Sustainable Stormwater Funding for the Upper Charles River

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

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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

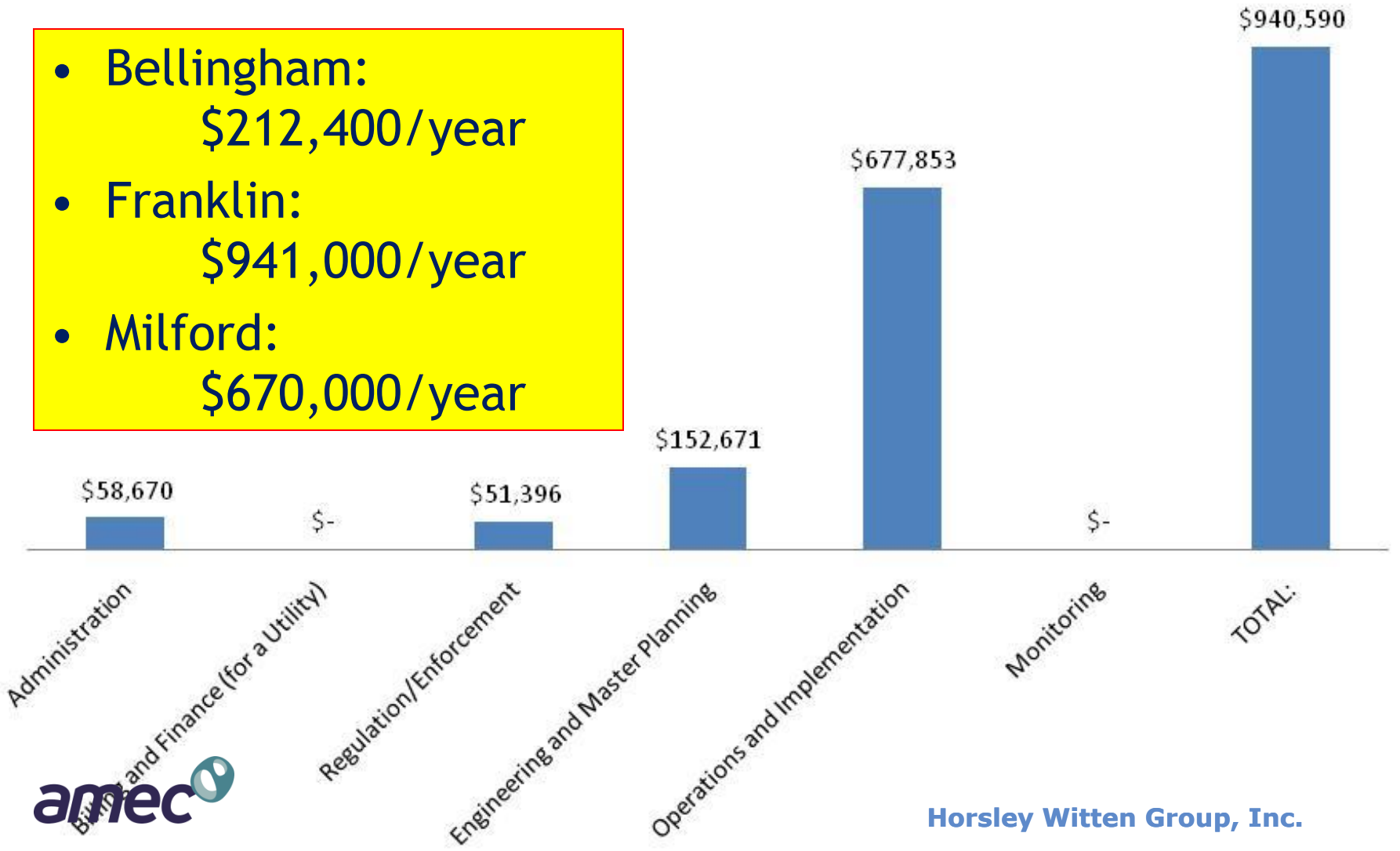
- Administrative;
- Billing and Finance;
- Regulation/Enforcement;
- Engineering/Master Planning;
- Operations and Implementation;
- Monitoring

Operations and Implementation (for example)

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

Working Costs for Existing Programs

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



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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)

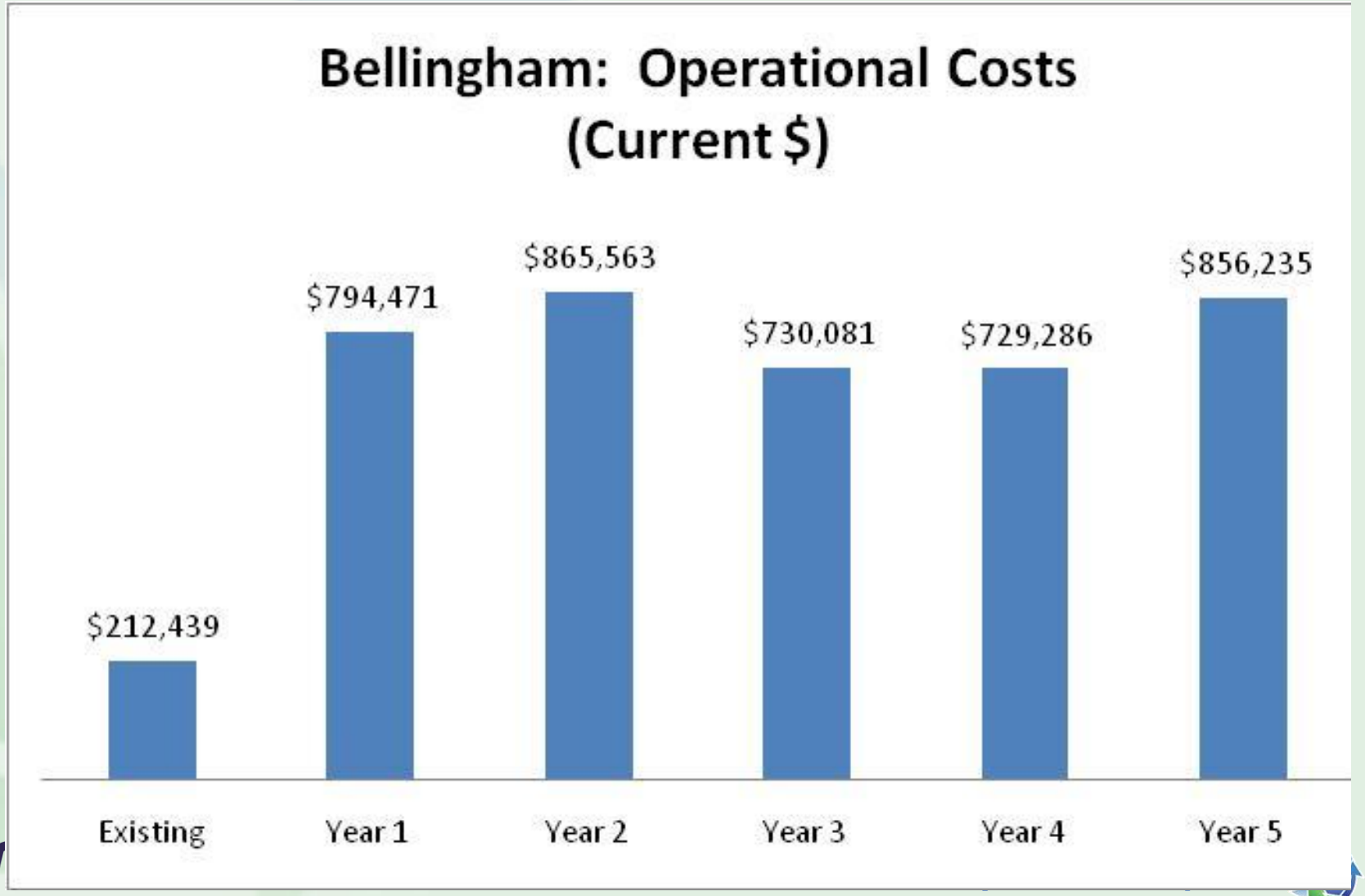
- Track # of site plan reviews, inspections, enforcement actions;
- ID/rank retrofit opportunities for municipally owned facilities;
- Develop a SWPPP for municipally owned facilities;
- Complete a code review and report;
- Impervious cover/DCIA tracking;
- Street sweeping optimization(2 times/yr);
- 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

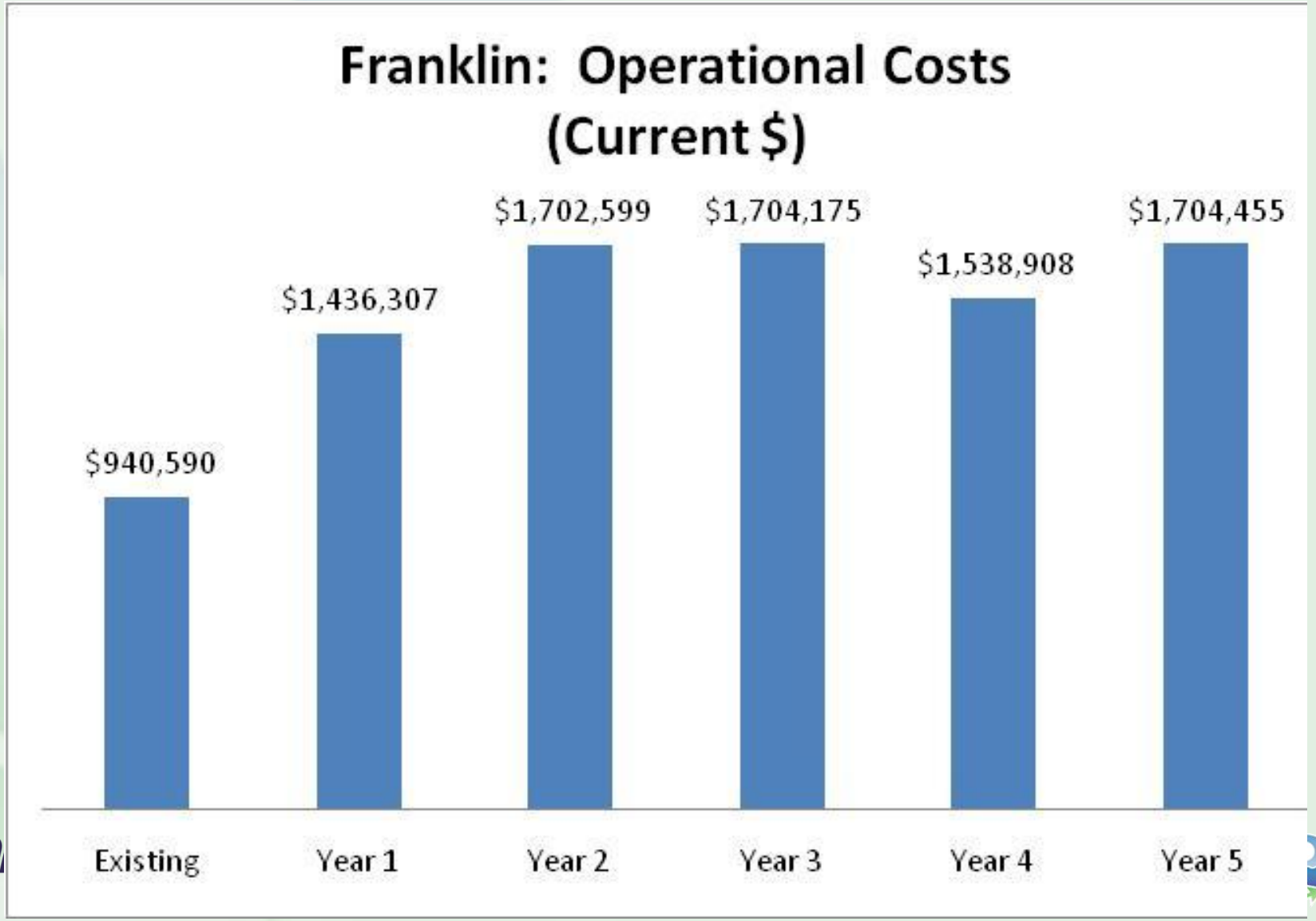
- Phosphorus control plan (PCP);
- Phosphorus control mapping of priority areas;
- Off-site phosphorus management plan (CMPP); and
- Increased/targeted public education on phosphorus control and increased public involvement.

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

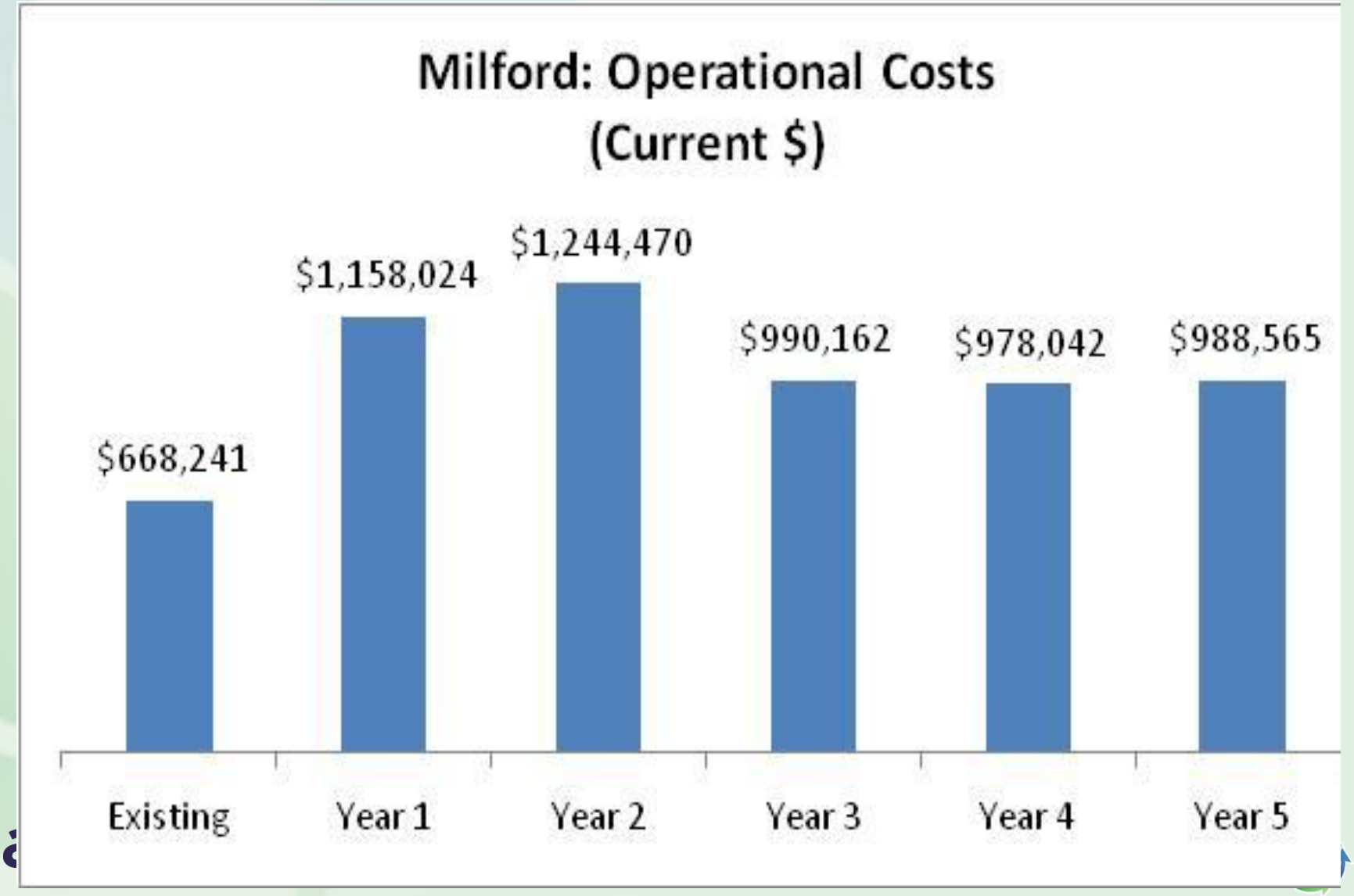
Draft Program Costs for Operational Expenses



Draft Program Costs for Operational Expenses



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%

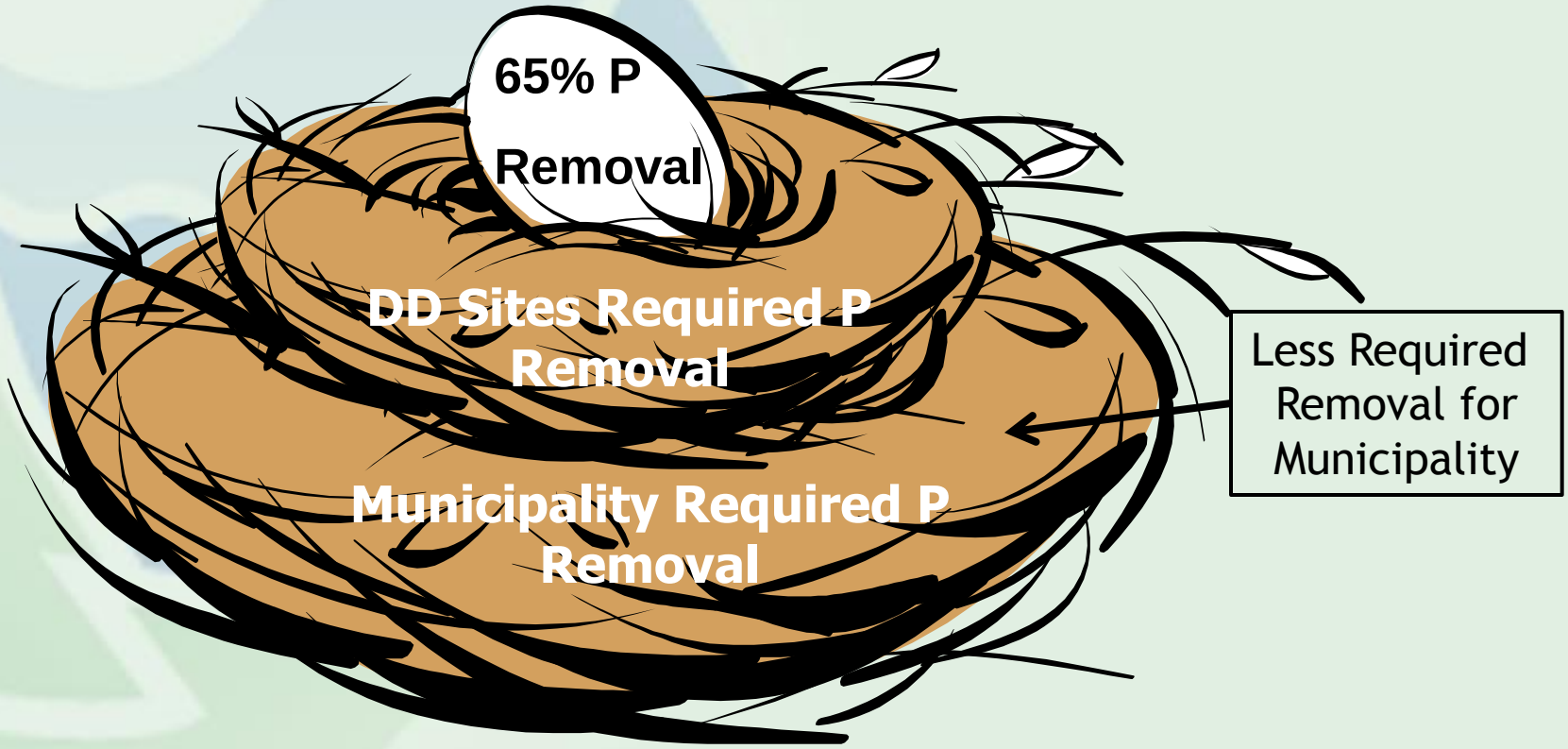
Note: DD phosphorus removal is nested within MS4 total removal

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



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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

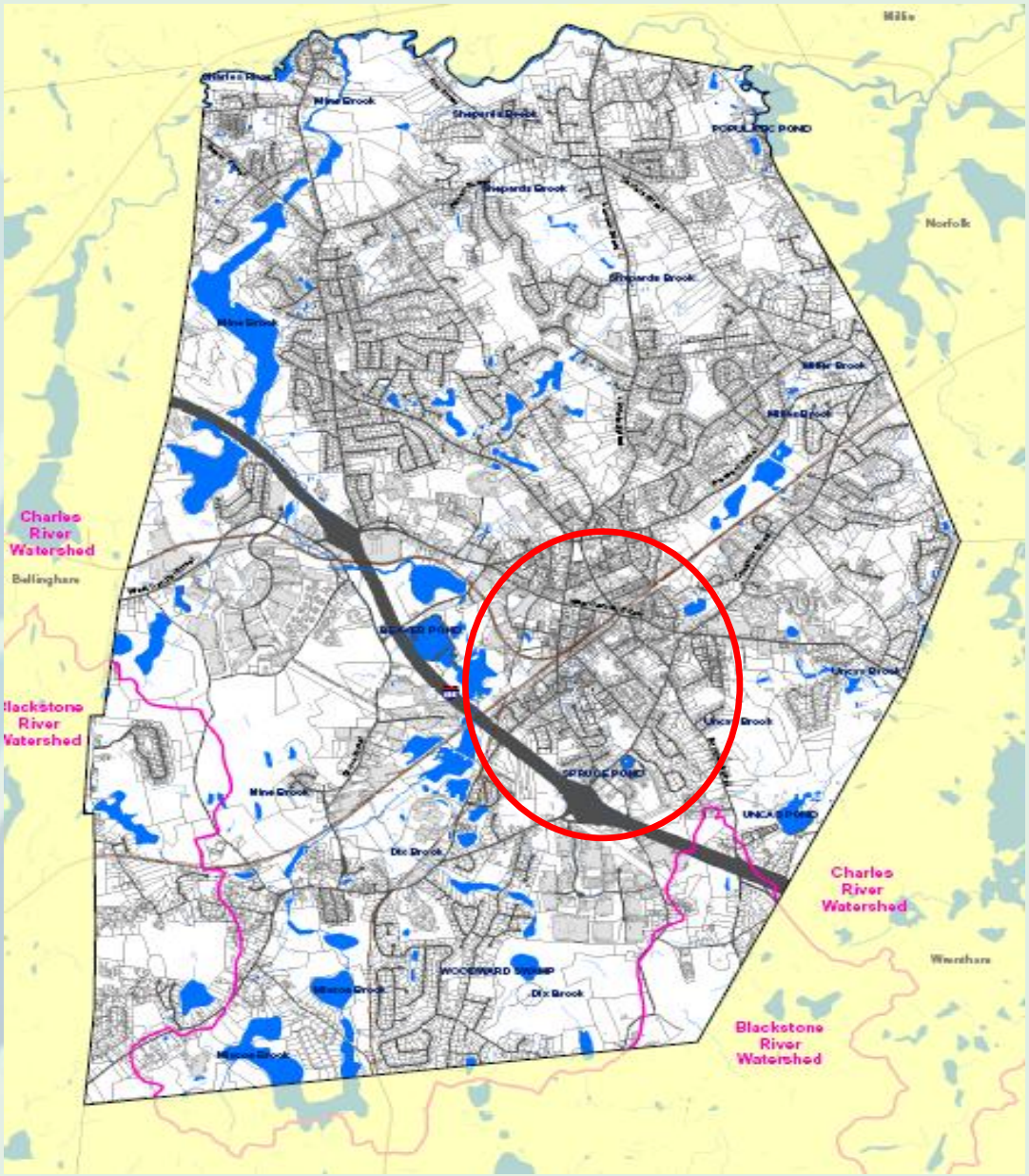
1.1 Square Mile Watershed;

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.



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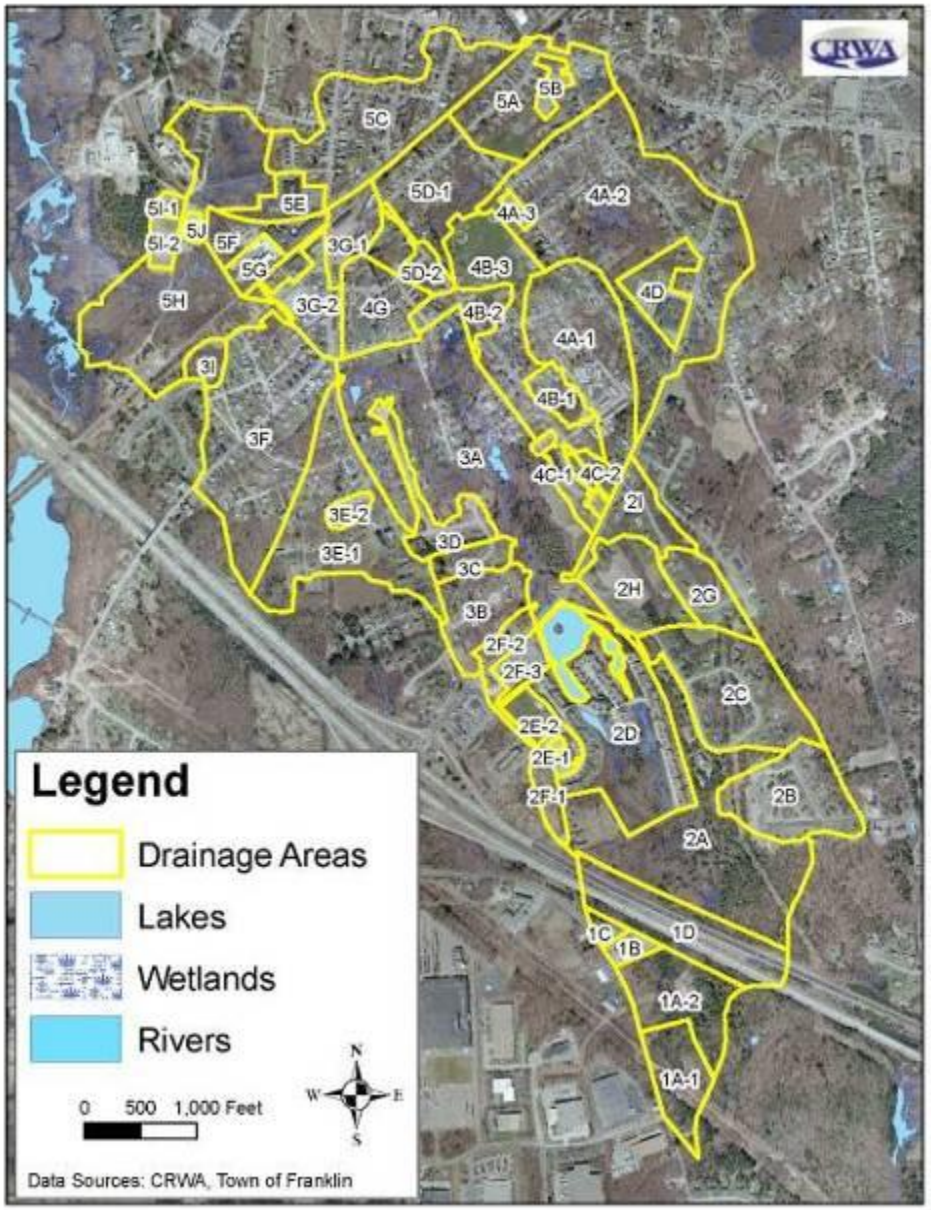
Sub-watershed Drainage Areas



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

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

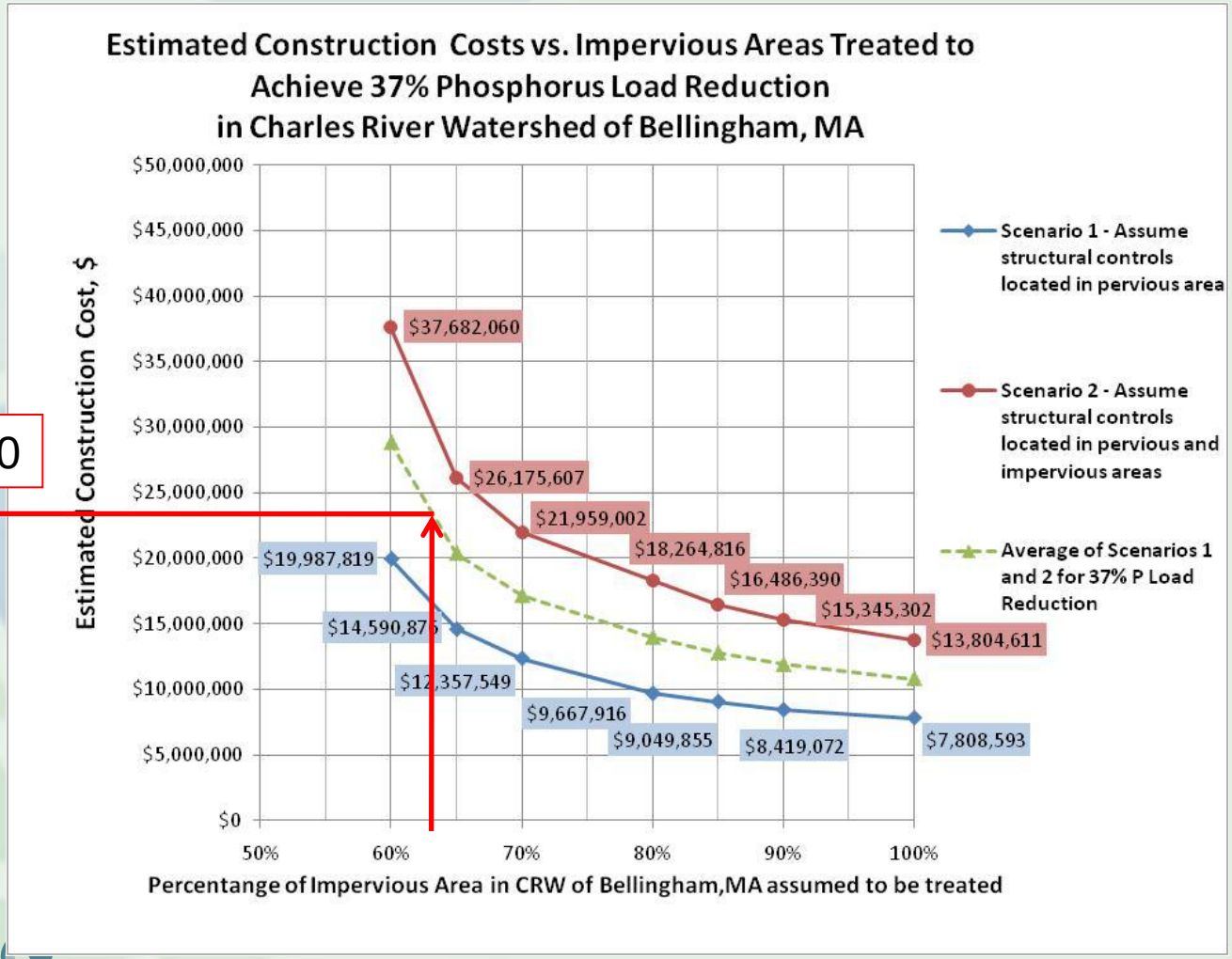
Summary of TMDL Compliance Capital Costs

(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



$23,600,000

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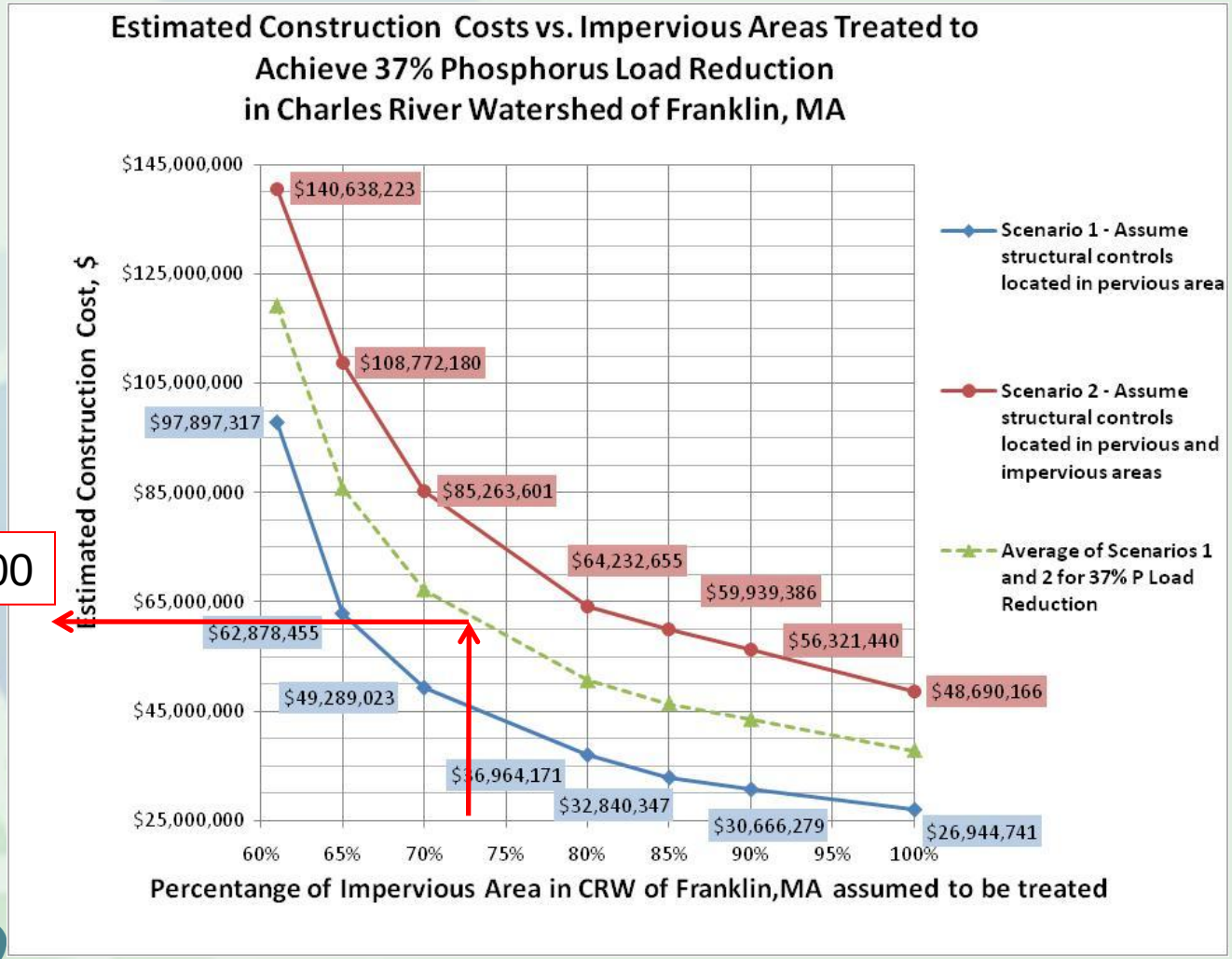
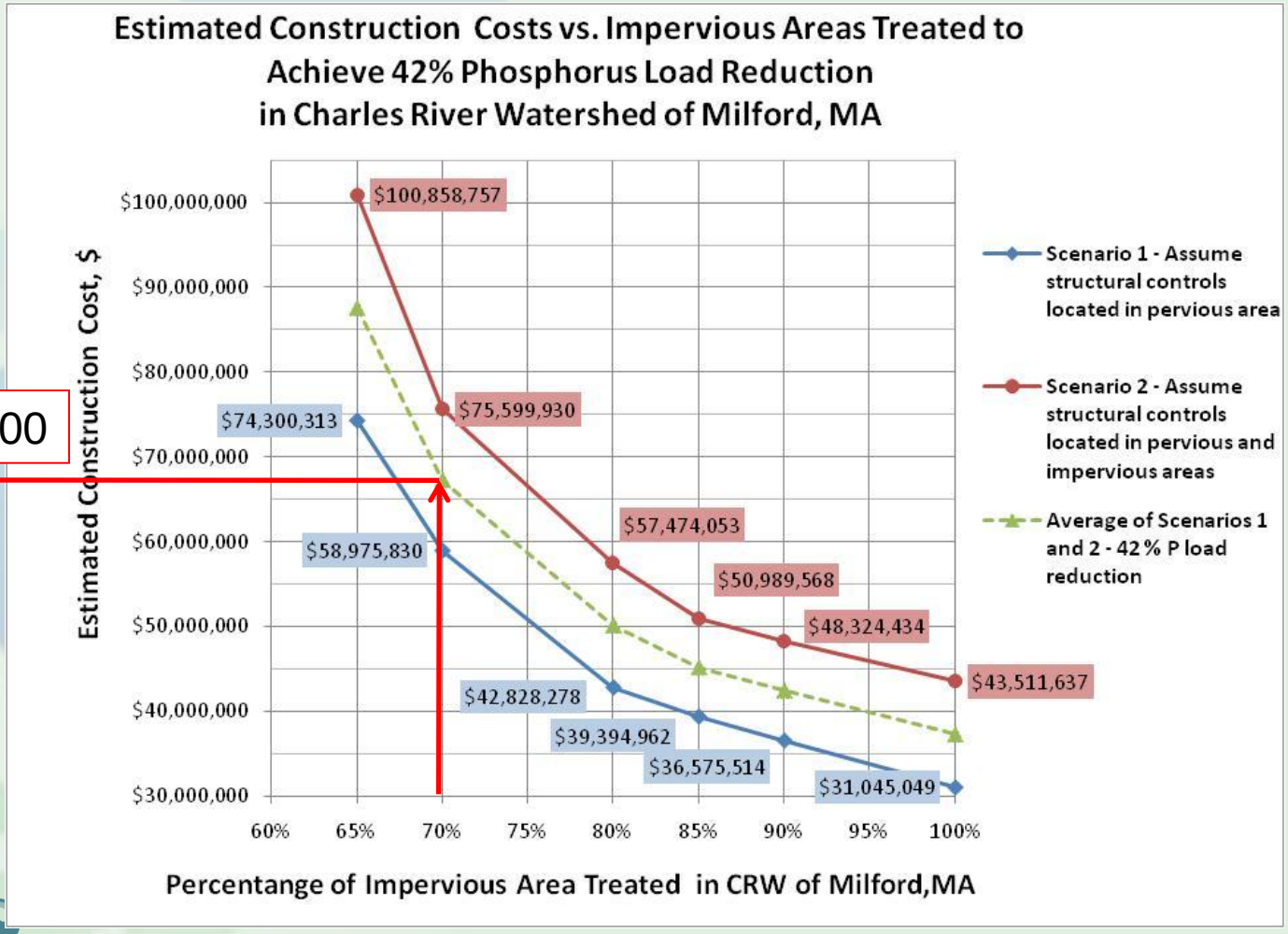
Comparison to Optimization Costs Franklin



$62,800,000

Comparison to Optimization Costs Milford



$67,400,000

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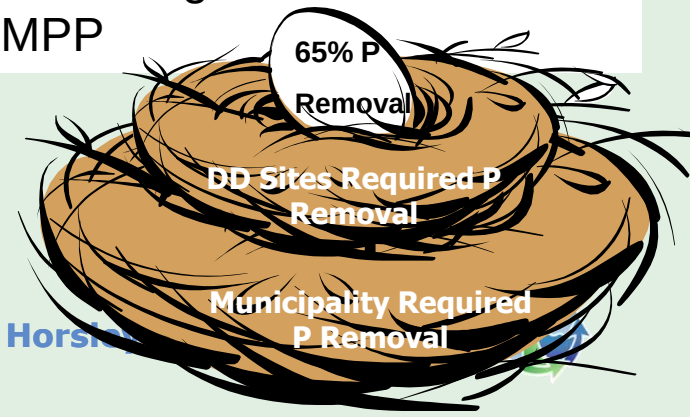
Municipal Costs in the Context of the RDA
Remember the "nested" topic?

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

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Two main topics

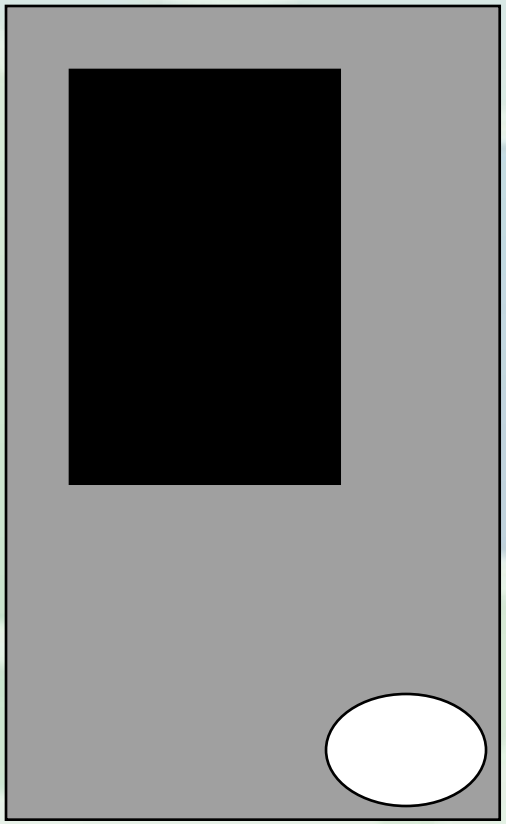
- How do the costs translate into fees?
- What fee options might there be?

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

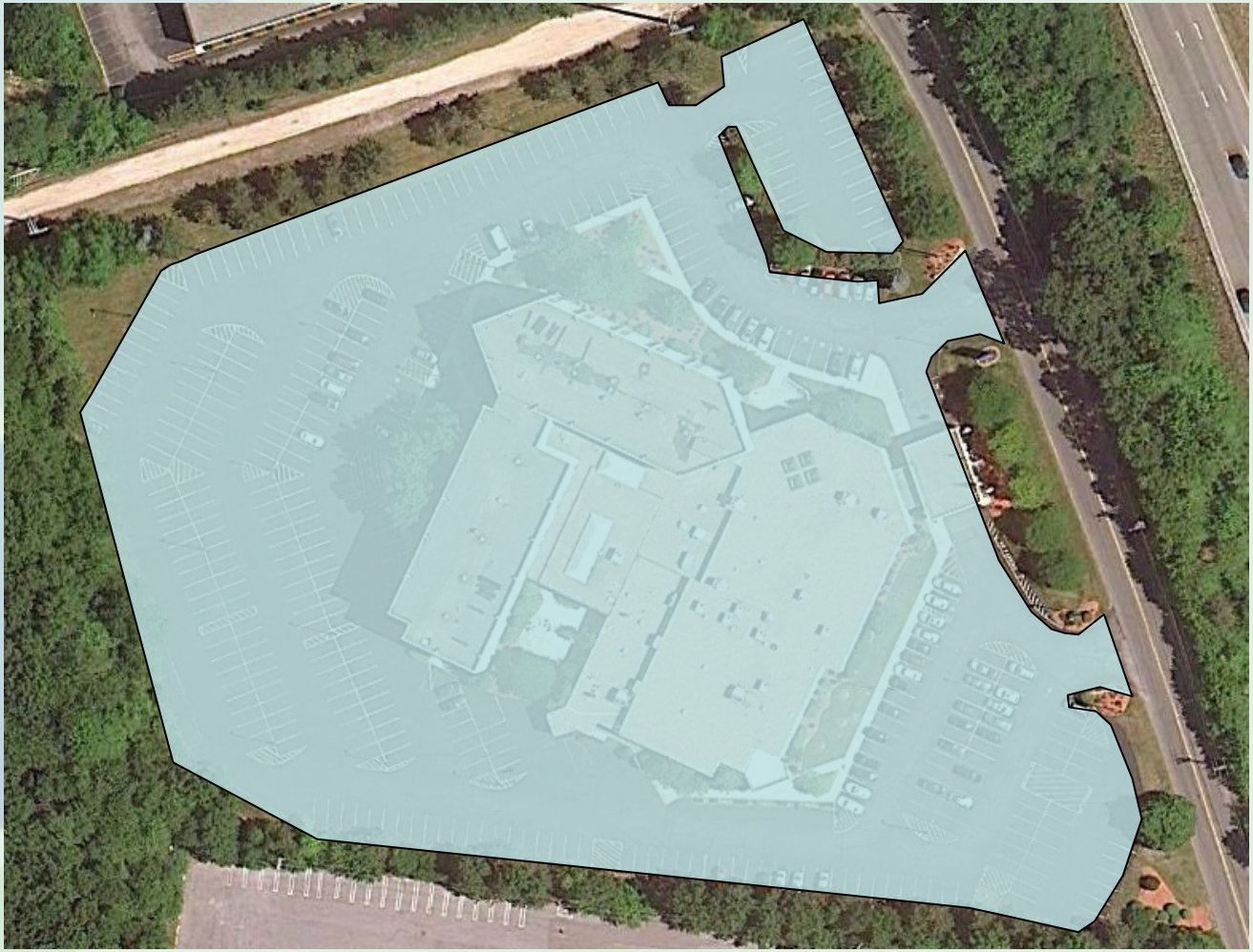
= is 96,000 SF IA
30 * $10.00/mo
minus credit

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



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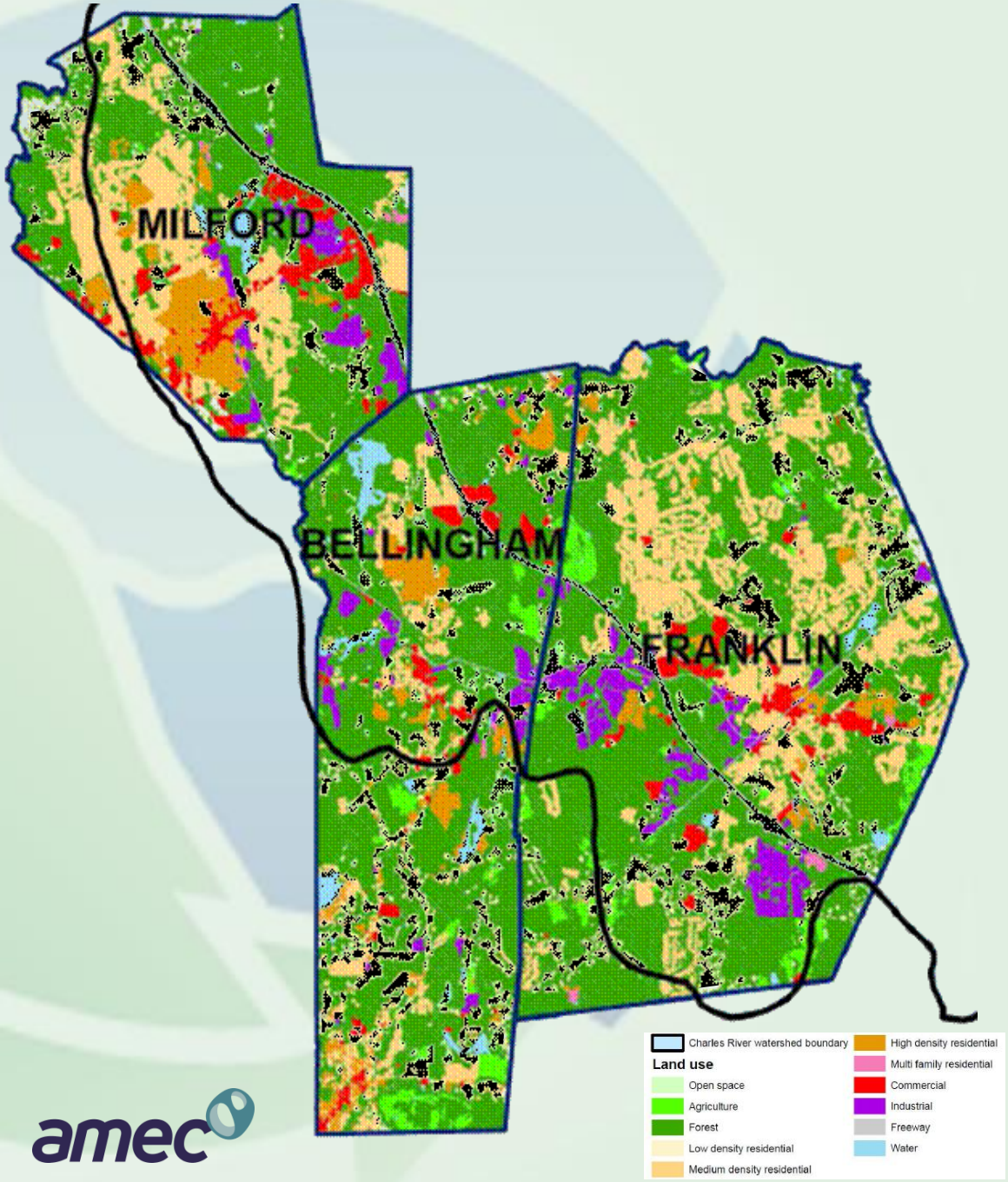

Every $1/mo per ERU generates

$675,000 in annual revenue

A $10/mo fee generates $6.75M annually

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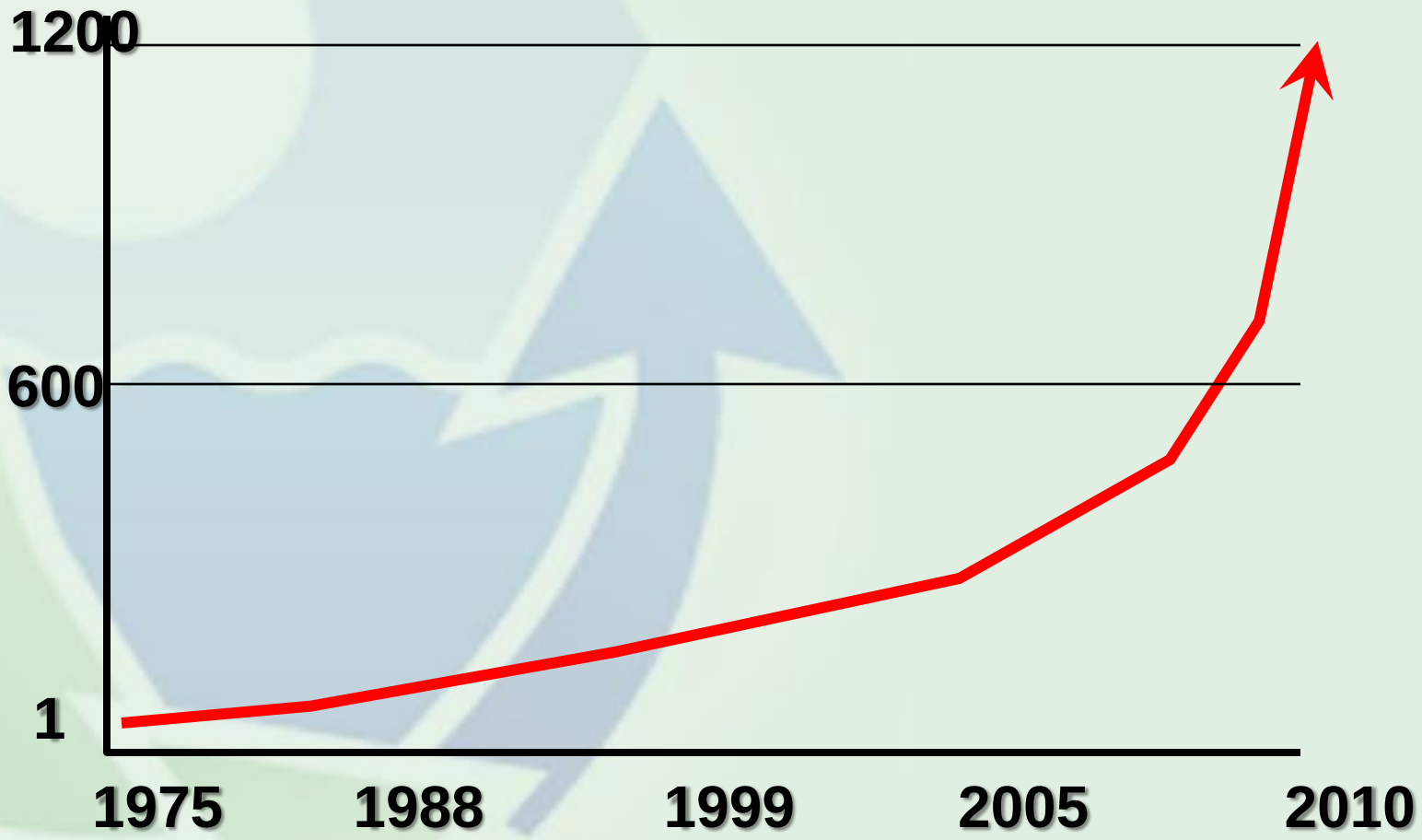
Growth of Storm Water Utilities



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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

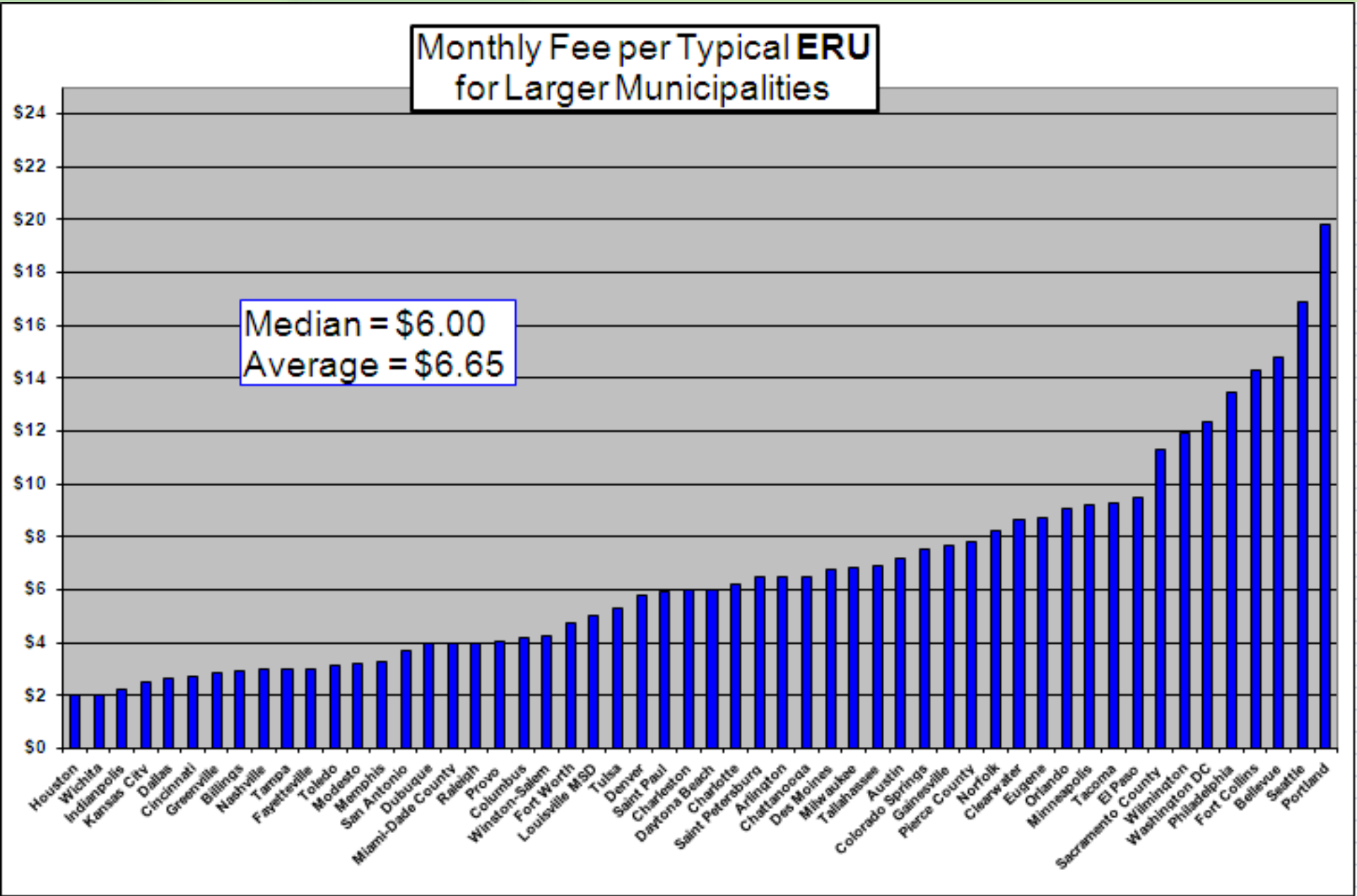
Advantages

- 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

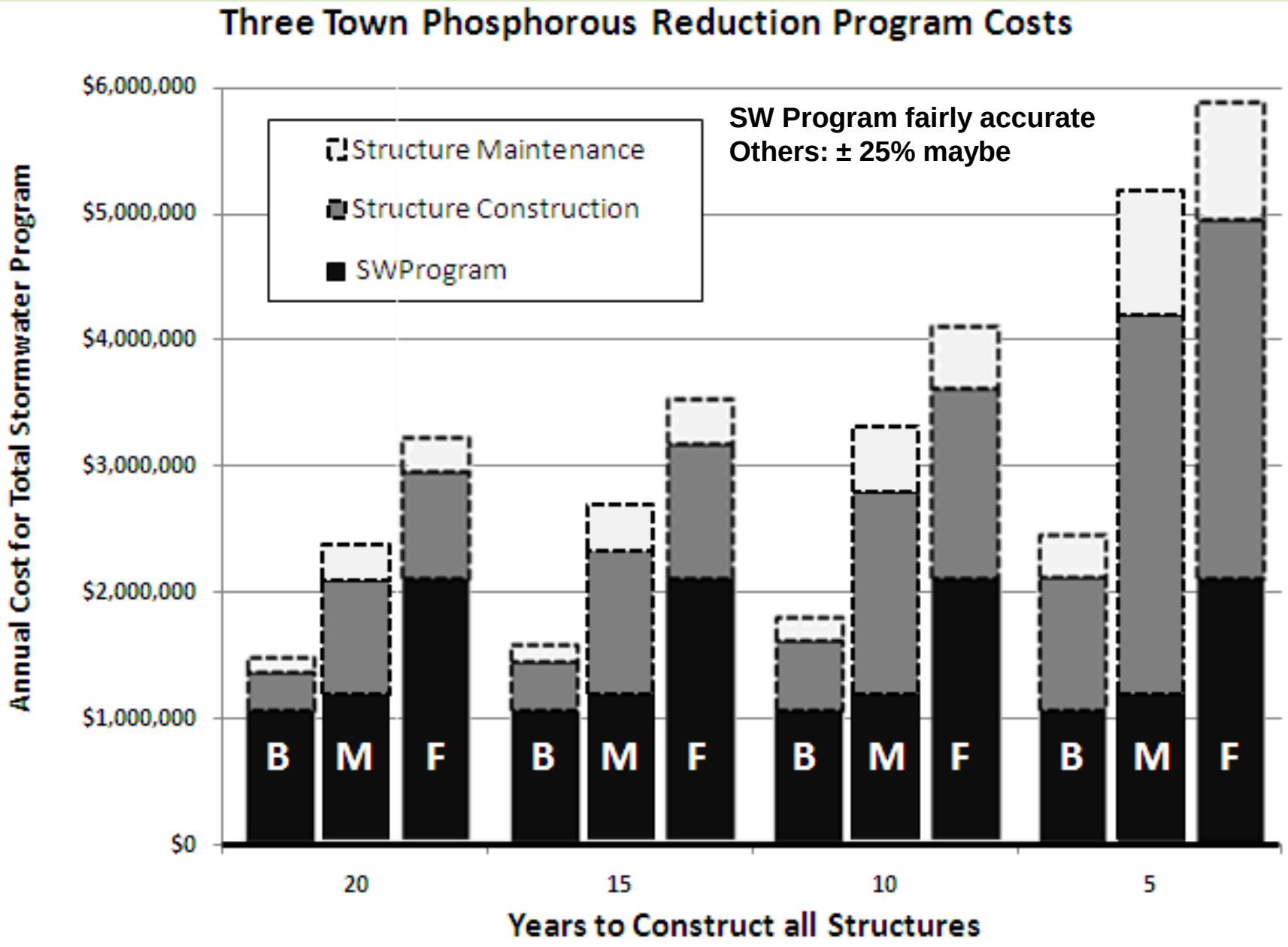
- Program Length:
  - 20, 15, 10 and 5 year program length options

- Program Expenditures:
  1. Uniform construction
  2. Back-end loaded
  3. RDA Designated Dischargers separate

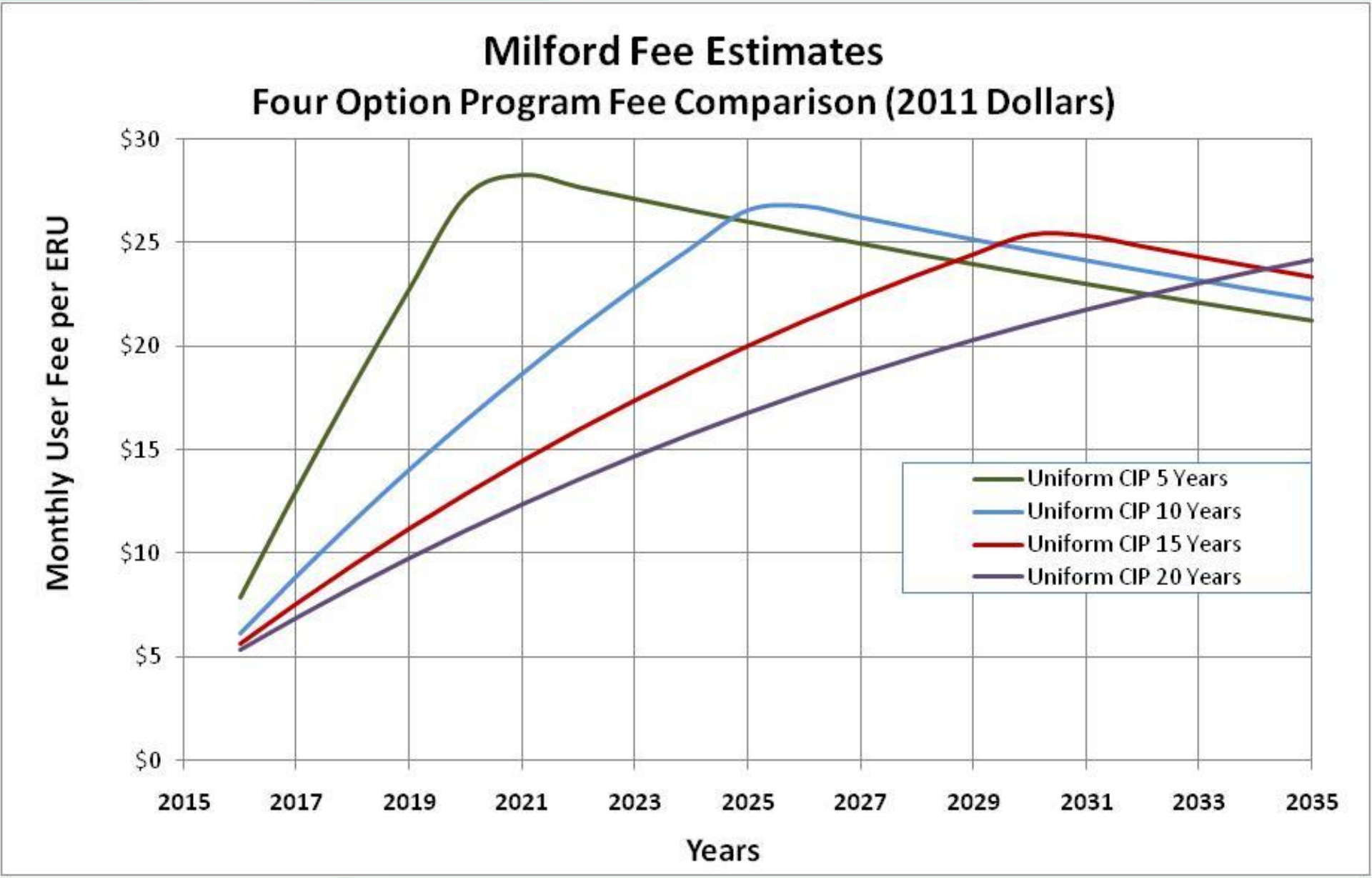
Program Length Options

- 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

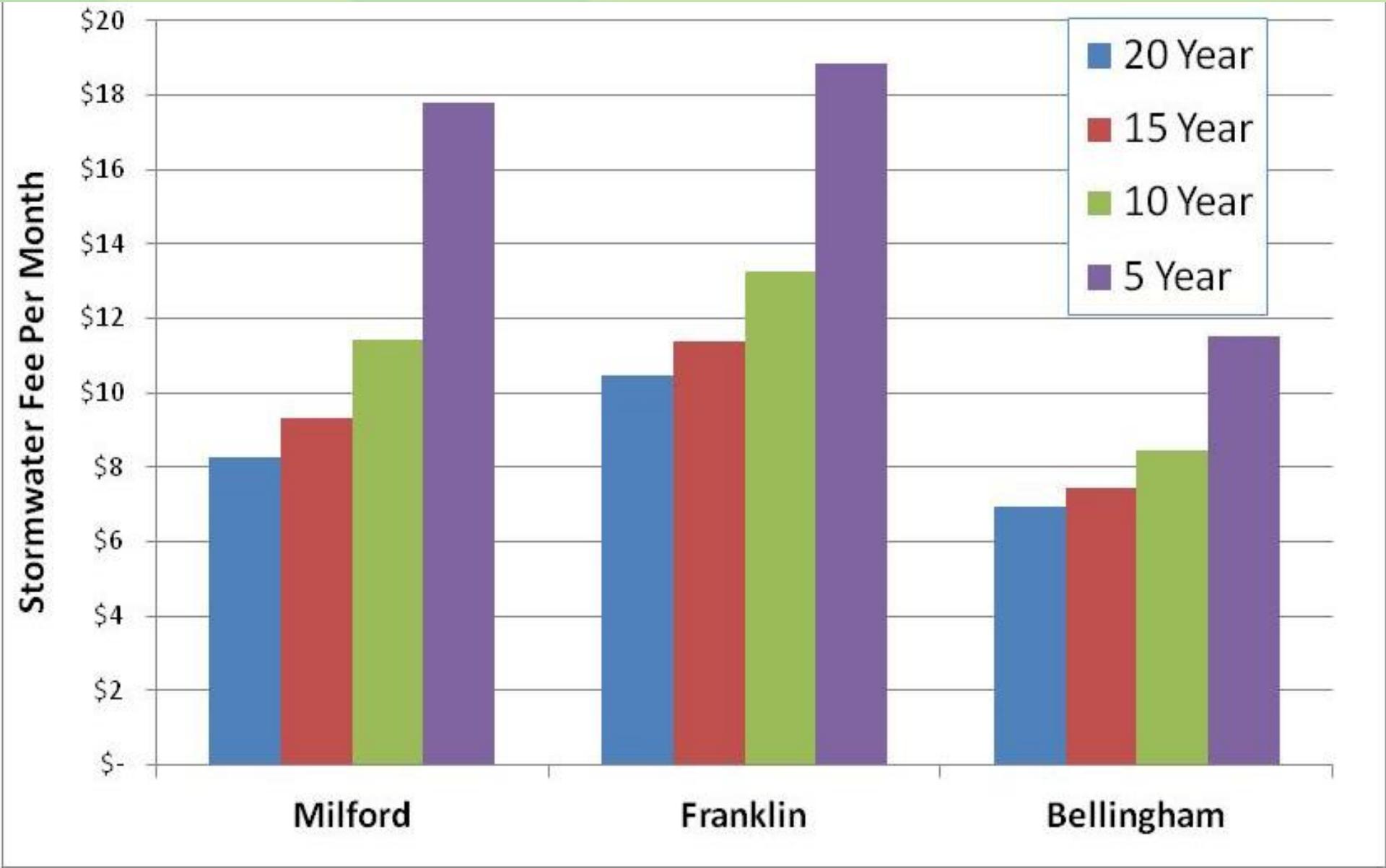


Impact of Program Length

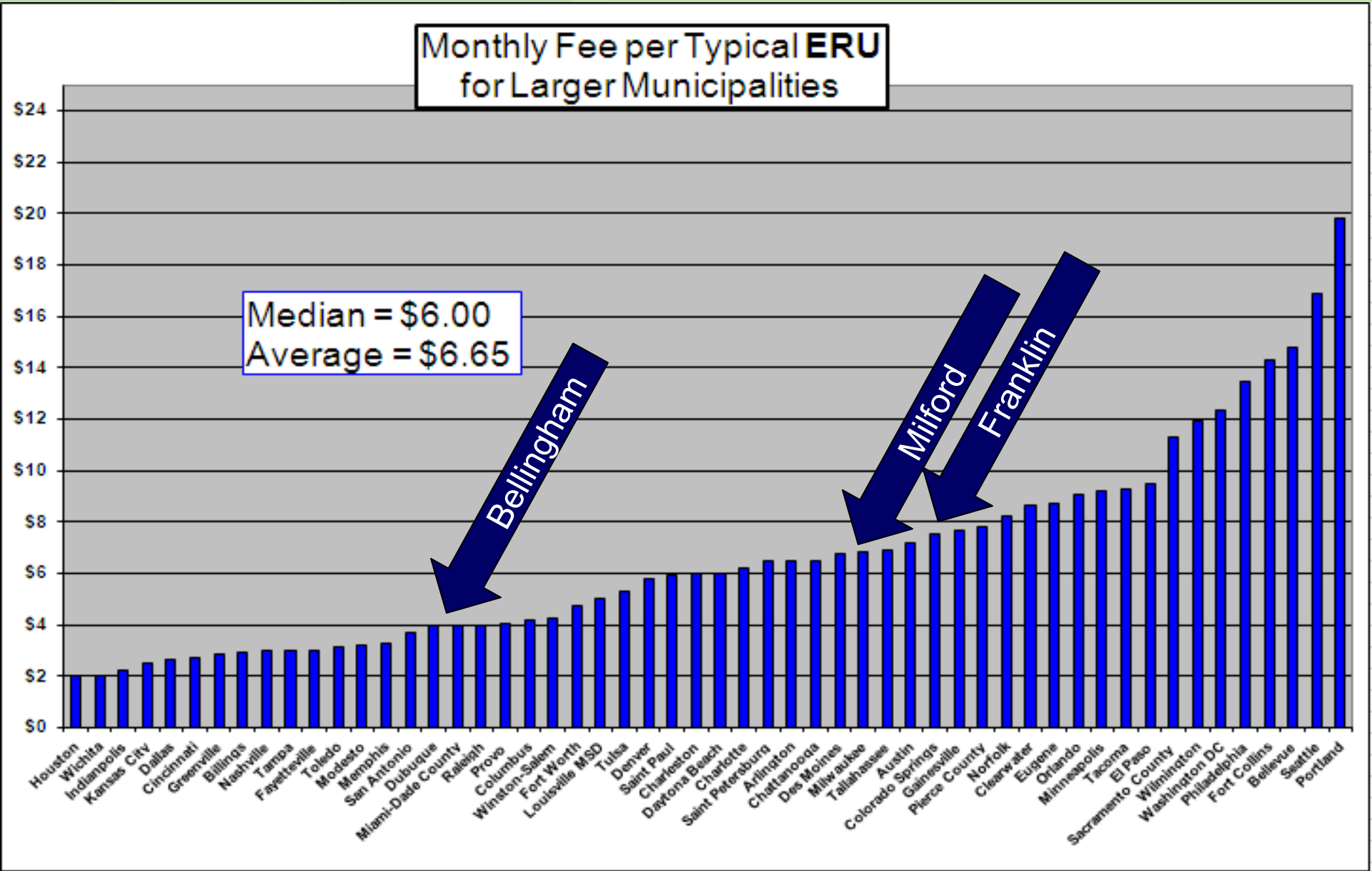


Estimated 5-Yr Avg. Fees/ERU/Month

Uniform CIP Program



Estimated Monthly Fees for Stormwater Only Costs



Expenditure Options

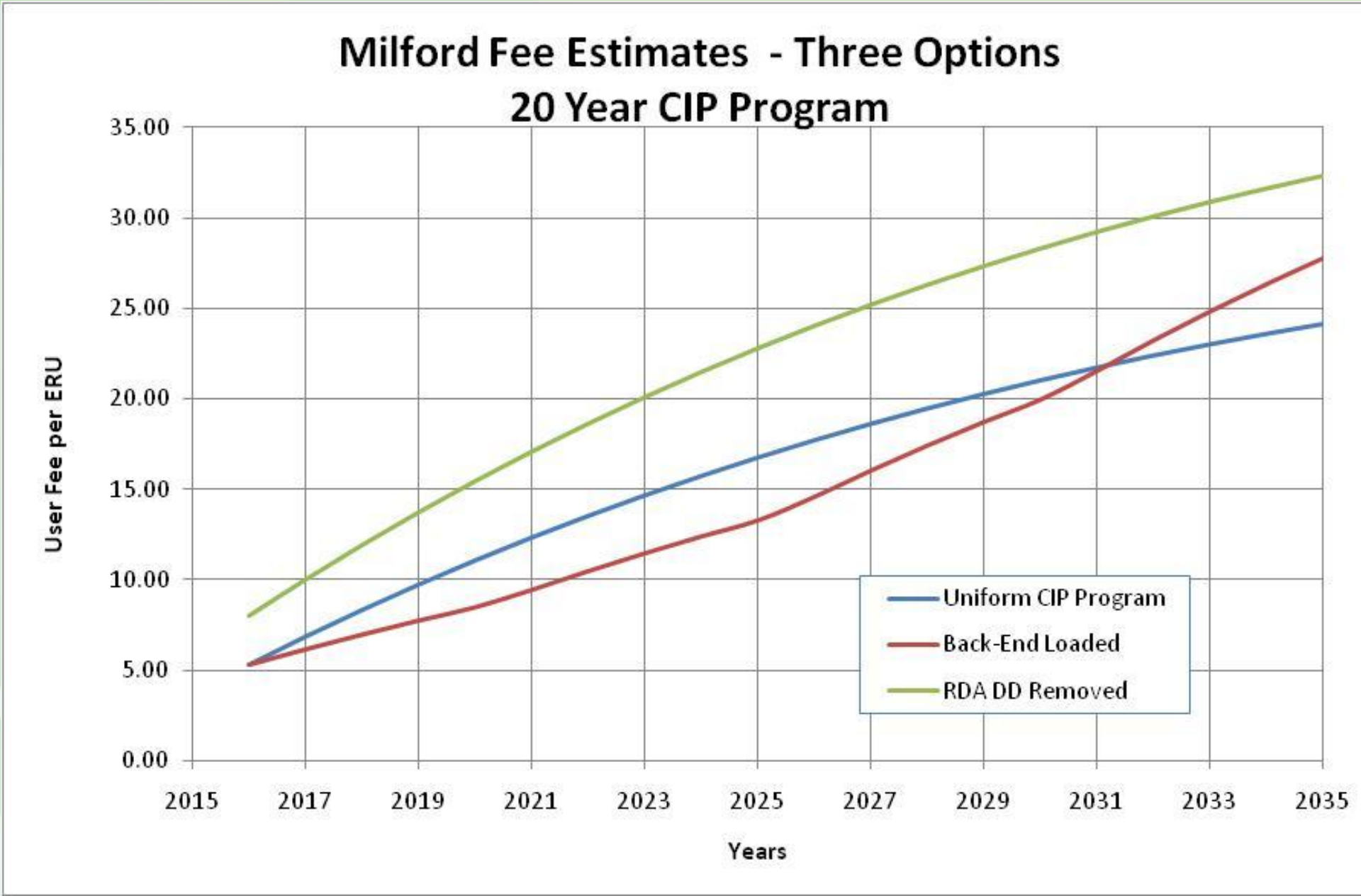
Back-End Loaded

- 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

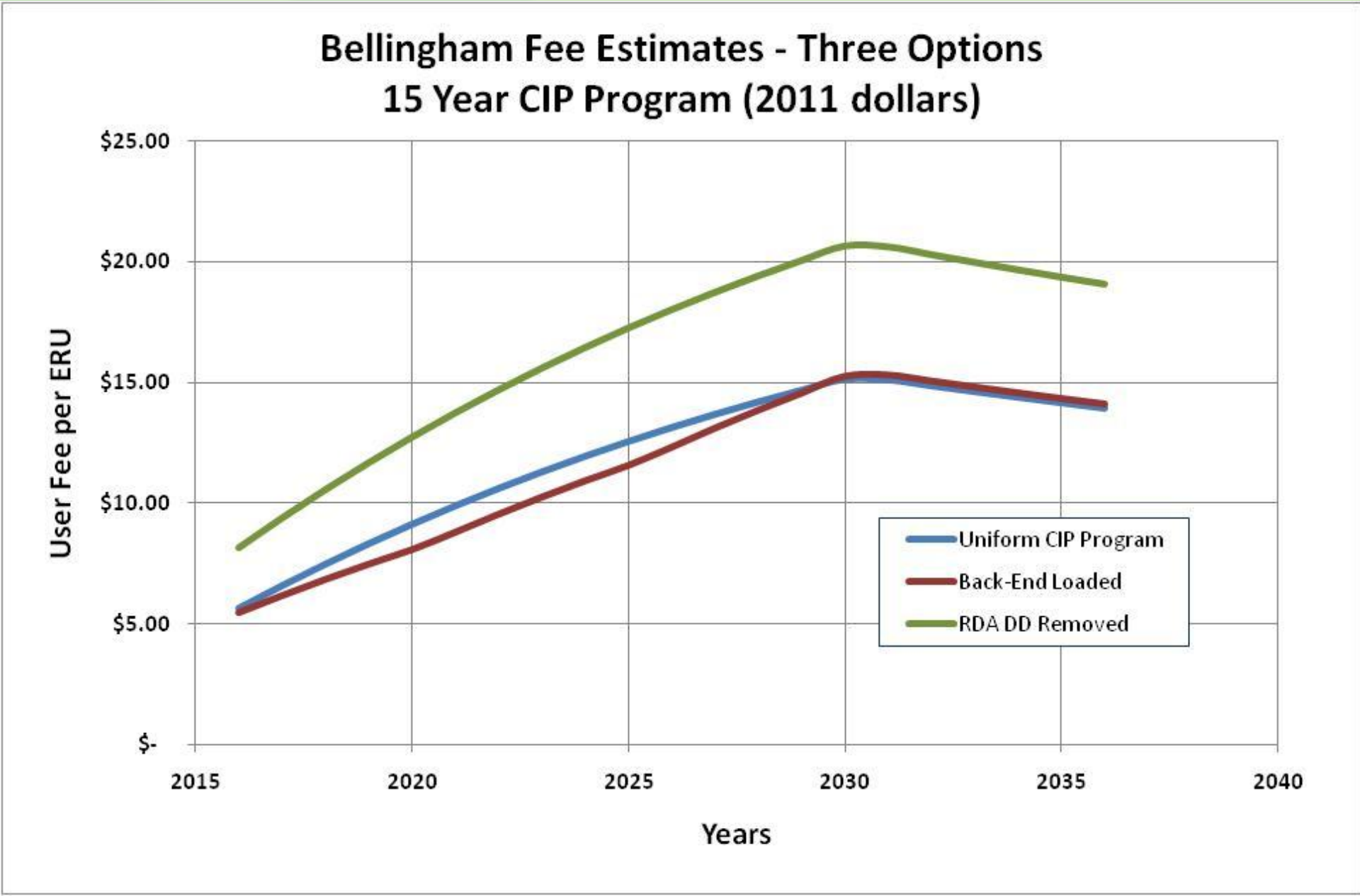
RDA DD Removed

- 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



Impact of Program Option



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:

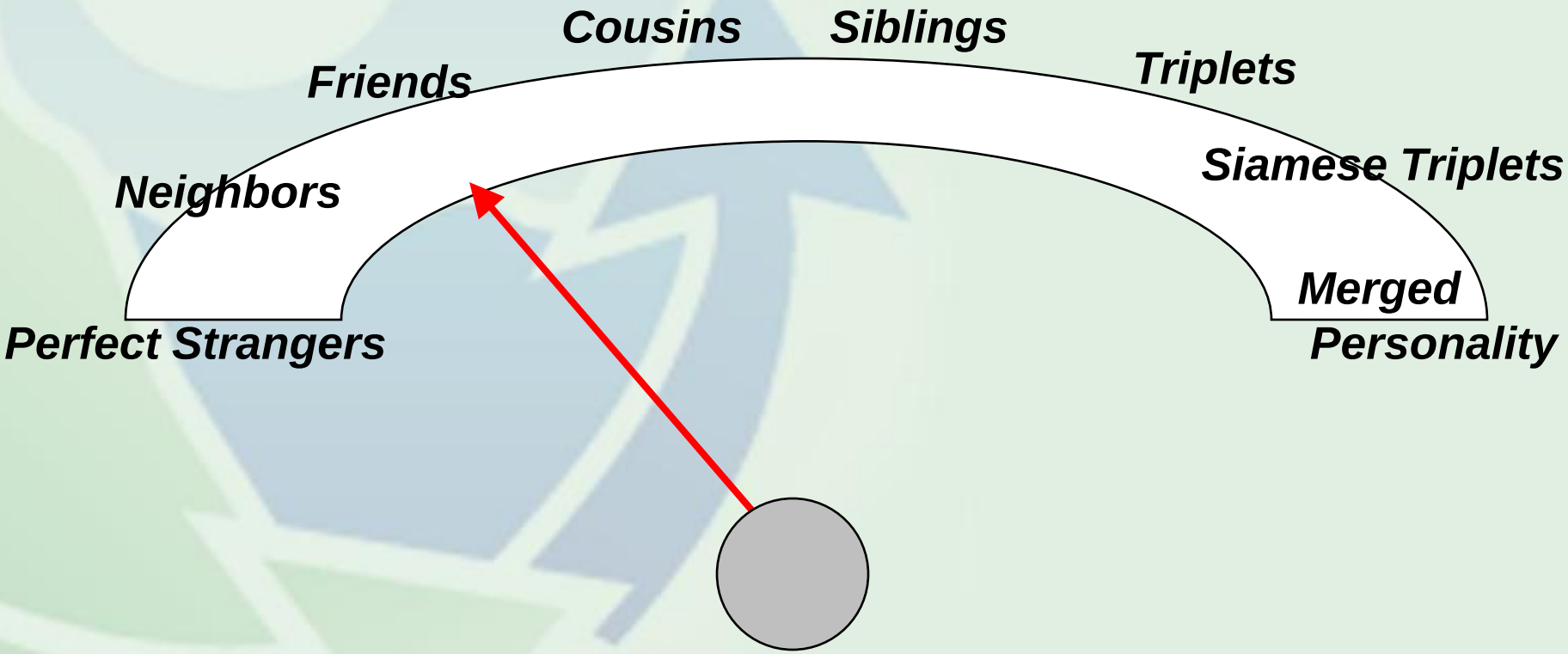
1. One area “bailing out” another one – “paying for another’s past sins”
2. Losing local control
3. Building a bureaucracy - “fee creep”
4. Consistency in treatment, fairness – “getting my share”
5. Responsiveness – “who controls priorities”

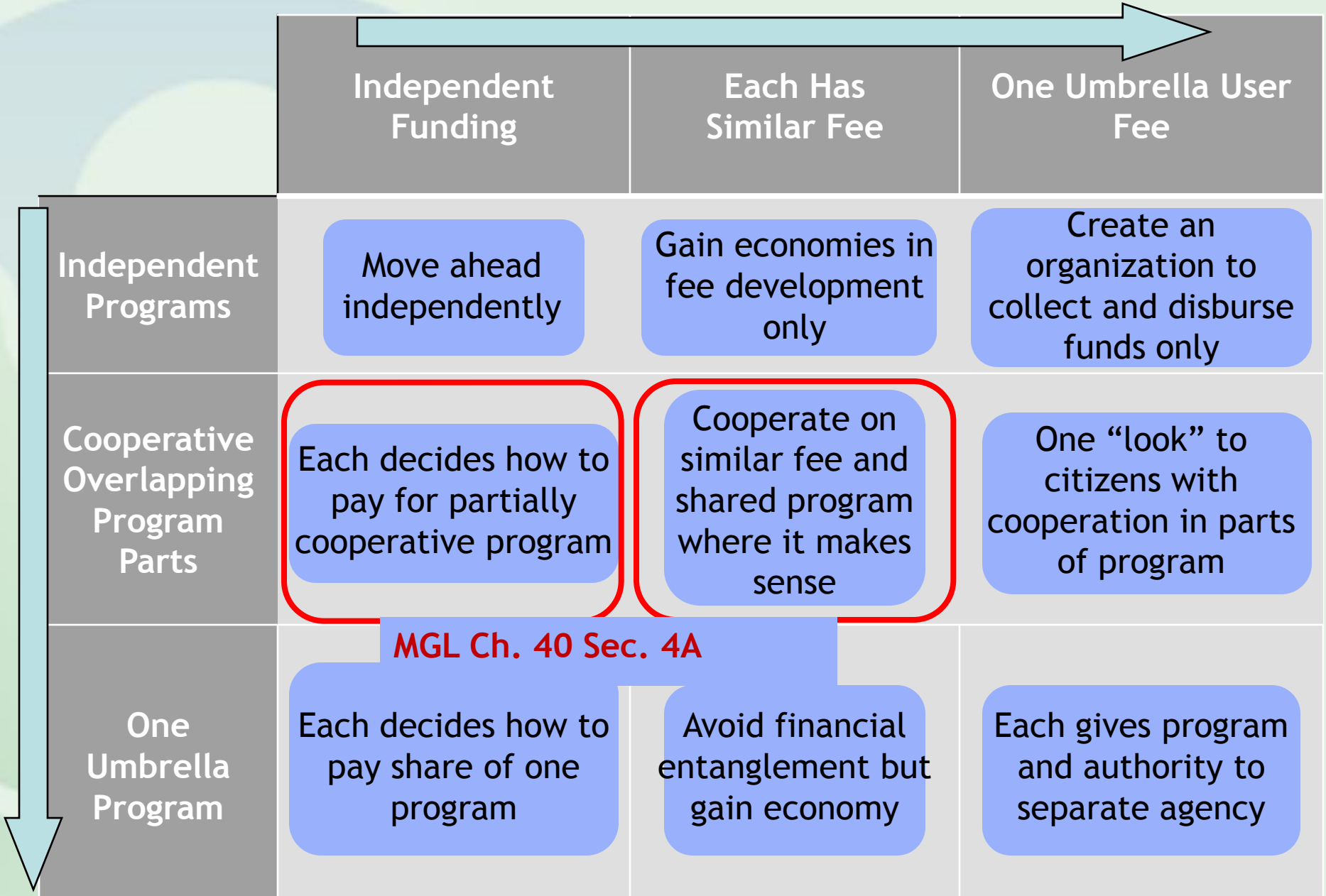
Some Potential Options

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

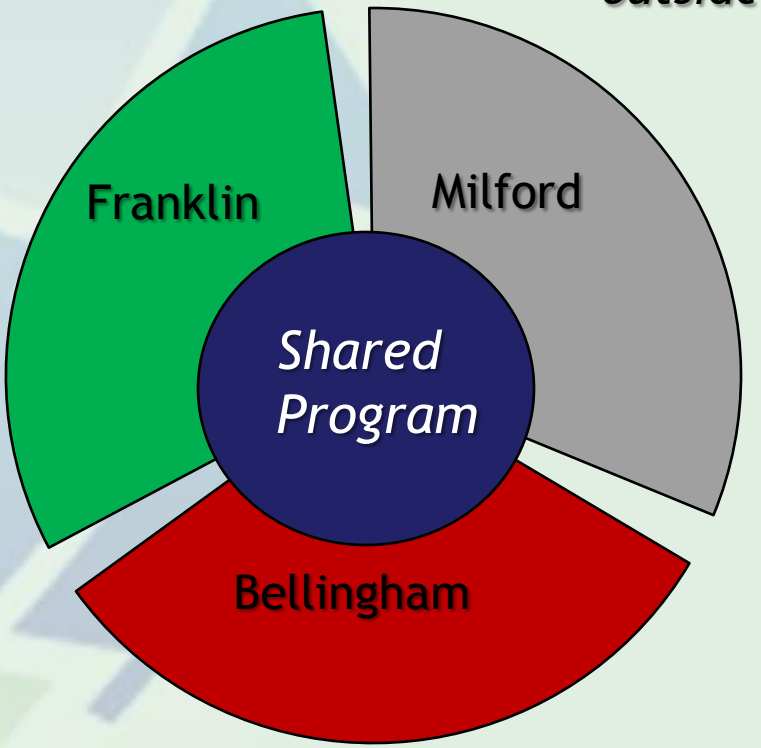



Independent Funding
Each Has Similar Fee
One Umbrella User Fee
Independent Programs
Move ahead independently
Gain economies in fee development only
Create an organization to collect and disburse funds only
Cooperative Overlapping Program Parts
Each decides how to pay for partially cooperative program
Cooperate on similar fee and shared program where it makes sense
One "look" to citizens with cooperation in parts of program
MGL Ch. 40 Sec. 4A
One Umbrella Program
Each decides how to pay share of one program
Avoid financial entanglement but gain economy
Each gives program and authority to separate agency

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

Independent programs outside blue circle



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

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