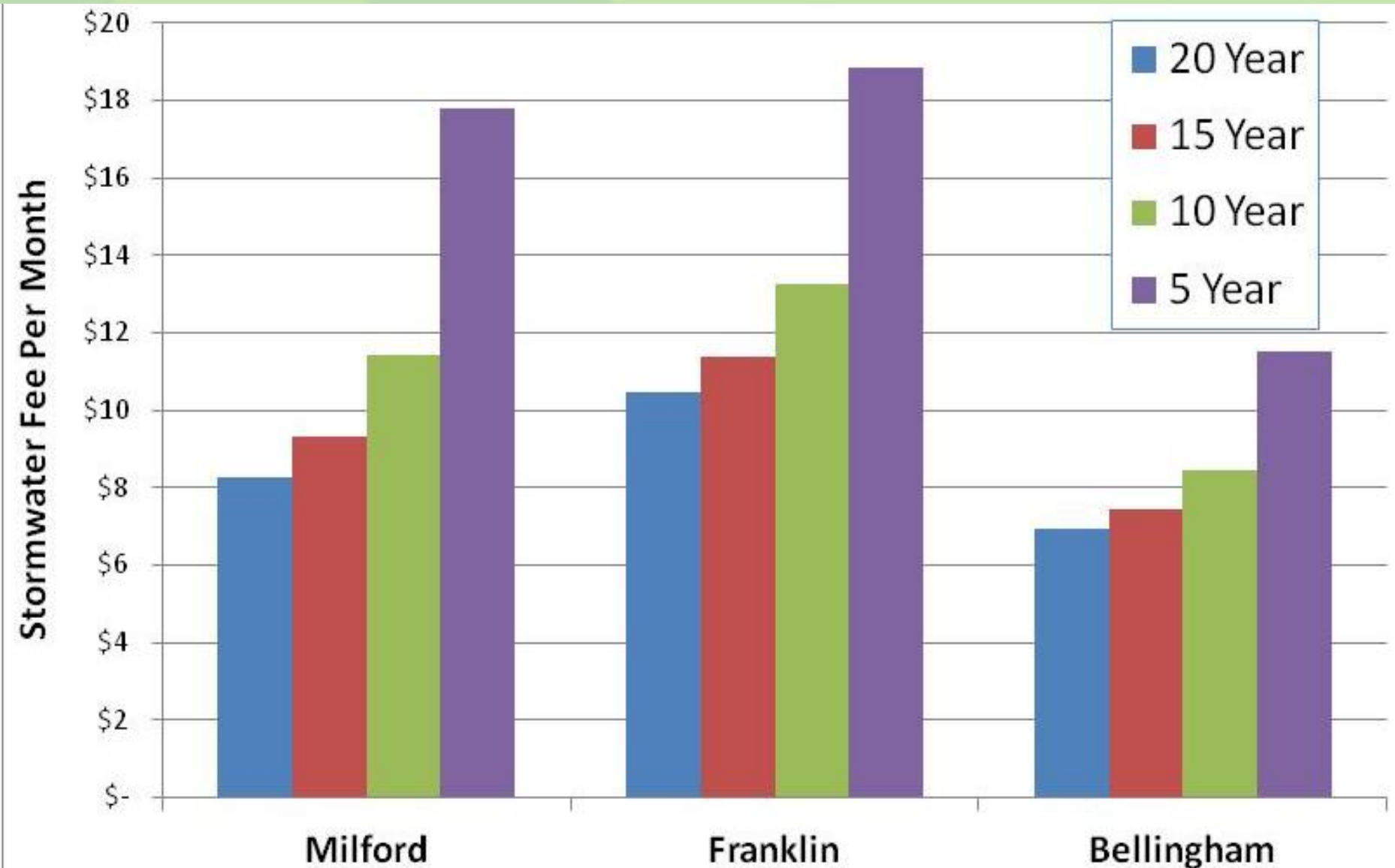


Impact of Program Length

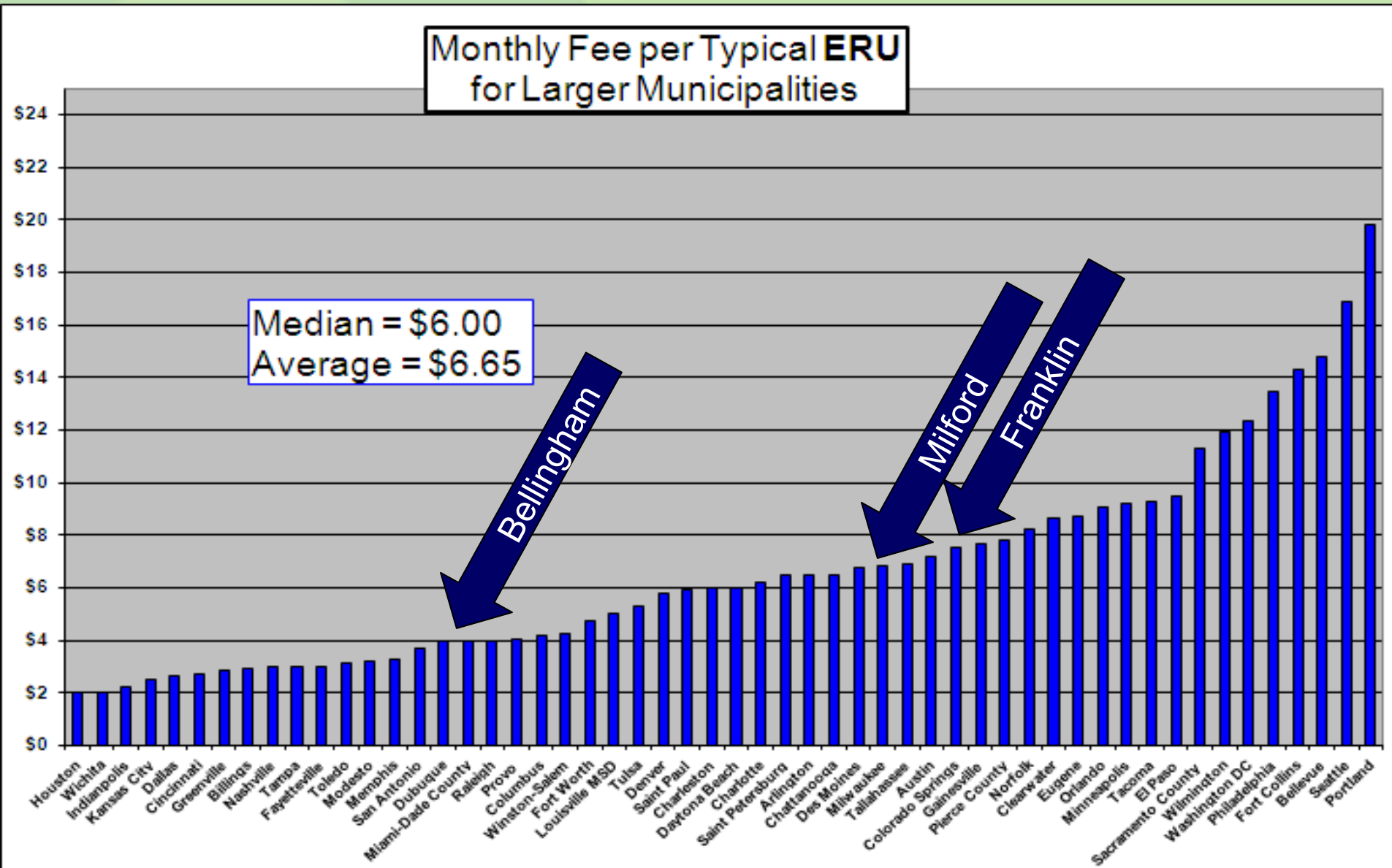


Estimated 5-Yr Avg. Fees/ERU/Month

Uniform CIP Program



Estimated Monthly Fees for Stormwater Only Costs



Expenditure Options

Back-End Loaded

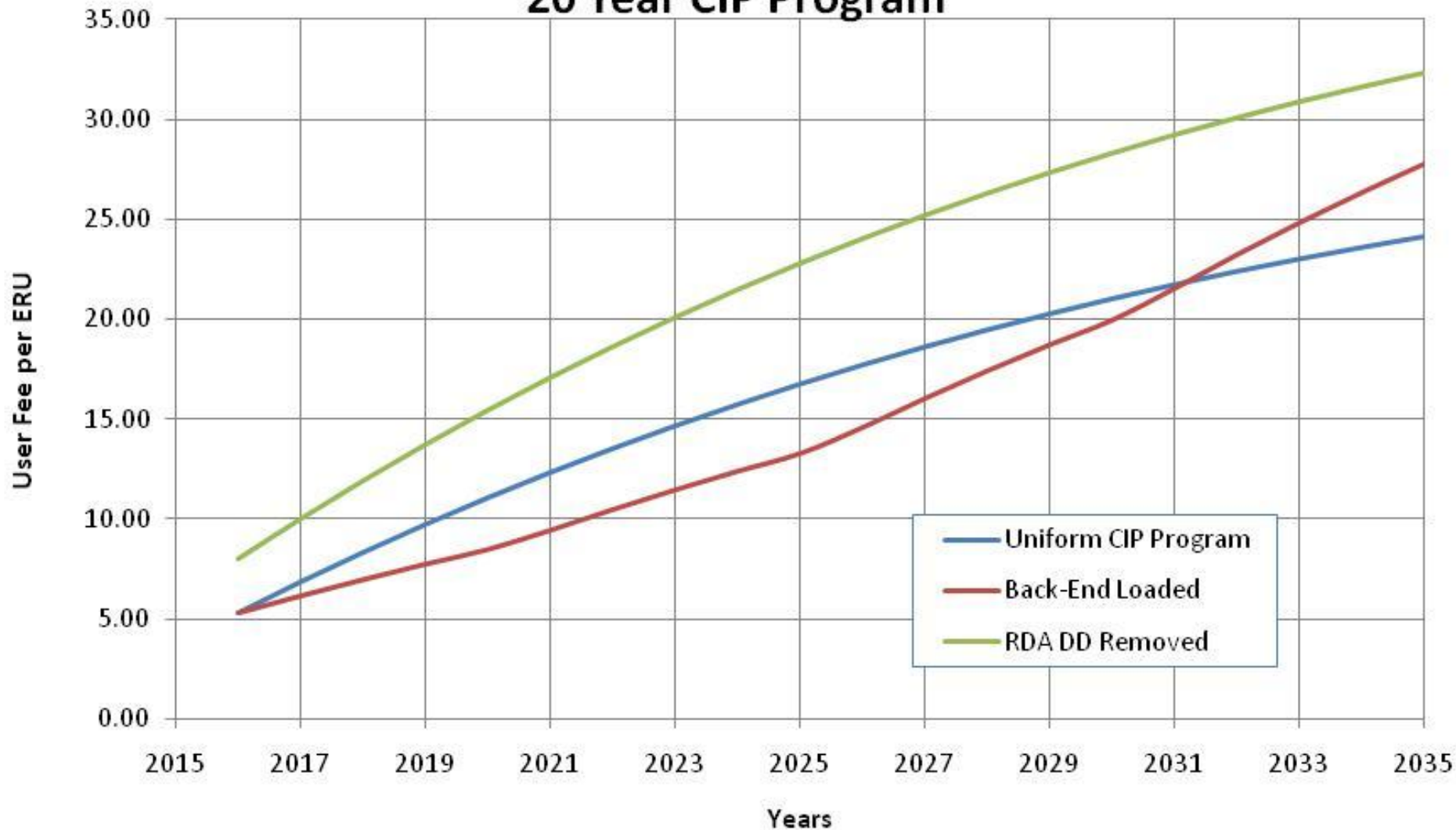
- Start off 25-50% lower capital costs/year
- Ramp up to 130% by last 5-year period
- Push bond repayment out
- Fee difference dependant on program period - 8-25% fee reduction initially
- Higher fee beyond end of program period

RDA DD Removed

- Remove both revenue and cost from the equation
- Causes local city rates to increase 35-55% because removes more revenue than cost

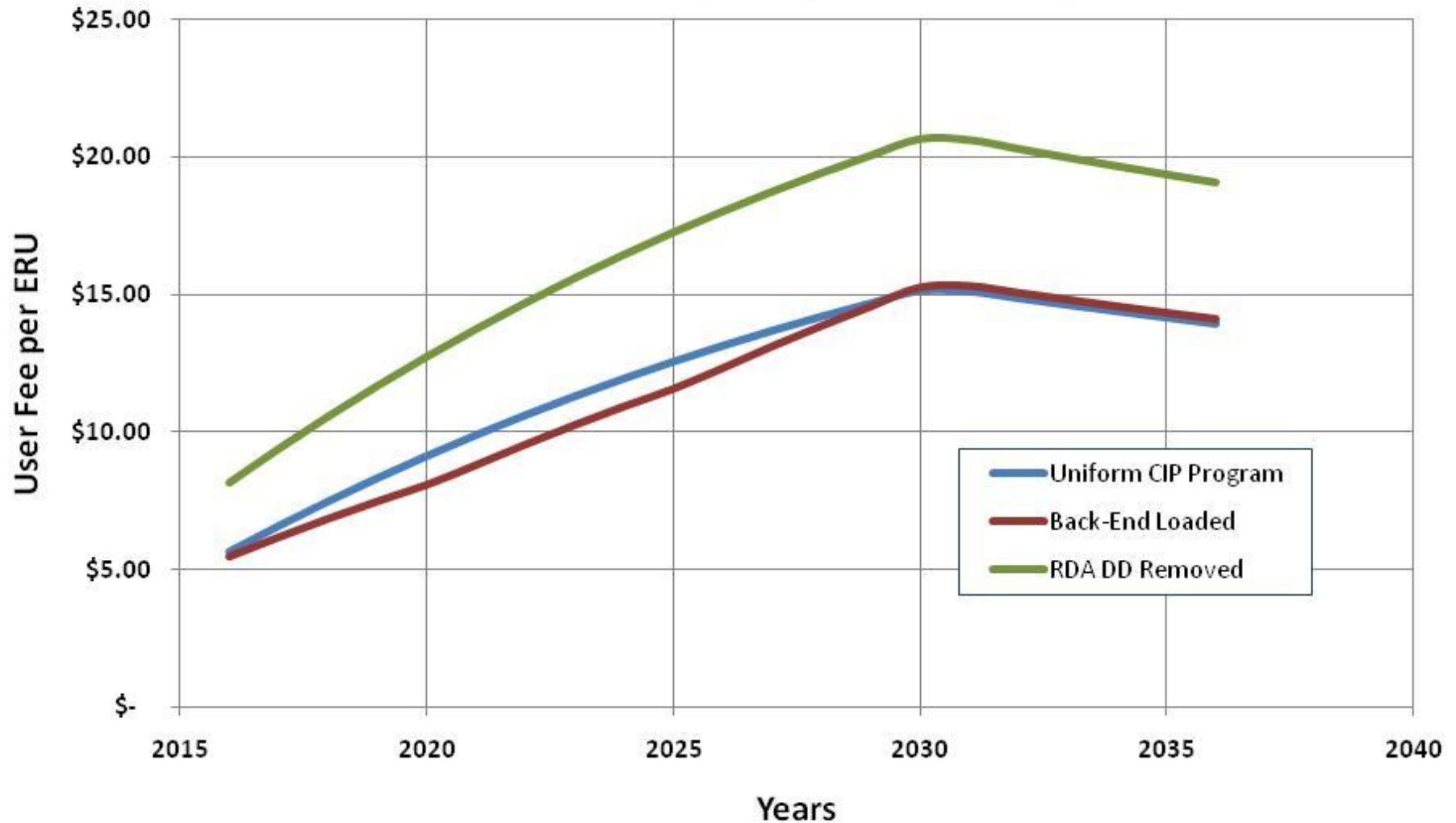
Impact of Program Option

**Milford Fee Estimates - Three Options
20 Year CIP Program**



Impact of Program Option

Bellingham Fee Estimates - Three Options
15 Year CIP Program (2011 dollars)



Regional Approach

“Can we gain economies, efficiencies, and effectiveness without sacrificing...?”

Advantages of a Regional Approach

- Some things we do have no geographic boundaries (e.g. education)
- Some things we do benefit from more opportunities to do them (e.g. potential phosphorous reduction sites)
- Some things we do are administrative fixed costs which could be spread across a bigger base

Common concerns about regional approaches:

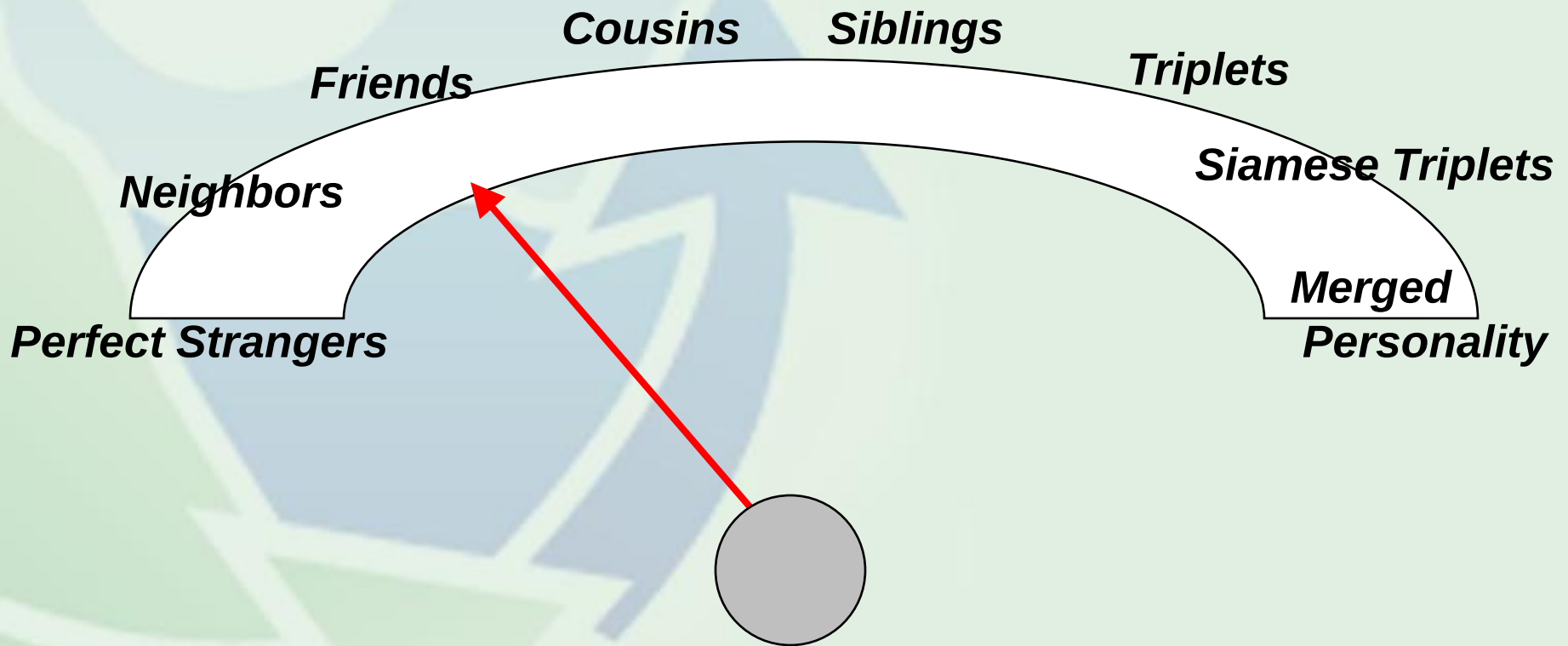
1. One area “bailing out” another one - “paying for another’s past sins”
2. Losing local control
3. Building a bureaucracy - “fee creep”
4. Consistency in treatment, fairness - “getting my share”
5. Responsiveness - “who controls priorities”

Some Potential Options

What does “regional” mean?

- Regional program
 - *“we share some common elements”*
- Regional funding
 - *“our funding approach looks the same and saves cost”*
- Regional organization
 - *“our administration is cooperative”*

Relationship O' Meter



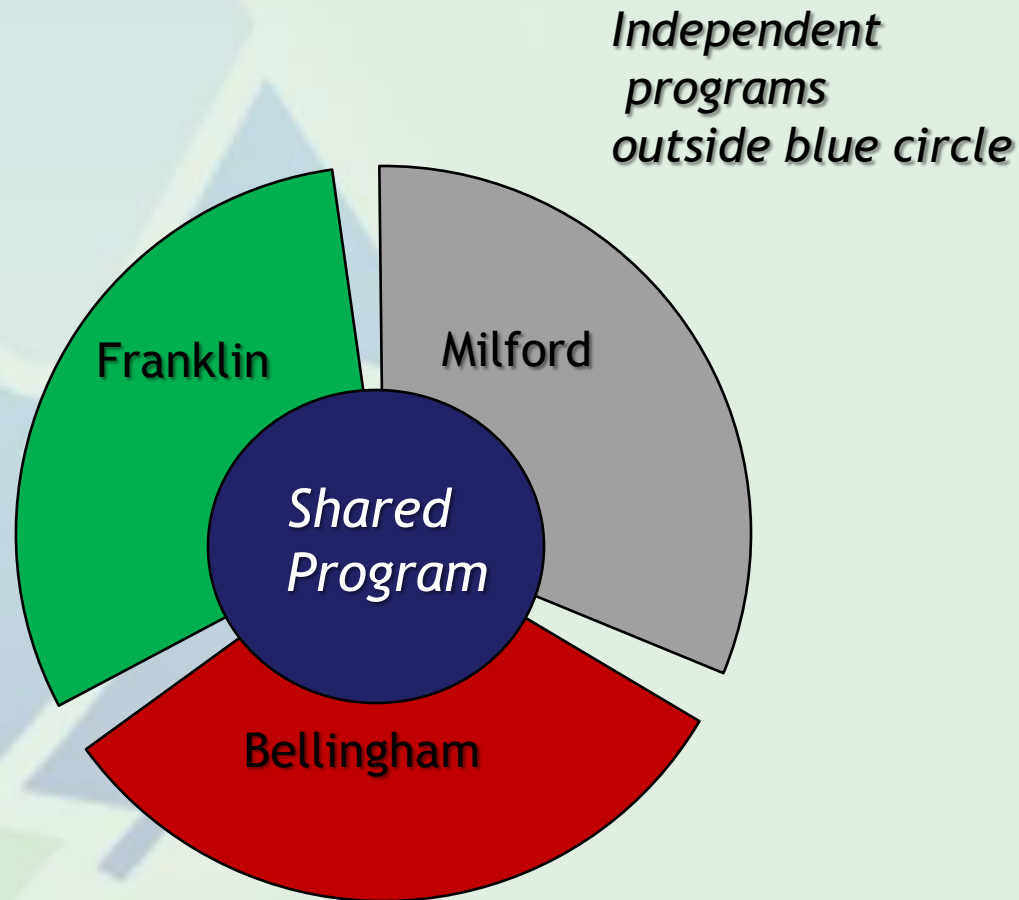
	Independent Funding	Each Has Similar Fee	One Umbrella User Fee
Independent Programs			
Cooperative Overlapping Program Parts			
One Umbrella Program			

MGL Ch. 40 Sec. 4A



Potential Organization Structure

- Carries out the cooperative program
- Jointly managed by a board and minimal hired administrative staff
- Could also collect and disburse bills if multiple user fees



A question of “due diligence”

Establishing a successful stormwater user fee requires that you pay attention to five key areas of due diligence:

1. Governance and inter-municipal consensus
2. Program concept and the compelling case
3. Public and political education and support
4. Financial policies and documents
5. Database development & accuracy and customer service

