

Sustainable Funding Mechanisms for Stormwater Assets: US Experience – South Australia Ideas

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“A national stormwater policy agenda is a no-brainer in responding to the challenges of water security, flood control, and climate change.

Historically, state and federal governments have largely neglected stormwater management, seeing it as the ‘poor cousin’ of water supply and sanitation...”

South Australia Senator Nick Xenophon, 2016

“The committee recommends that... (governments) develop and implement a National Stormwater Initiative for stormwater management. As part of the NSI... consider new funding models... that would facilitate improved stormwater management...”

Environmental and Communications Reference Committee
Stormwater Management in Australia
December 2015, Recommendation #4

“Stormwater Victoria advised that only the absolute minimum of maintenance is occurring in the \$11 billion stormwater asset. They argued that this is unsustainable and that a new funding model is needed ‘so that the costs of renewing and replacing drainage infrastructure are not unsustainably transferred to future generations’”

Environmental and Communications Reference Committee
Stormwater Management in Australia, p. 48
December 2015

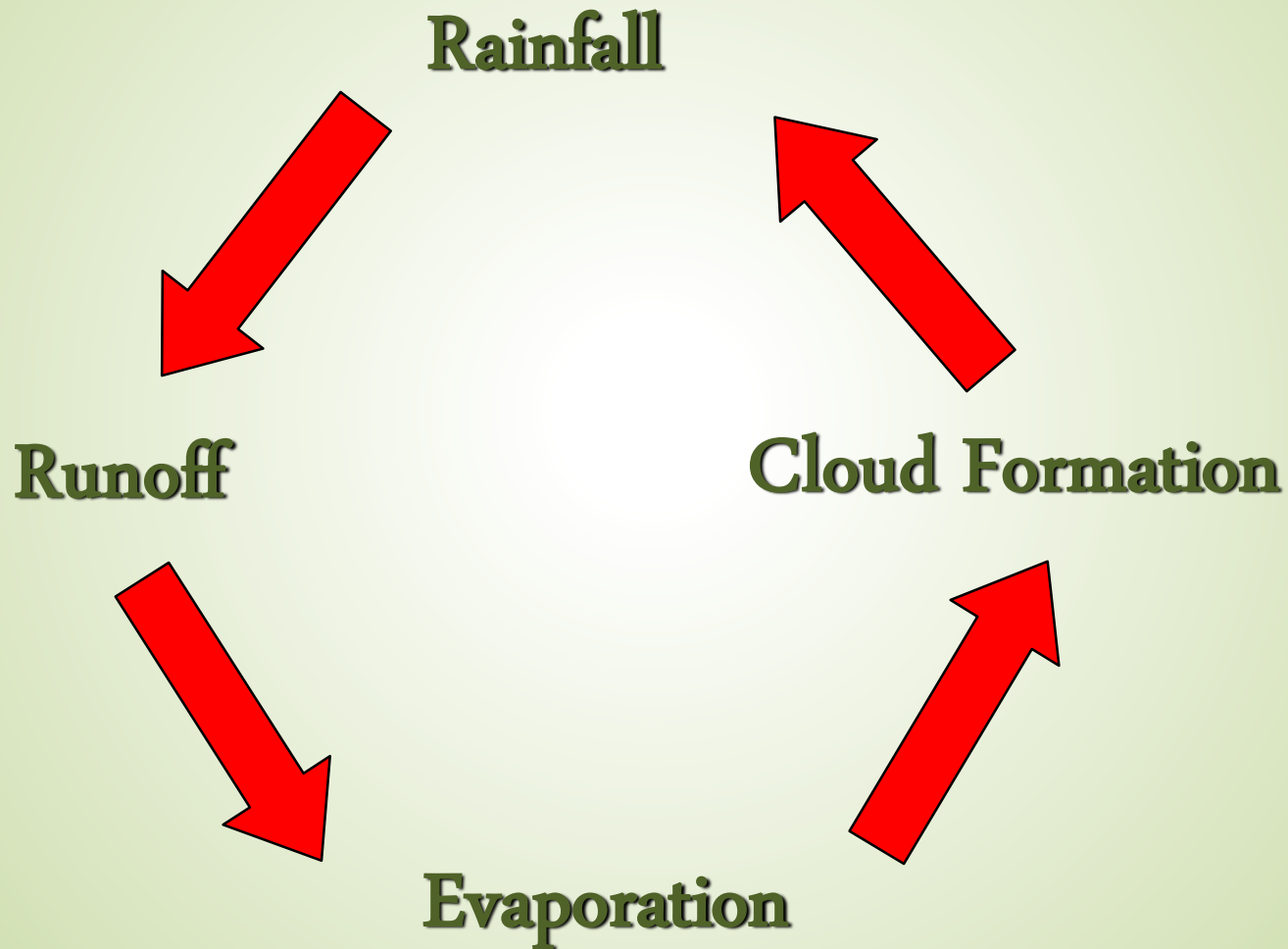


I get that there are complex and seemingly intractable historical, legal, financial, relational, organizational, operational, geographical, and metaphysical issues and hurdles.

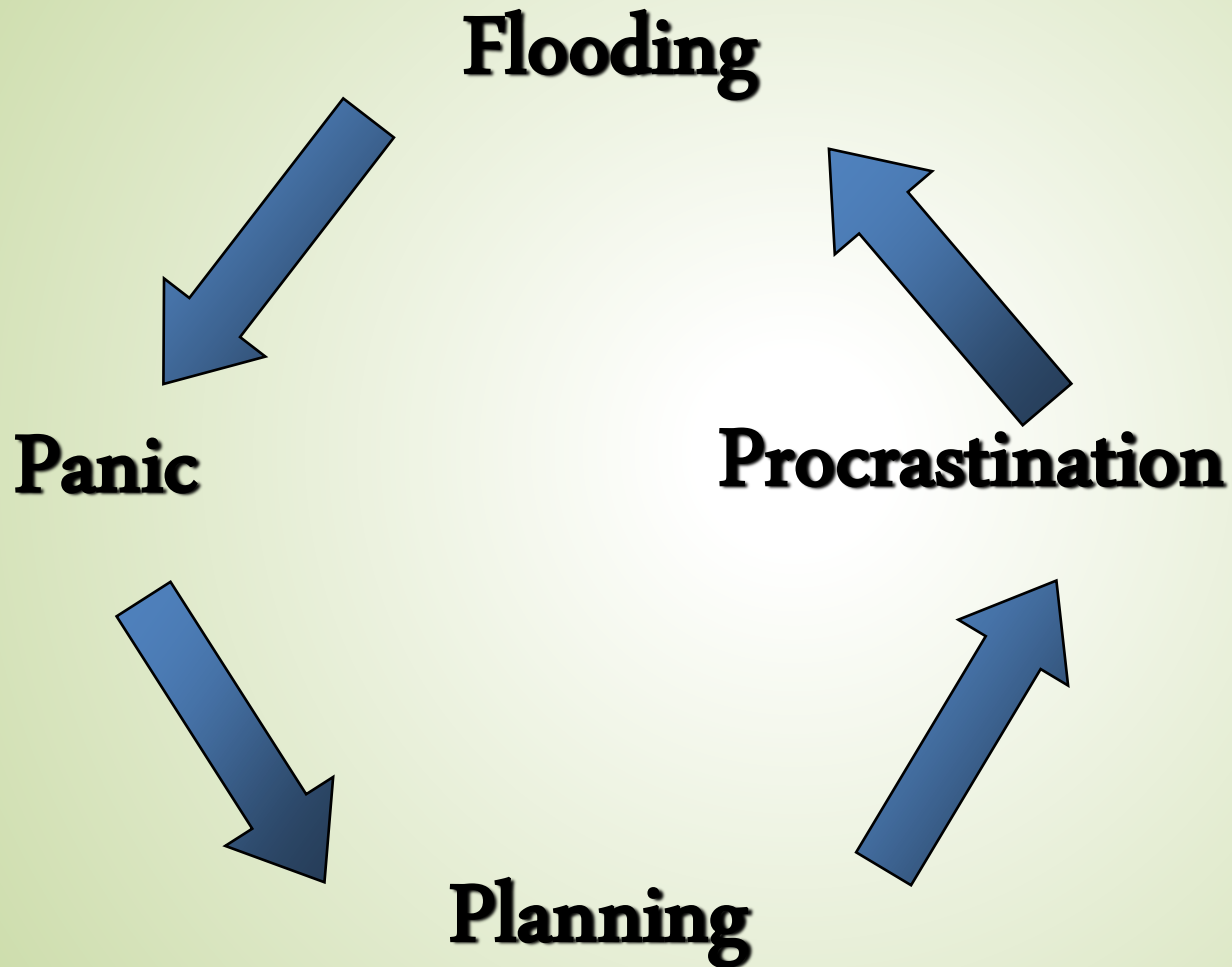
But I only have 73 ½ minutes left so...

... lets get to the cheese !!

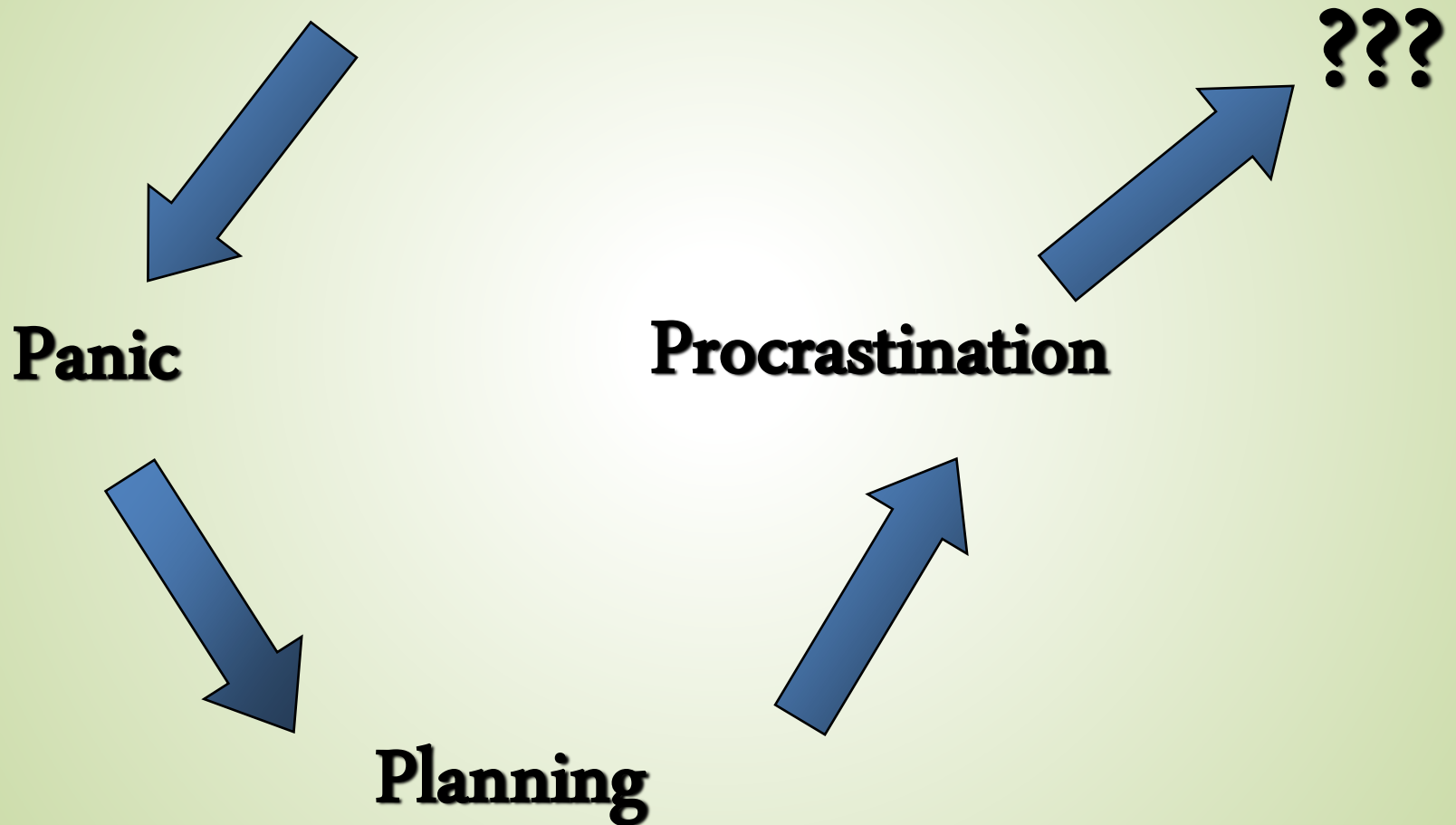
The Hydrologic Cycle



The Hydro-illogical Cycle



The Hydro-illogical Cycle



Its not just the flooding driver for local stormwater programs of course...



- ✓ **Flooding**
- ✓ **Aging infrastructure**
- ✓ **Expanded system responsibilities**
- ✓ **Reduced national or state assistance**
- ✓ **Development pressures**
- ✓ **Erosion of channels & creeks**
- ✓ **Water quality & ecology**
- ✓ **Regulatory mandates and/or lawsuits**
- ✓ **Preservation of property value**
- ✓ **Drinking water protection and replenishment**
- ✓ **Climate change and resiliency**
- ✓ **Drought and rainwater reuse**

There is another “driver”

"The rise of the Millennials"



TASTE THE LOVE

ORGANIC
FAIR TRADE
LOCALLY ROASTED
BEAUTIFULLY CRAFTED

**WSUD – hmmm... Organic? Check. Fair Trade? Check.
Locally Roasted? Check. Beautifully Crafted? Check.**



Andy Reese – US Experience – South Australia Ideas

wood.

[illegible]

- ## Andy Reese – US Experience – South Aust

So that other “driver”
has led to some amazing benefits of
WSUD or Green Infrastructure

Elmer Avenue Neighborhood Retrofit

Google “The Miracle on Elmer Avenue”



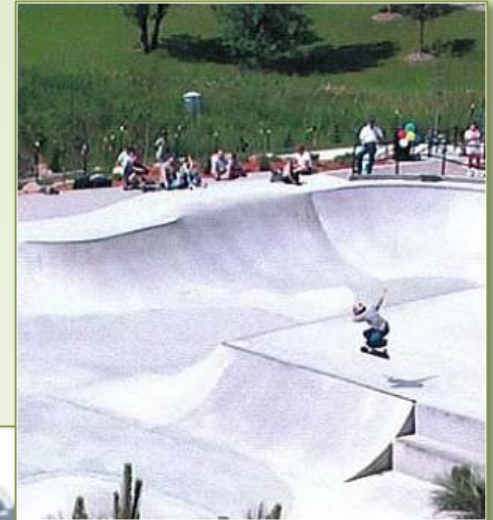
Before



After

South Denver Natural Urban Waterways

Creating public “ownership” of beautiful flowing water features with sustainability, flood control and recreation built in



Historic 4th Ward Park - Atlanta



Cracked asphalt and trash to glistening oasis generating > \$750M in new development within three blocks and saving the City \$15M vs. a tunnel.

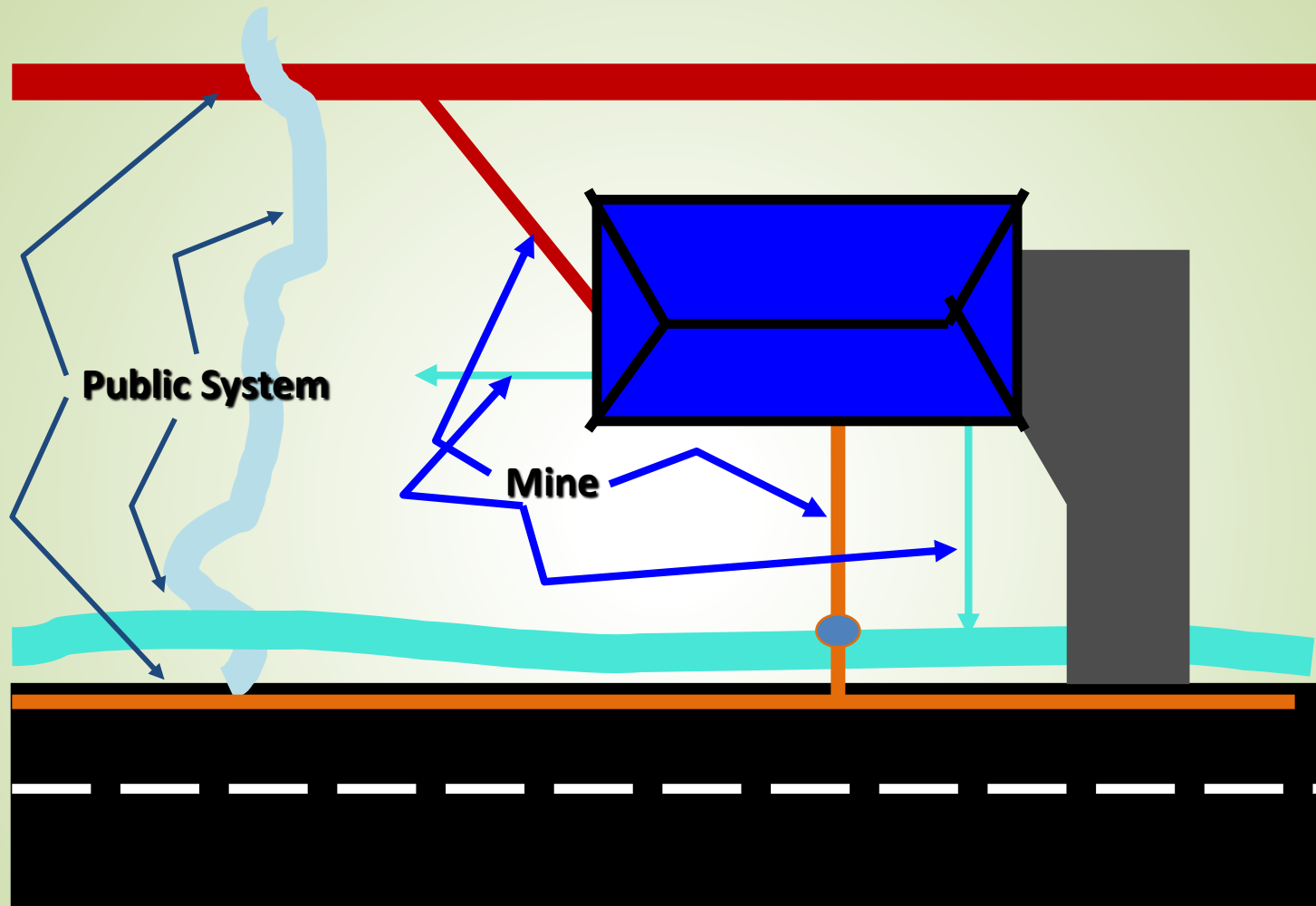
Its not easy to know where to start and what you are, in fact, starting...



So in the 1980's a few ideas began to gain traction with US local public works leaders.

Those ideas led to a radical transformation of stormwater in the USA in more than 3,000 local councils and regional governments.

Lets look at three of those ideas.



In every threesome in the movies...
The smooth one... the smart one ...and the “other one”



Stormwater

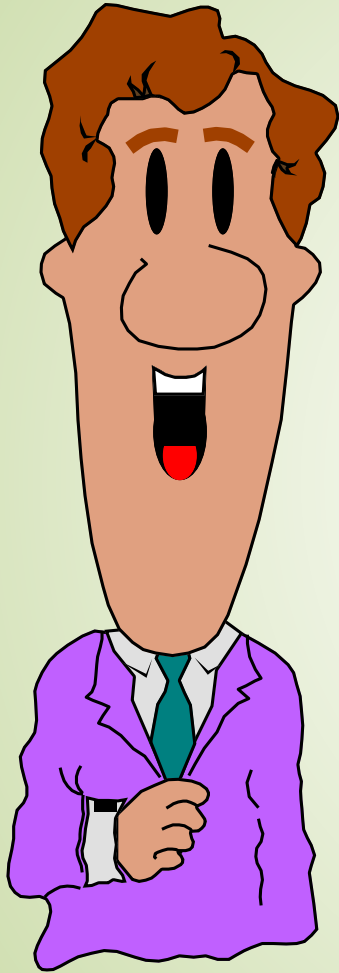


Stormwater, Its Time to Grow Up –



Get a job, get married, buy a house, and have kids like your older sibs wastewater and water supply.

Key Ideas

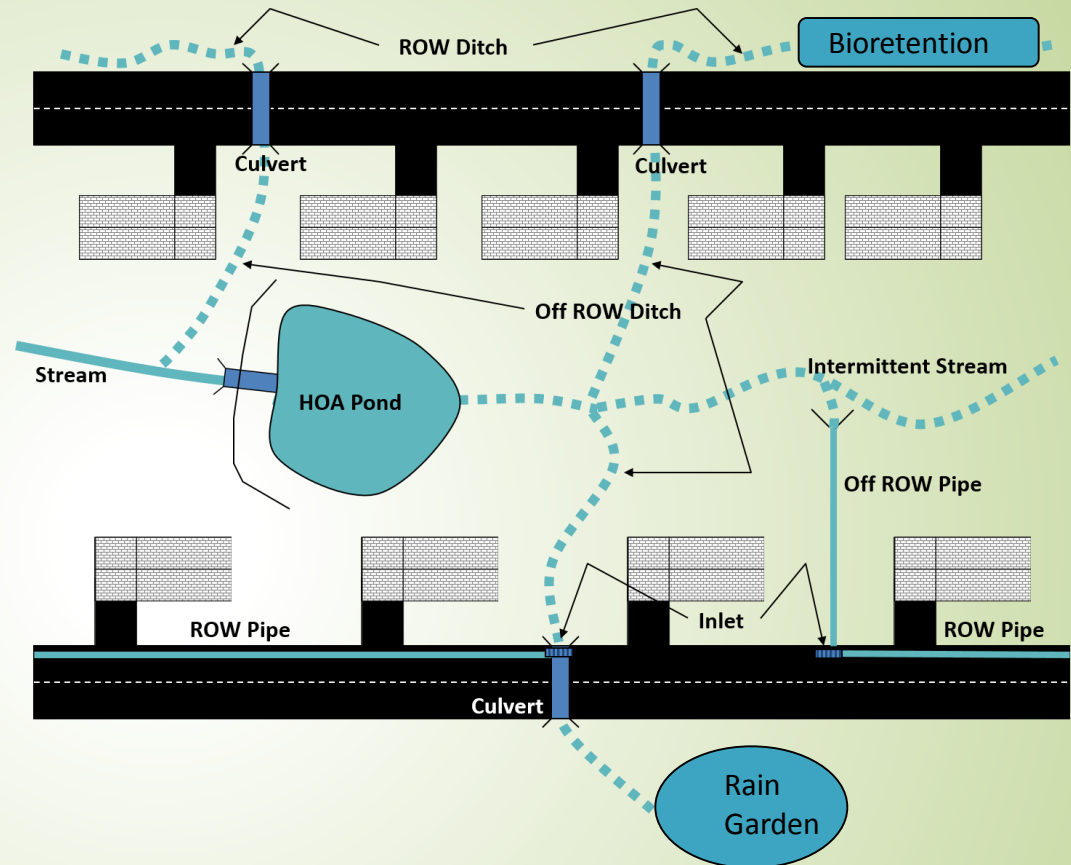


1. Stormwater is a system like water and wastewater

Stormwater is a connected public system

System, not Parcel or ROW, Thinking

- I own and/or operate a stormwater system.
- It starts from the first time public water enters my system.
- I begin to transform my program with balanced EOS, TOS and LOS policies

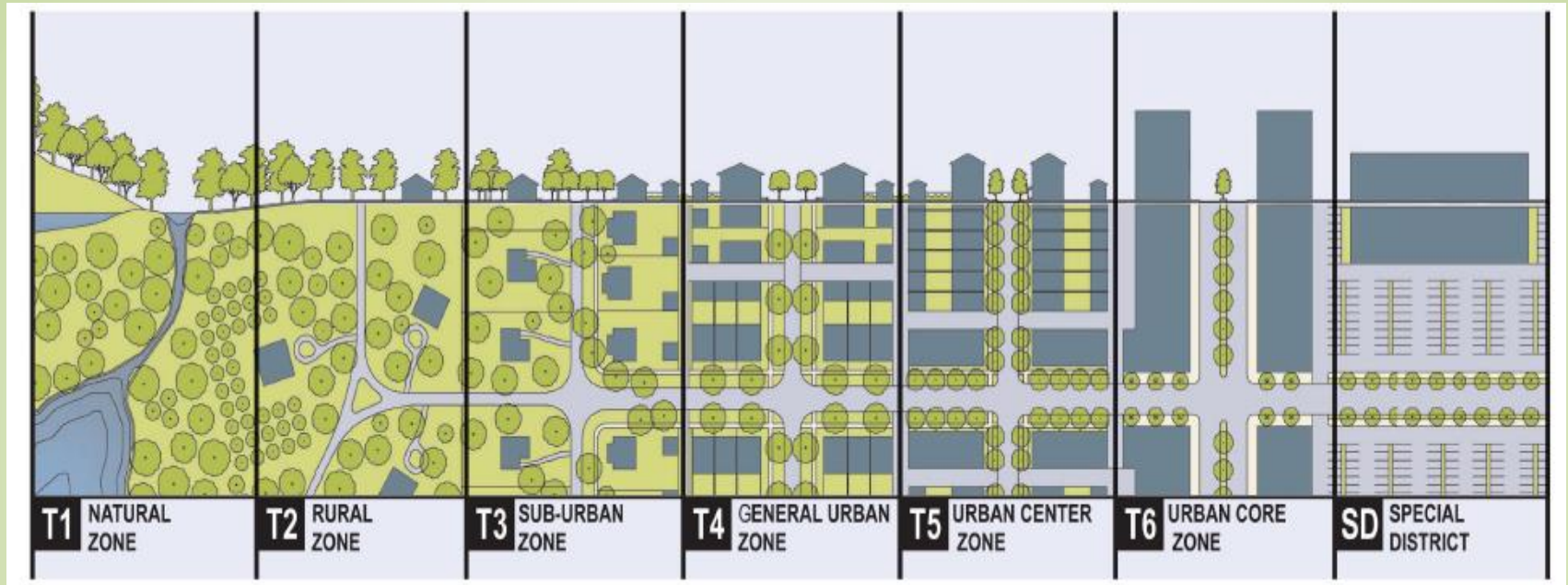


EOS - Where do I go?

TOS - What do I do when I get there?

LOS - How well do I do it?

Newer WSUD will look different in different places... fine!



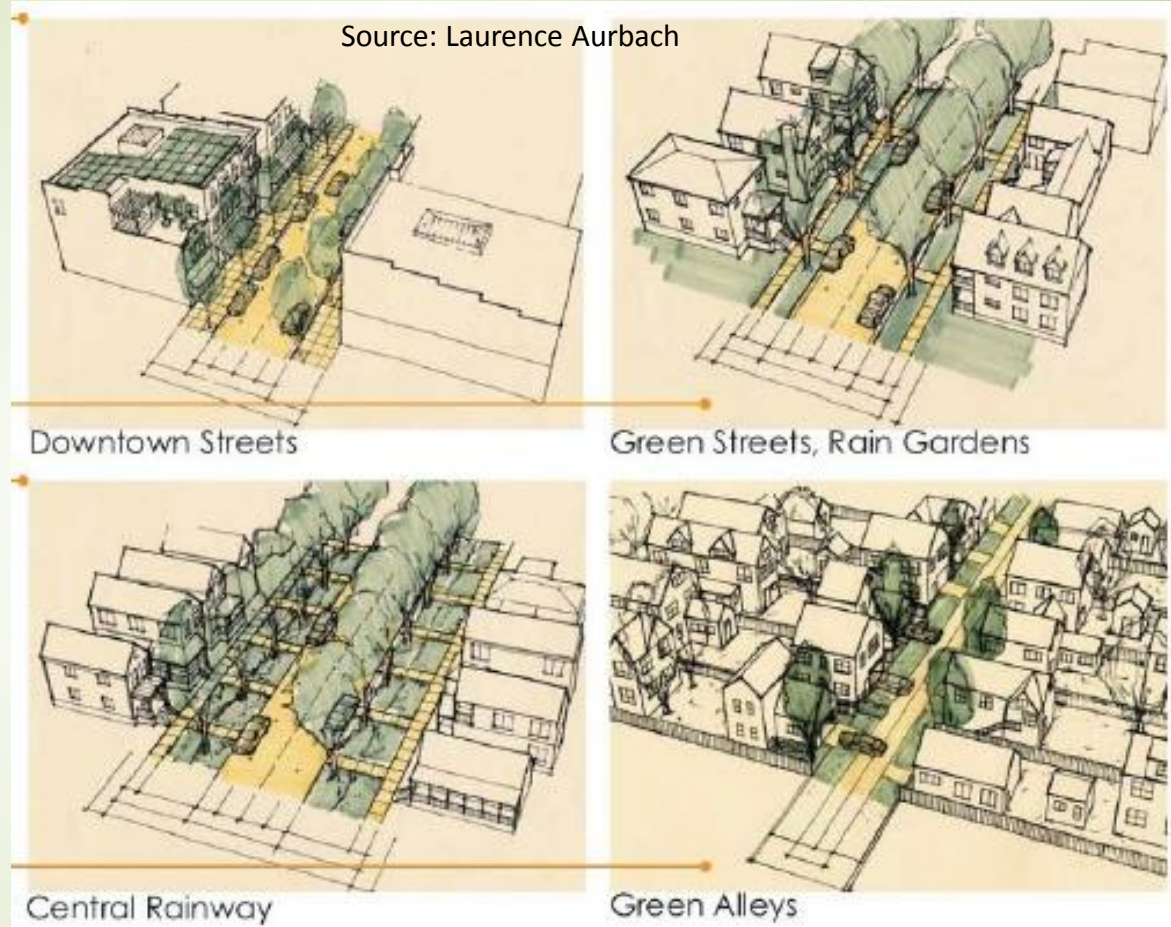
As we move from individual site-based controls to coordinated neighborhood consideration the cost and value of green and defining “floodplains” become more important and complex.

New stormwater concepts cause lines to begin to blur... fine

ROW as a Shared Resource

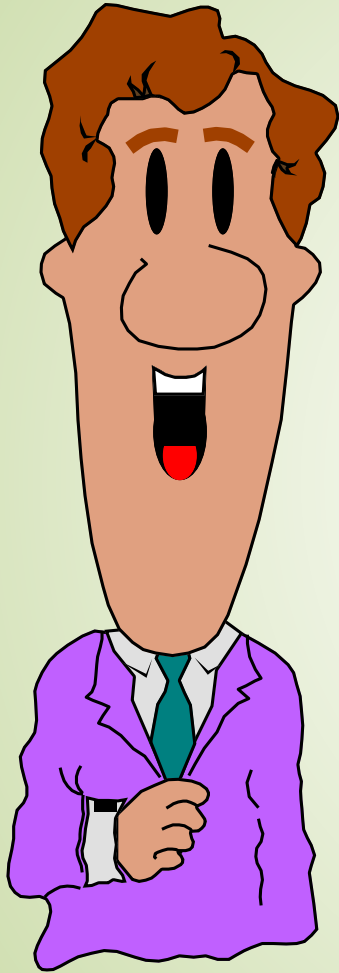
- The ROW is not a boundary it is a legal line whose use can be redefined.
- New WSUD development concepts blur the ROW line.
- Stormwater as an attractive resource.

Source: Laurence Aurbach




Roadways account for >1/3 of the runoff and far more % pollution

Key Ideas



1. Stormwater is a system like water and wastewater
2. Stormwater should be run in a comprehensive business-like manner with a business plan like...



**I've got a flooding
problem and I
want you to solve
it ... now !!**

So why is there flooding?

Flooding Problems

1. Clogged or damaged
2. Building location
3. Undersized system
4. More runoff
5. More rainfall - climate

1. Knowledge/Maint
2. Incomplete regs
3. Poor design
4. No impact assessment
5. Resilience steps

1. Authority structure
2. Master planning
3. Funding

Little political support
Little public knowledge

Joint vision & direction

We have found this sort of “5 Whys” logic development can serve as a basis for a structuring the program part of a business plan for stormwater management and this articulated set of needs drives the solutions.

Flooding Problems

1. Clogged or damaged
2. Building location
3. Undersized system
4. More runoff
5. More rainfall - climate

1. Clean & repair
2. Floodproof or remove
3. Upsize system
4. Effective detention
5. Resiliency

1. Knowledge/Maint
2. Incomplete regs
3. Poor design
4. No impact assessment
5. Resilience steps

1. Upgrade maintenance
2. Upgrade regulations
3. Integrated Criteria
4. Modelling tools
5. Resiliency program

1. Authority structure
2. Master planning
3. Funding

1. Joint agreements
2. Watershed plans
3. **SAFE Funding**

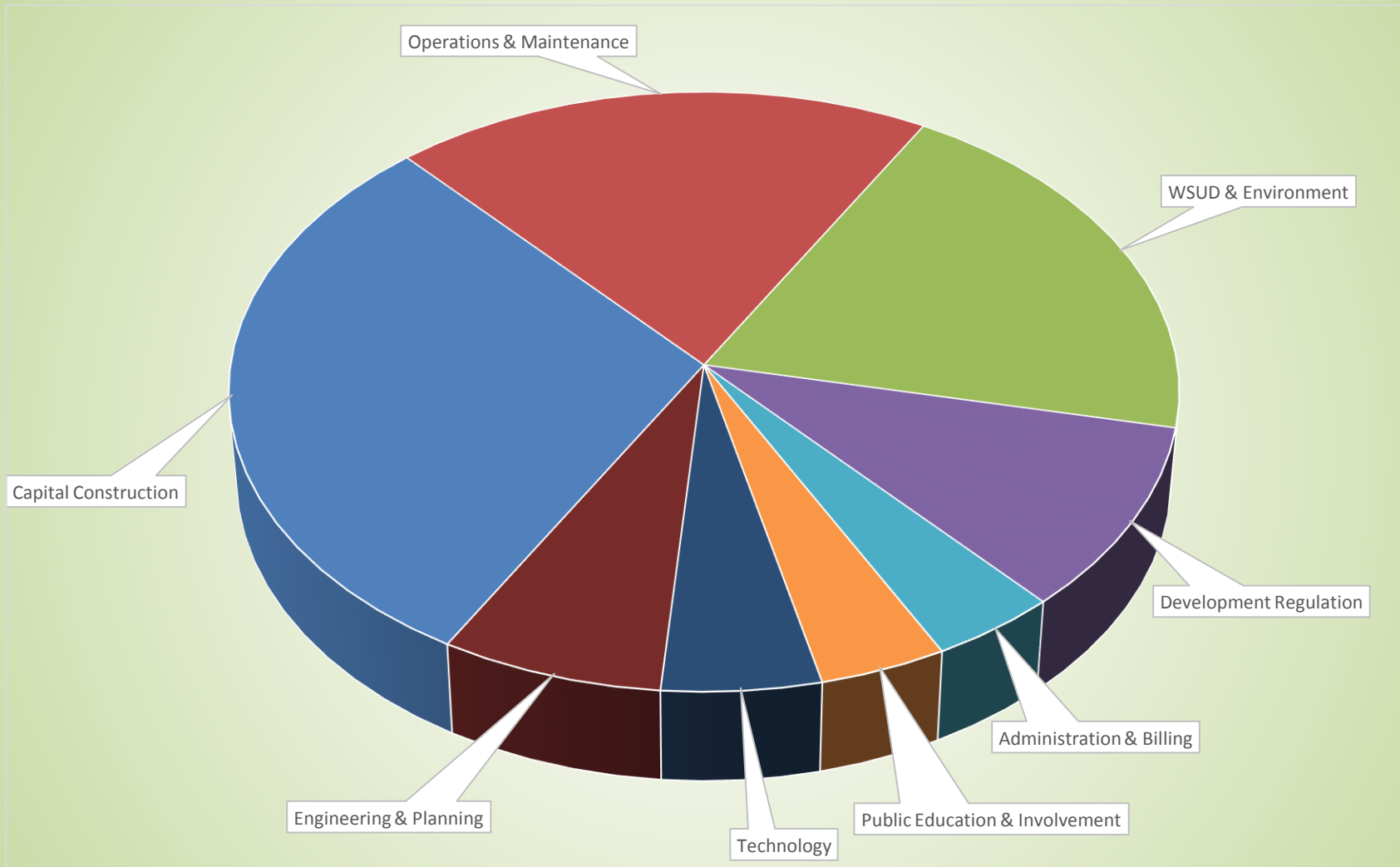
Little political support
Little public knowledge

Political education
PI&E program

Joint vision & direction

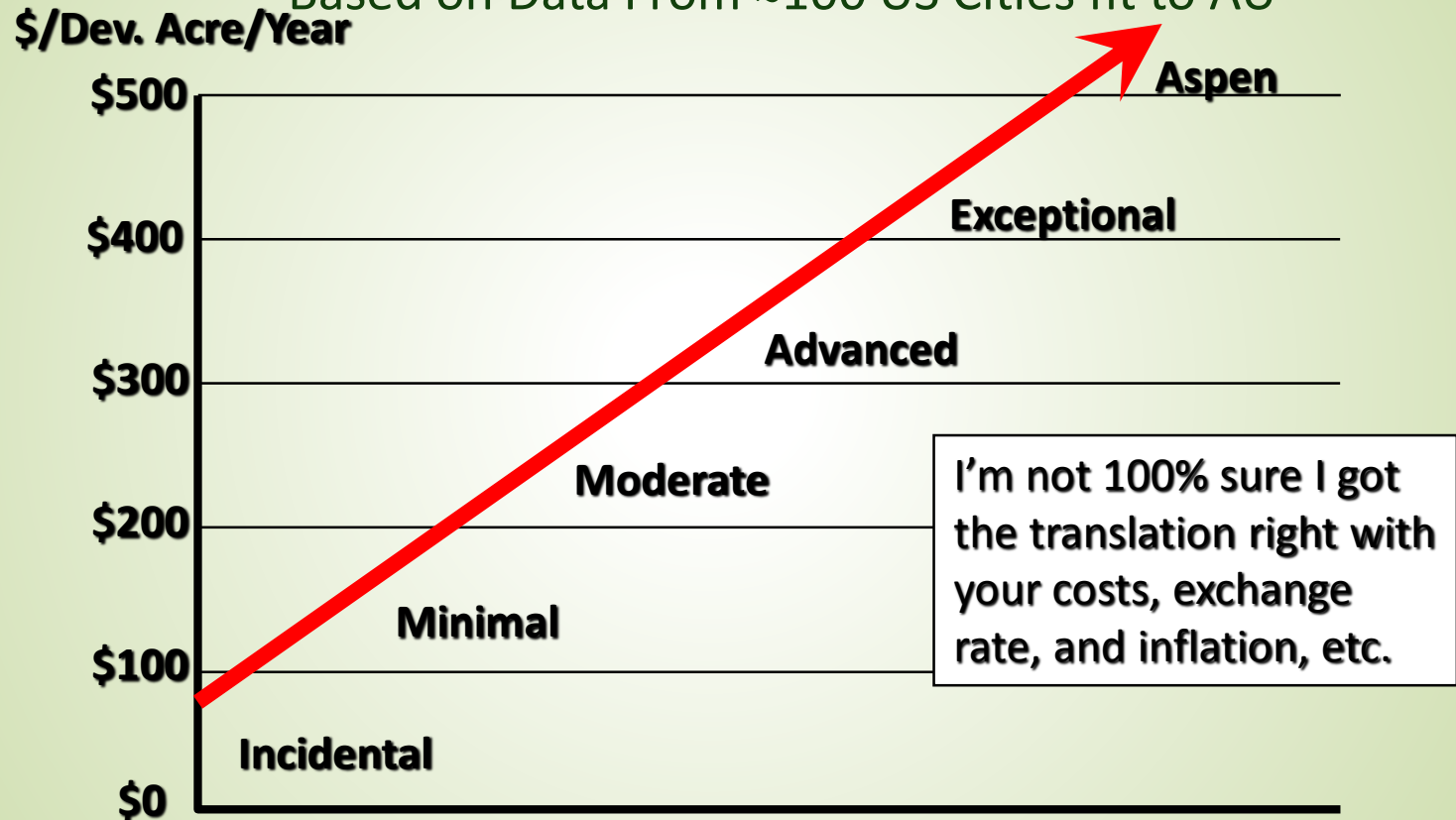
Business plan & champs

The “Business” of Stormwater



Stormwater Program Costs

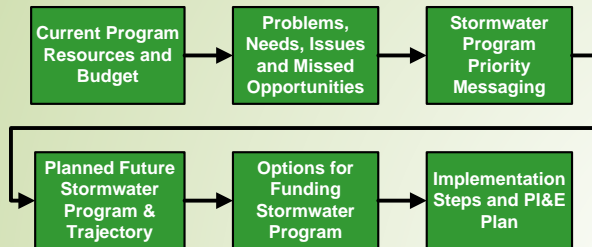
Based on Data From ≈100 US Cities fit to AU



The Business of Stormwater

- **A data driven biz plan drives my budget**

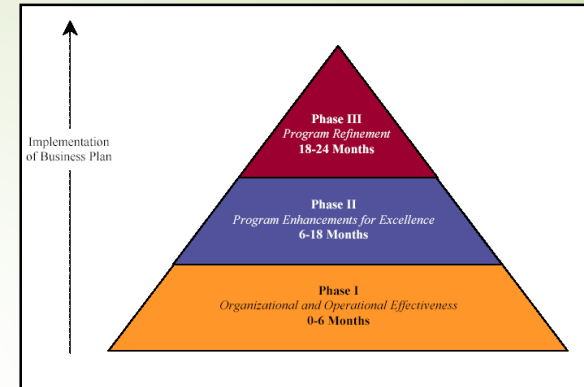
The “Does it Make Sense” Study



- **The Plan**

1. Who are we?
2. What’s going on now?
3. Where to we want to go?
4. How will we get there?
5. What is the time-frame and steps to make it happen?
6. What will it cost and how will we pay for it?

Business Planning



The “Balanced Scorecard”

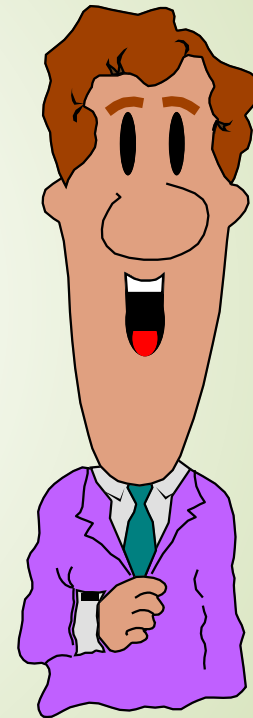
	Theme 1: Effective & Efficient Government	Theme 2: Social, Education, & Economic Opportunity	Theme 3: Community Health & Safety	Theme 4: Growth Management & Environment
<i>Perspective:</i>				
Customers				
Business Processes	Desired Outcomes			
Financial Value				
Learning & Capacities				

The Business Management of Stormwater

The scariest thing for a stormwater manager is to comprehensively look underground.

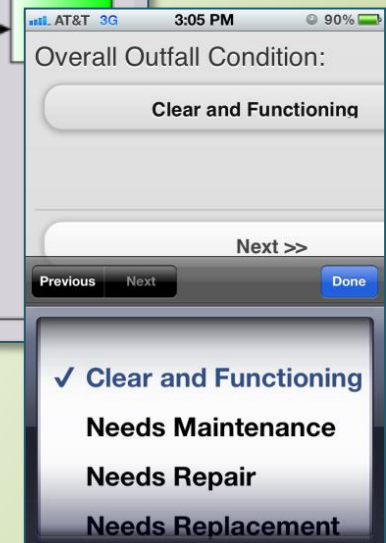
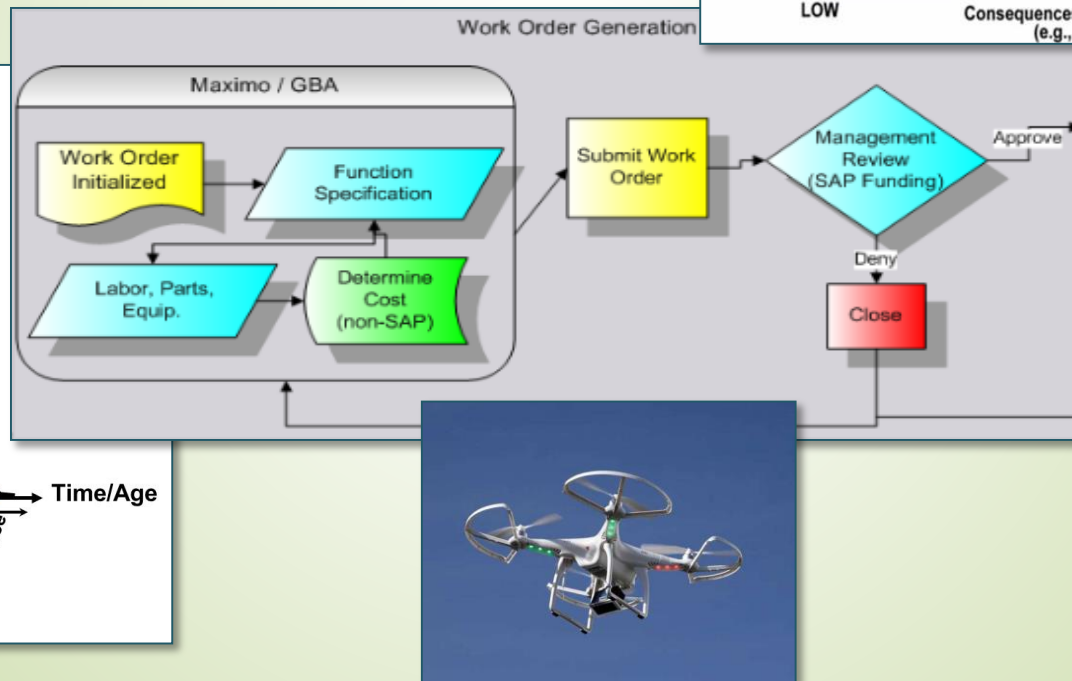
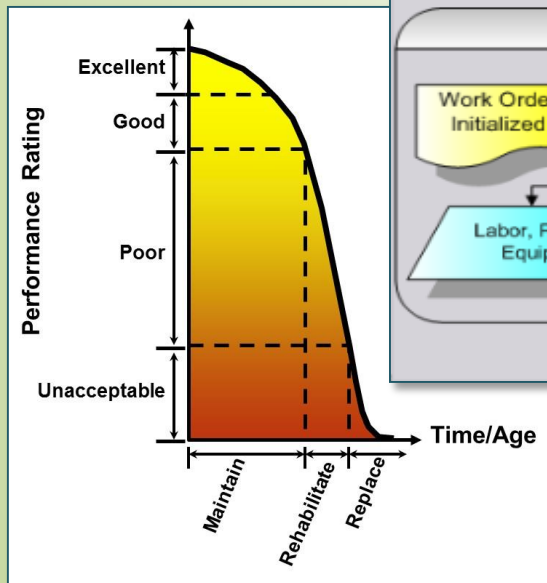
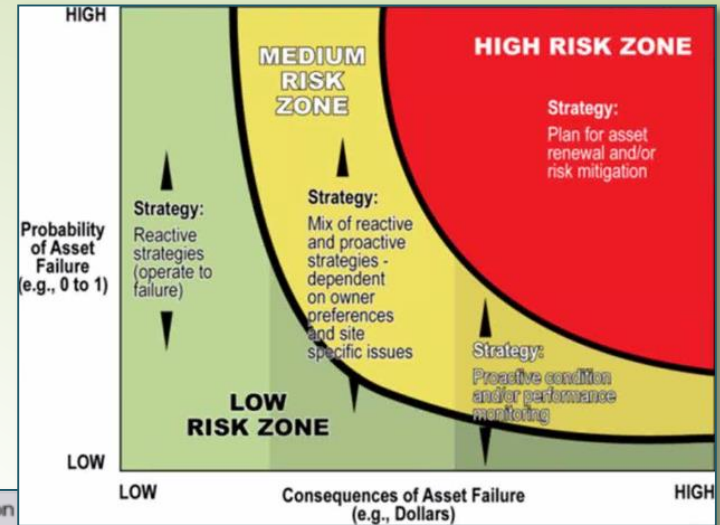
Aging infrastructure is the “sleeping giant” for most stormwater programs today.

Effective asset management can help stretch scarce dollars.



Leaders combine four things:

- 1. Maintenance Management*
- 2. Risk-Based Asset Assessment*
- 3. Work Order Management*
- 4. Innovations Everywhere*



A Few Recent Tech/Prog Innovations

- Drones for almost everything
- Real-time controls
- Micro-storage mapping within neighborhoods
- Floating outlet structures
- Neural water quality monitoring with dashboard remote input
- Real-time storm warning
- Under-street detention
- “Soft” assets
- CBP3 partnerships
- Data banks and on-line design tools
- Bioretention – Injection
- Stormwater distribution systems
- WSUD as a climate change resiliency system
- Two-way bioretention for undersized system relief
- Smart-phones for almost everything
- Simplified residential WSUD with “hardware store” components
- Side-channel systems for flood relief
- Continuous simulation models in real-time
- Urban soils as a codes issue

Innovative Partnerships

- **Private staffing with public control for cyclical needs**
 - Plans review
 - Site inspection
 - Small CIP
 - Permit activities
- **Private program management**
 - Small scale capital programs
- **Regional water organizations partner with local councils**
 - Help in funding collection
 - Incentivize local projects
 - Handoff at certain sized systems
- **Local councils band together to share programs**
- **CBP3 in its many forms**
 - Count on private sector efficiency and “step cutting” to reduce costs.
 - Funded by user fee
- **Non-Profit in GI**
 - Demonstration
 - Residential
 - Education
 - Public support for the green cause

Even multi-
council
partnerships



Innovative Public Engagement

Uninformed ➡ Passive ➡ Active ➡ Sustaining

1

INCLUSIVE PLANNING

The planning and design of a public engagement process includes input from appropriate local officials as well as from members of intended participant communities.

2

TRANSPARENCY

There is clarity and transparency about public engagement process sponsorship, purpose, design, and how decision makers will use the process results.

3

AUTHENTIC INTENT

A primary purpose of the public engagement process is to generate public views and ideas to help shape local government action or policy, rather than persuade residents to accept a decision that has already been made.

4

BREADTH OF PARTICIPATION

The public engagement process includes people and viewpoints that are broadly reflective of the local agency's population of affected residents.

5

INFORMED PARTICIPATION

Participants in the public engagement process have information and/or access to expertise consistent with the work that sponsors and conveners ask them to do.

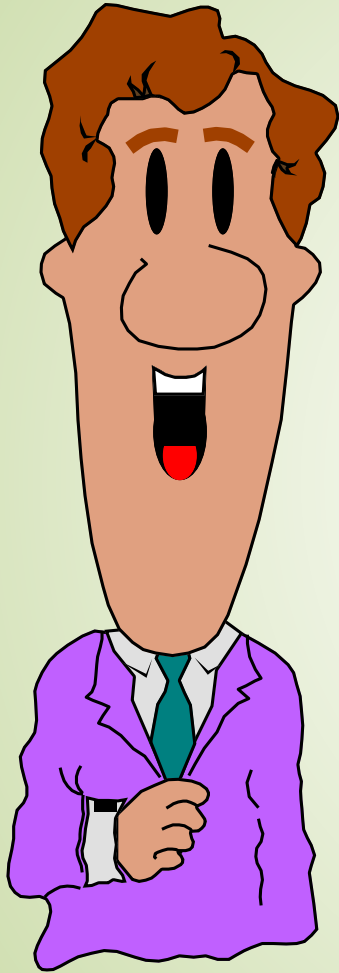
6

ACCESSIBLE PARTICIPATION

Public engagement processes are broadly accessible in terms of location, time, and language, and support the engagement of residents with disabilities.

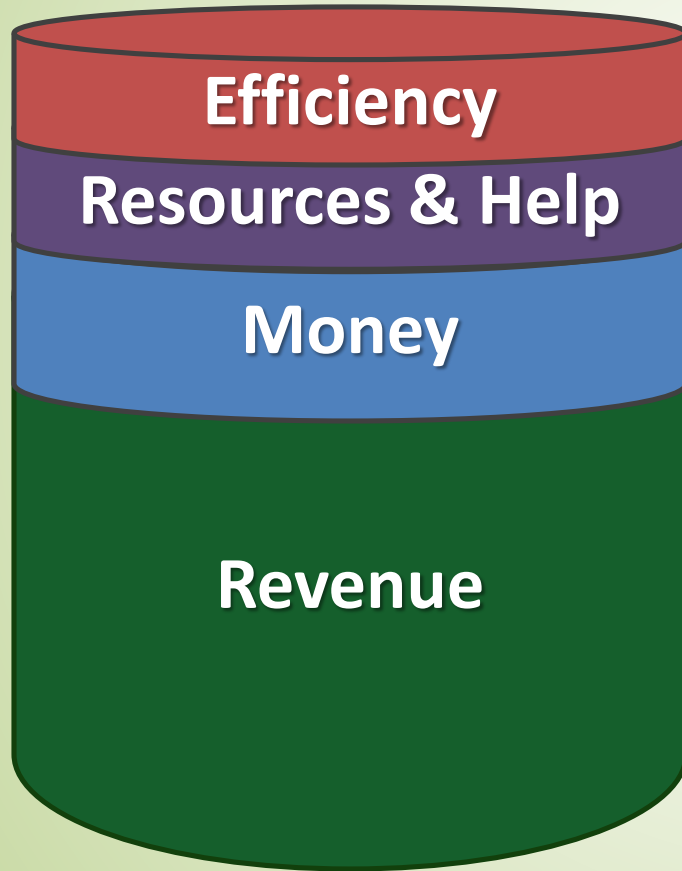
Source: Institute for Local Government

Key Ideas



1. Stormwater is a system like water and wastewater
2. Stormwater should be run in a comprehensive business-like manner with a business plan like...
3. To be effective you need diverse funding strategies centered around “SAFE” revenue like...

>200 “funding” methods and most fall into four buckets:



- **Efficiency** – technological, operational, financial changes that reduce overall costs, asset management – *same program costs less*
- **Resources** – others perform some of your program or provide non-monetary goods – *same program but I do less*
- **Money** – one-time, limited, dependent on a trigger – *same program or targeted expansion with some help some of the time*
- **Revenue** – regular, predictable, budgeted, flow of financial resources – *“rightsized” program with sufficient funding and multiple innovations like...*

The question we always come to is: “How much of this can you cover with efficiencies, resources & money?”

1. Administration

- General Administration
- Gen Prog Planning & Dev
- Interlocal Coordination
- Grants Program

2. Billing And Finance

- Billing Operations
- Customer Service
- Financial Management
- Indirect Cost Allocation
- General Government Support

3. Public Ed & Involvement

- Public Awareness
- SW Qual Ed & Reporting
- Public Involvement
- Citizen's Advisory Group
- Non-profit Integration
- Media Relations
- Risk Communications

4. Technical Support

- GIS Applications
- Database Management
- Mapping & Imagery
- General Data Collection
- Web & Customer Support

5. Engineering & Planning

- Des Criteria, Stds And Guidance
- Field Data Collection
- Quantity Master Planning
- Quality Master Planning
- Design, Field & Ops Engr
- Retrofitting For Water Quality
- Hazard Mitigation
- Zoning Support
- Multi-objective Planning Support
- WSUD
- Climate change and resiliency

6. Operations & Maintenance

- General Maintenance Mgmt
- General Routine Maintenance
- General Remedial Maintenance
- Emergency Response Maint
- Infrastructure Management
- Public Assistance

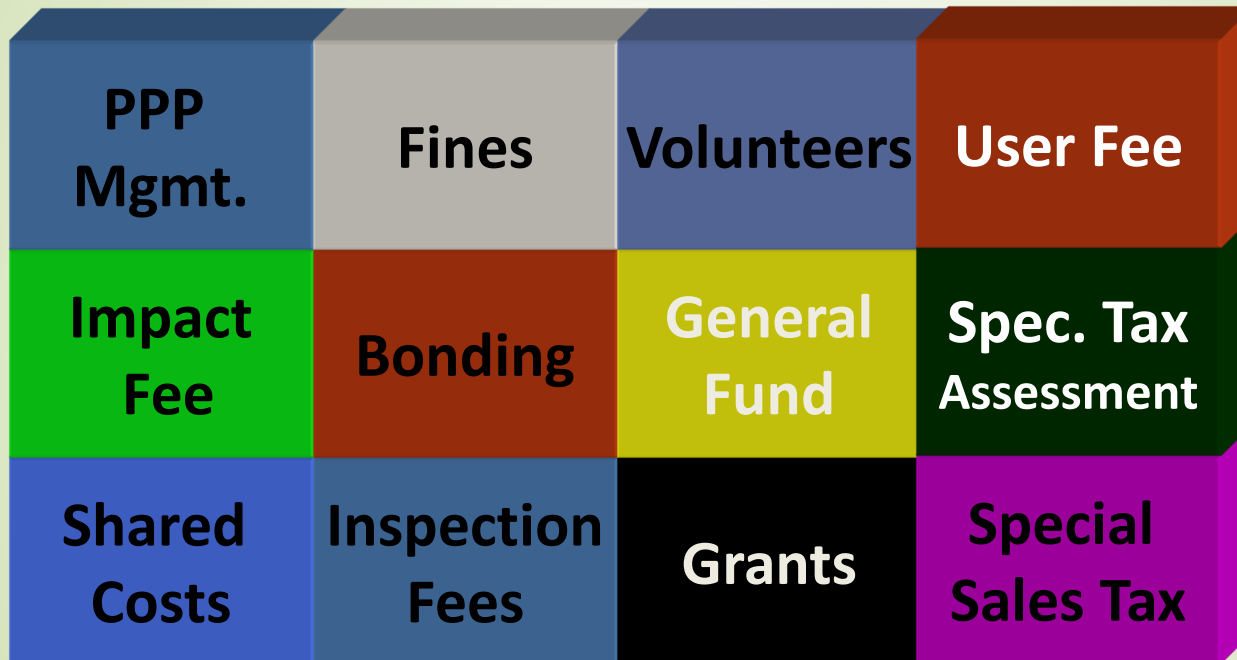
7. Capital Improvements

- Major Capital Improvements
- Minor Capital Improvements
- Land, Easement, And ROW
- Public-Private Partnerships

8. Regulation And Enforcement

- Code Dev & Enforcement
- General Permit Administration
- Drainage Sys Insp & Reg
- Zoning & Land Use Reg
- Special Inspection Programs
- Flood Insurance Program
- Multi-Obj Floodplain Mgmt
- Erosion Control Program
- Pest, Herb & Fertilizer
- Used Oil & Toxic Materials
- Spill Response & Clean Up
- Illicit Con & Illegal Dumping
- Groundwater & Drinking Water
- Watershed Assessment & TMDL
- Septic & I&I Program
- Industrial Program
- Monitoring

Building Blocks for Funding and Financing



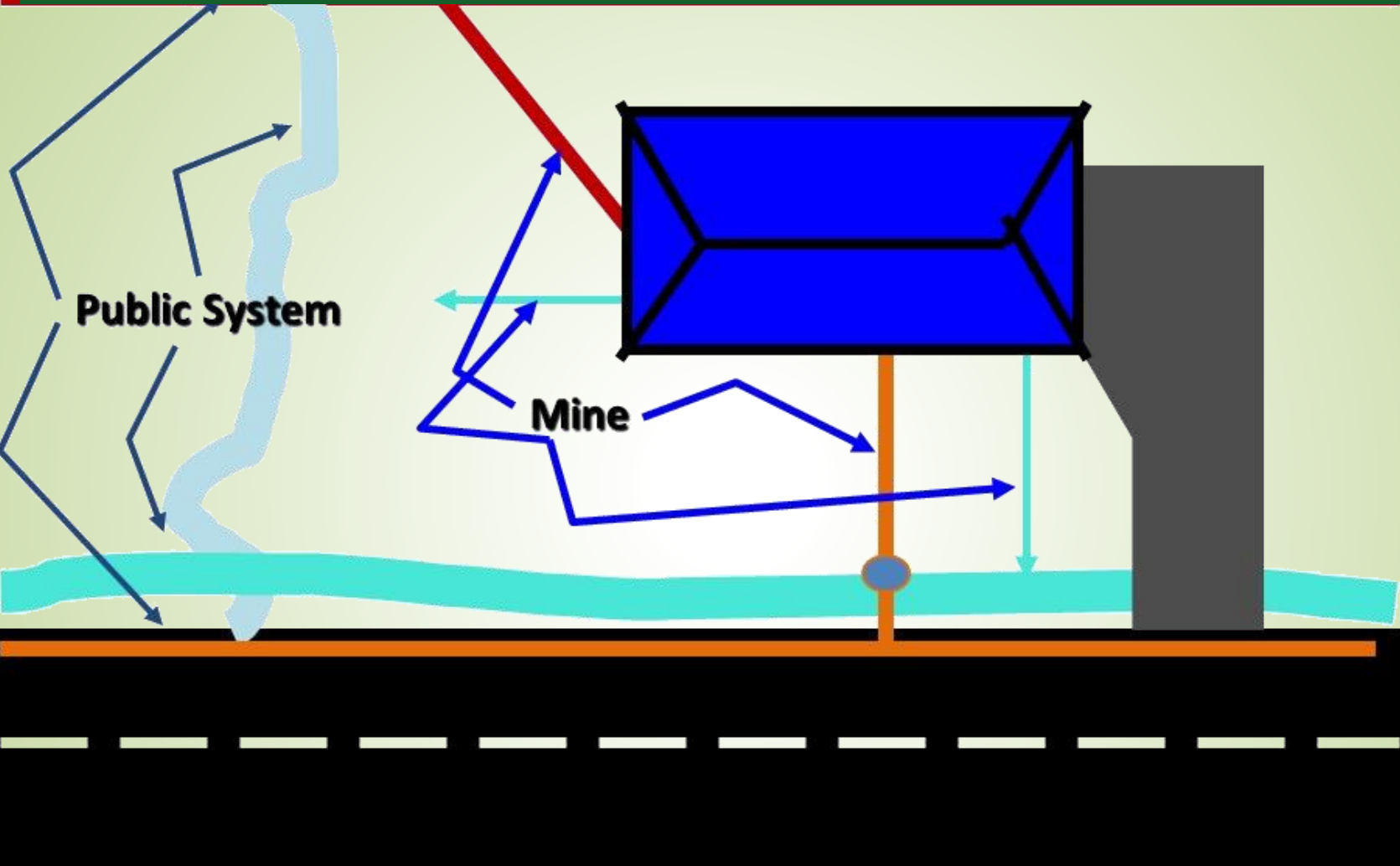
This is the most important thing I will say...

The single most important transformational change was a shift to local and/or regional user-fee funding for the bulk of the stormwater program... like water and sewer.

(i.e. the wild child gets a job)

andy talk state and money

Stormwater (the “other one”) is a “private good” like water and sewer



Two Primary Revenue Sources

✓ Taxes (Rates)

- Primary revenue generator
- No mandatory association with specific activities
- Based on property value

✓ Service Charge (Charges)

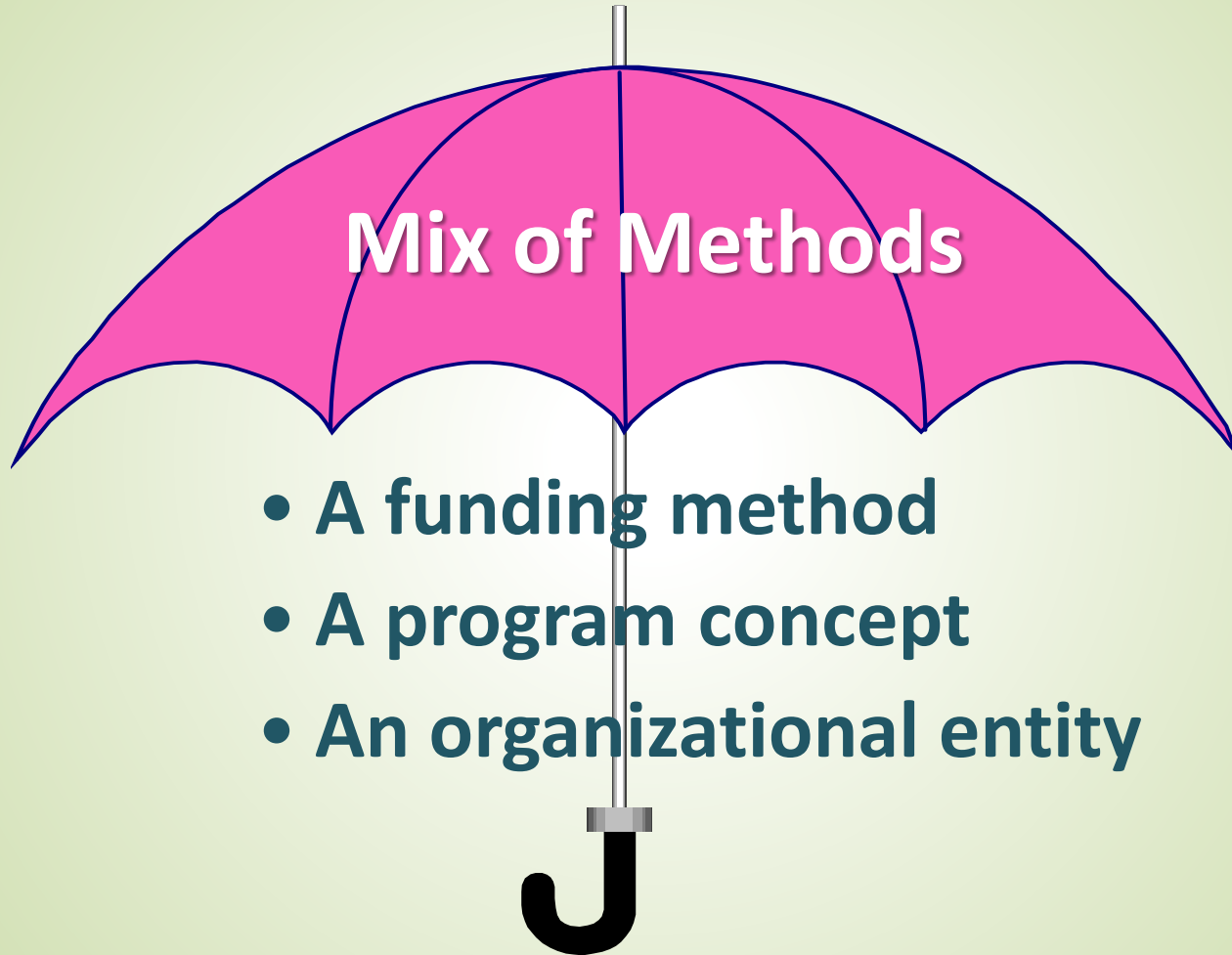
- Tied to objective or program
- Fee level based on provision and use of goods & services

Would I pay a water bill on the basis of property value?

*Then if stormwater is a private good
why would I pay for stormwater on that basis?*

What Is a Stormwater Utility?

First of all...it is Revenue.



Advantages of a Stormwater Utility to Fully Support Programs

Look right here:
“no new taxes”

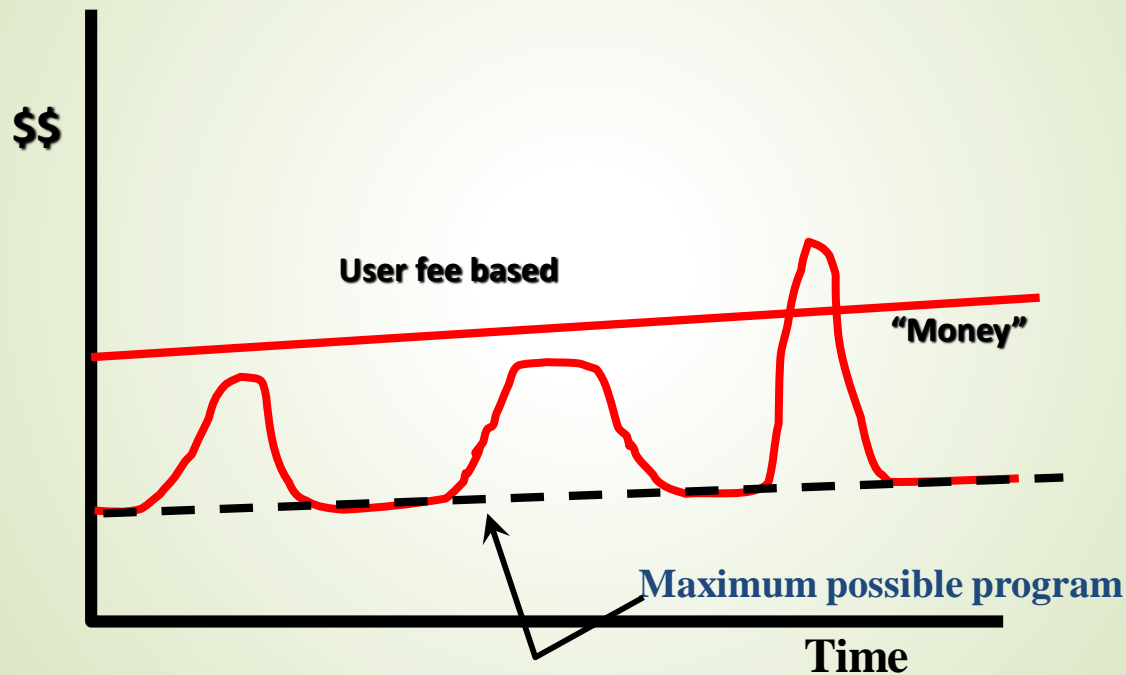


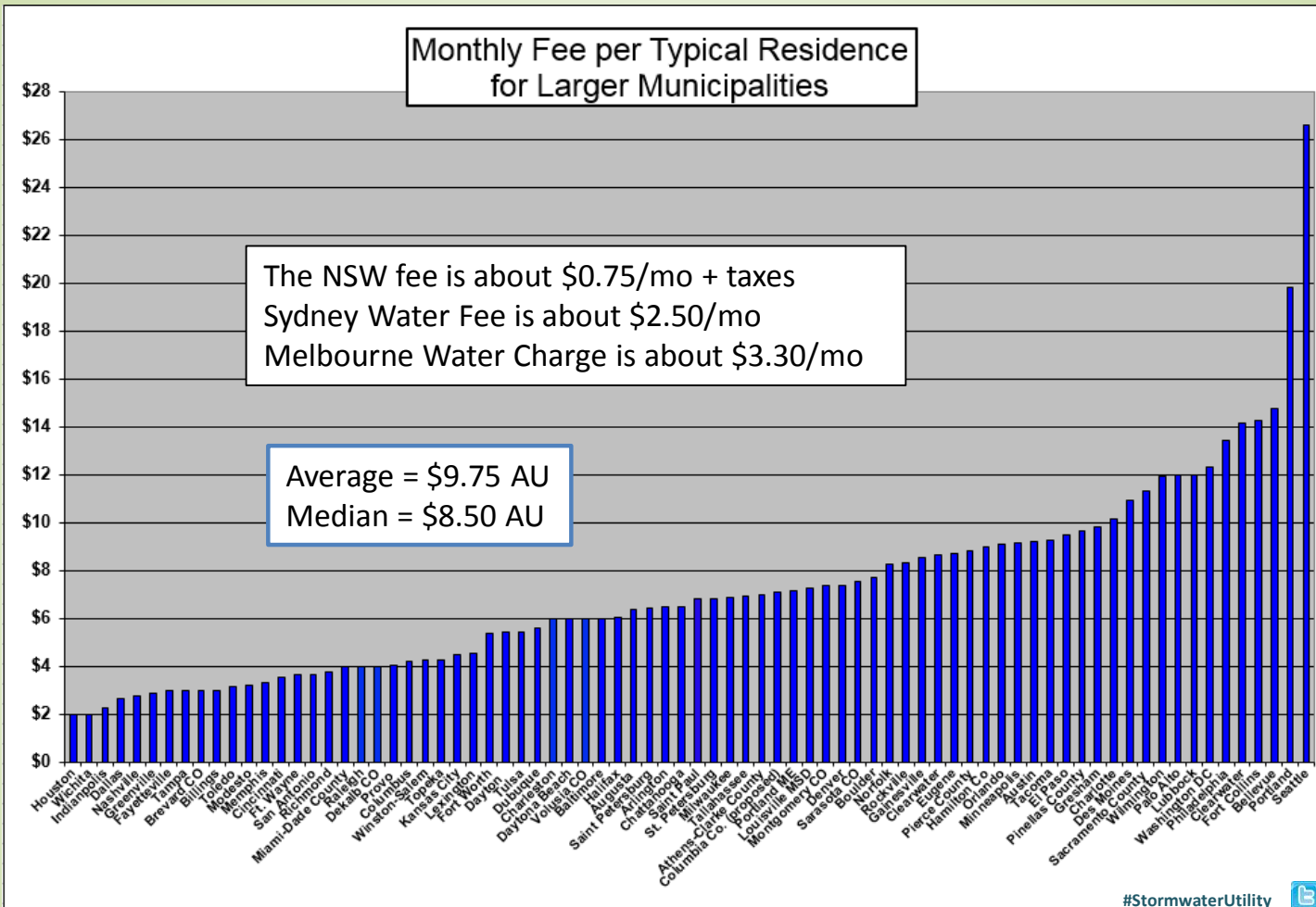
Stable
Adequate
Flexible
Equitable

Stable

This is a charge not a rate!!!

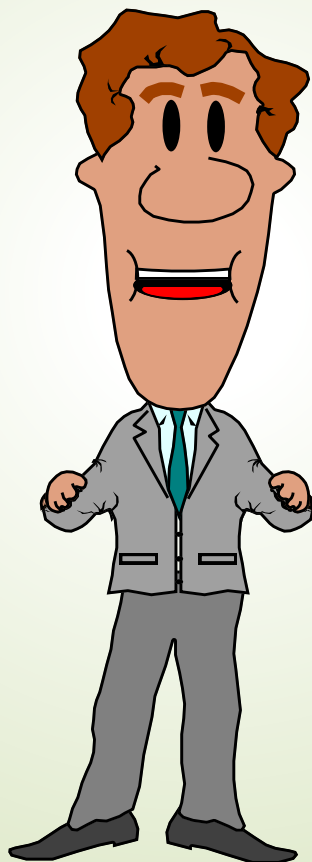
Utility vs. Tax or “Money” Funding





Adequate

Okay - tell me when you start to feel this would be too much to charge per month for a residential property to solve scarcity, flooding, infrastructure and pollution problems where you live



\$ 2

\$ 4

\$ 6

\$ 8

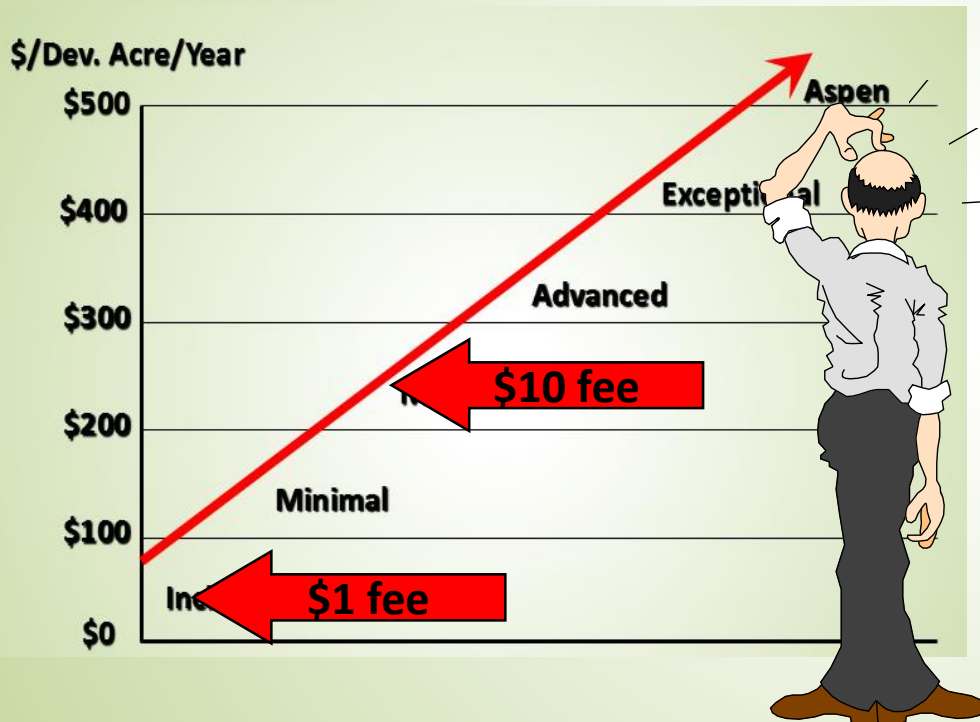
\$ 10

\$ 12

Adequate

Danger #1 If you start with a “low, low introductory offer” you will have hell to pay to increase it.

Danger #2 If you pay with taxes and a fee, taxes will start to disappear and you will be stuck with too low a fee.



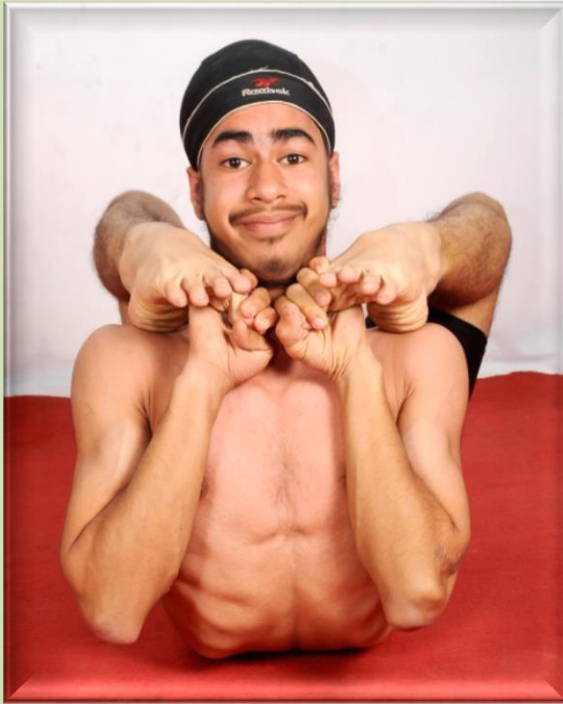
For every \$1 per month per residence (and proportional fees to non-residences)

A user fee approach can typically generate about \$25 to \$40 per urbanized acre per year depending on density and land use make up.

Rough Revenue Estimates

Urban Area	Estimated 2018 Population	Area SQ K	\$1.00	\$3.00	\$5.00	\$8.00
Sydney	4,749,182	12,368	\$ 60,322,000	\$ 180,966,000	\$ 301,610,000	\$ 482,576,000
Melbourne	4,617,337	2,664	\$ 59,204,500	\$ 177,613,500	\$ 296,022,500	\$ 473,636,000
Brisbane	2,334,066	15,842	\$ 28,734,000	\$ 86,202,000	\$ 143,670,000	\$ 229,872,000
Perth	2,119,935	6,418	\$ 25,668,000	\$ 77,004,000	\$ 128,340,000	\$ 205,344,000
Adelaide	1,328,115	3,258	\$ 16,805,000	\$ 50,415,000	\$ 84,025,000	\$ 134,440,000
Gold Coast/Tweed	660,163	414	\$ 8,215,000	\$ 24,645,000	\$ 41,075,000	\$ 65,720,000
Canberra/Queanbeyan	441,483	814	\$ 4,974,000	\$ 14,922,000	\$ 24,870,000	\$ 39,792,000
Hobart	212,895	1,695	\$ 2,760,500	\$ 8,281,500	\$ 13,802,500	\$ 22,084,000
Albany	35,580	297	\$ 462,000	\$ 1,386,000	\$ 2,310,000	\$ 3,696,000

Infinite Flexibility



- 2,500 stormwater utilities in the USA and almost no two are exactly alike.
- You can accommodate almost any arrangement, need, credit, organizational structure, political conundrum, and weird thing within a legal and effective rate structure.

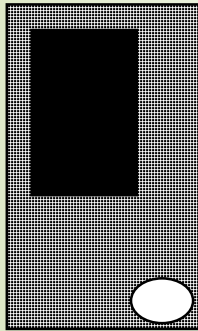
Flexible: No two are the same

– fits any local or financial structure

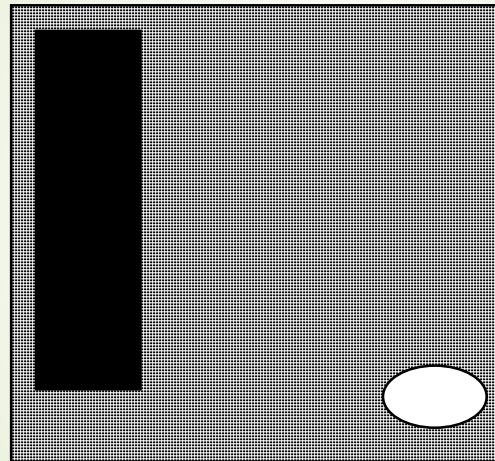
1. Some organization(s) need to do stormwater
 - Local Govt alone
 - Water organization with Local Govt partners
2. I need to be able to send a bill to all beneficiaries of the service
 - Urban area special stormwater district
3. The rate structure needs to fit the needs and limitations
 - Local Govt or Water organization with private partner

It is Equitable

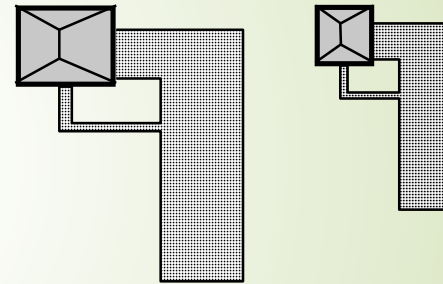
Based on a rational nexus measure of “use” of the public system and/or program benefits. Mostly impervious area but can be other factors as well.



Fast Food
\$150/mo.
less credit



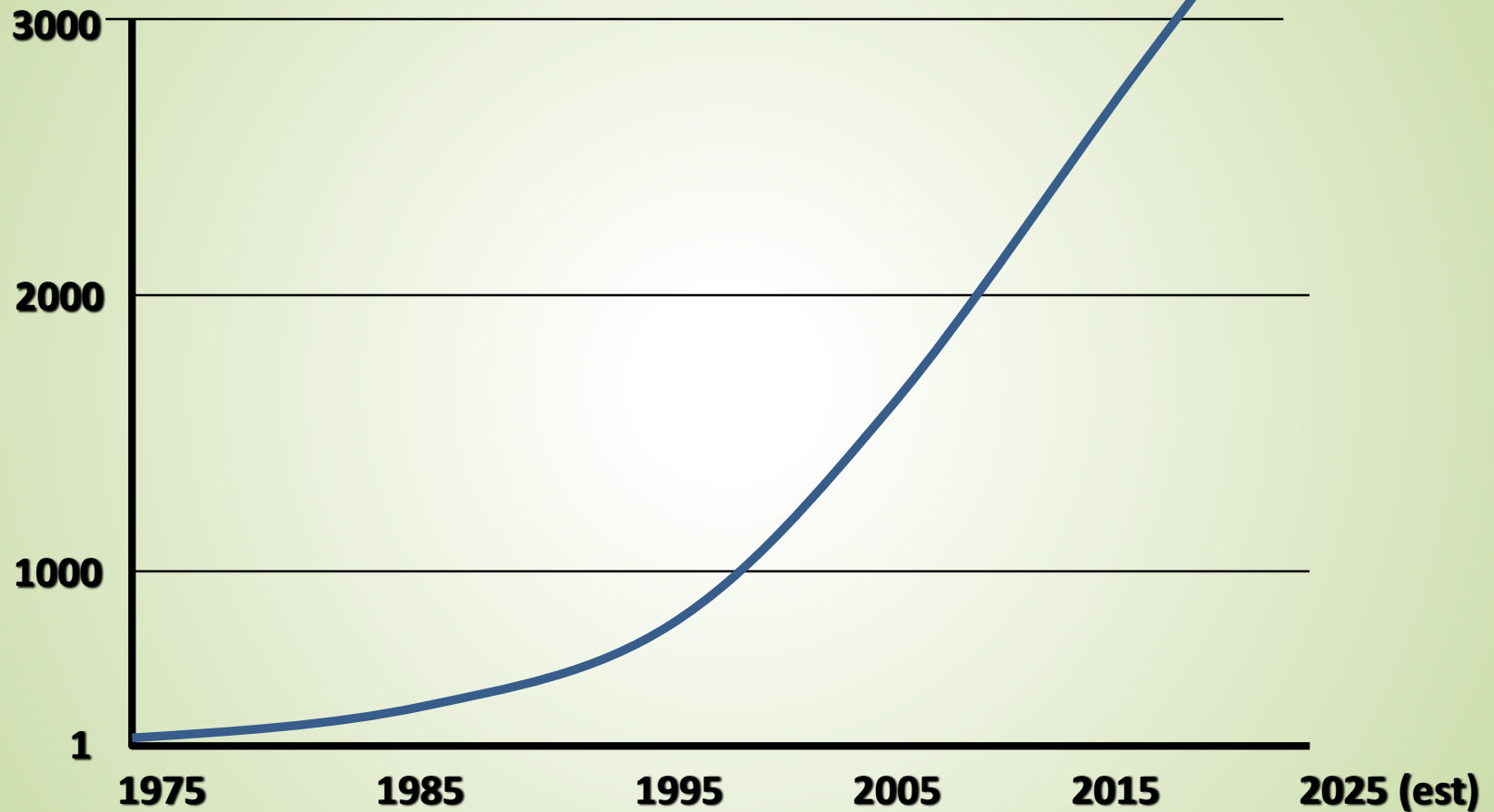
60,000 sq m shopping
\$3,000/mo.
less credit



2 tiers residential

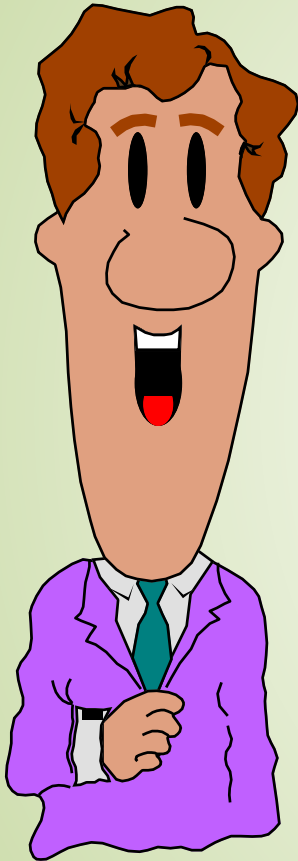
Large Res. Small Res.
\$12.00/mo. \$6.00/mo.

Number of Stormwater Utilities



Wait! Can I even do this?!

1999 Local Government Act Section 155



155—Service rates and service charges

(1) In this section—

prescribed service means any of the following services:

- (a) the treatment or provision of water;
- (b) the collection, treatment or disposal (including by recycling) of waste;
- (ba) a television transmission (or retransmission) service;
- (c) any other service prescribed by the regulations for the purposes of this definition.

(2) A council may impose—

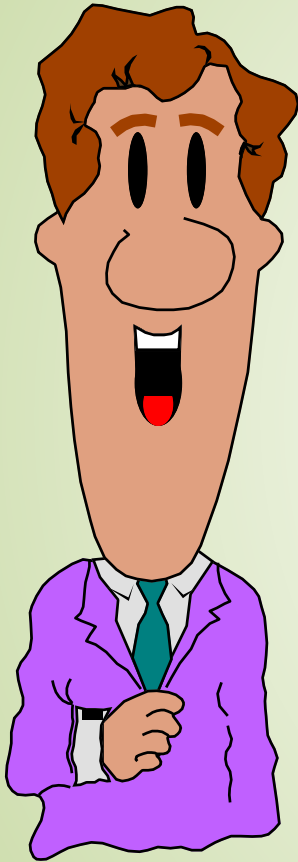
- (a) a service rate, an annual service charge, or a combination of a service rate and an annual service charge, on rateable land within its area to which it provides, or makes available, a prescribed service;
- (b) an annual service charge on non-rateable land to which it provides, or makes available, a prescribed service.

(2a) Subsection (2) does not apply in prescribed circumstances.

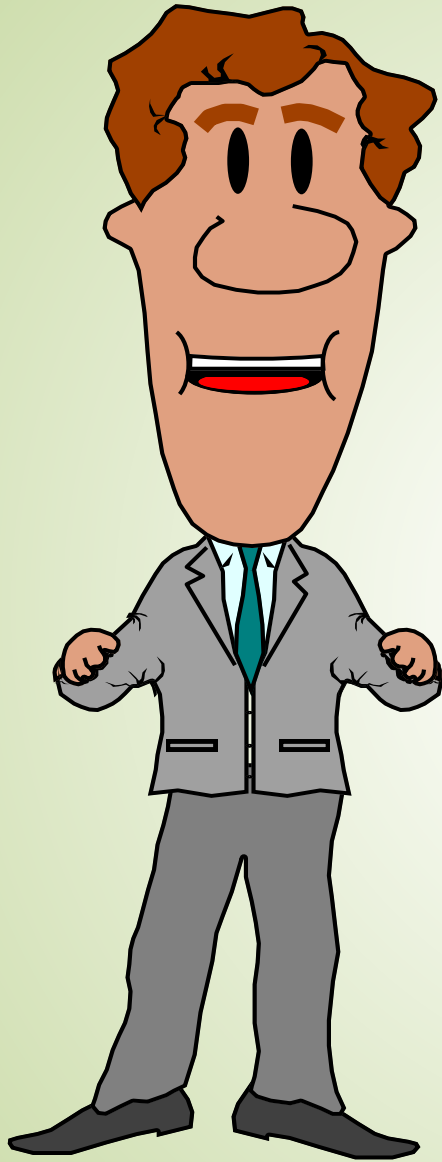
(3) A service rate, or annual service charge, may vary—

- (a) according to whether the land to which it applies is vacant or occupied; or
- (b) according to any other factor prescribed by the regulations and applied by the council.

OK, lets pretend I'm interested.
How do I get started?



*Hint: We never ask if we can start
a user fee; we only ask if we can
continue the process of seeing if
it is acceptable and feasible... till
the last vote.*

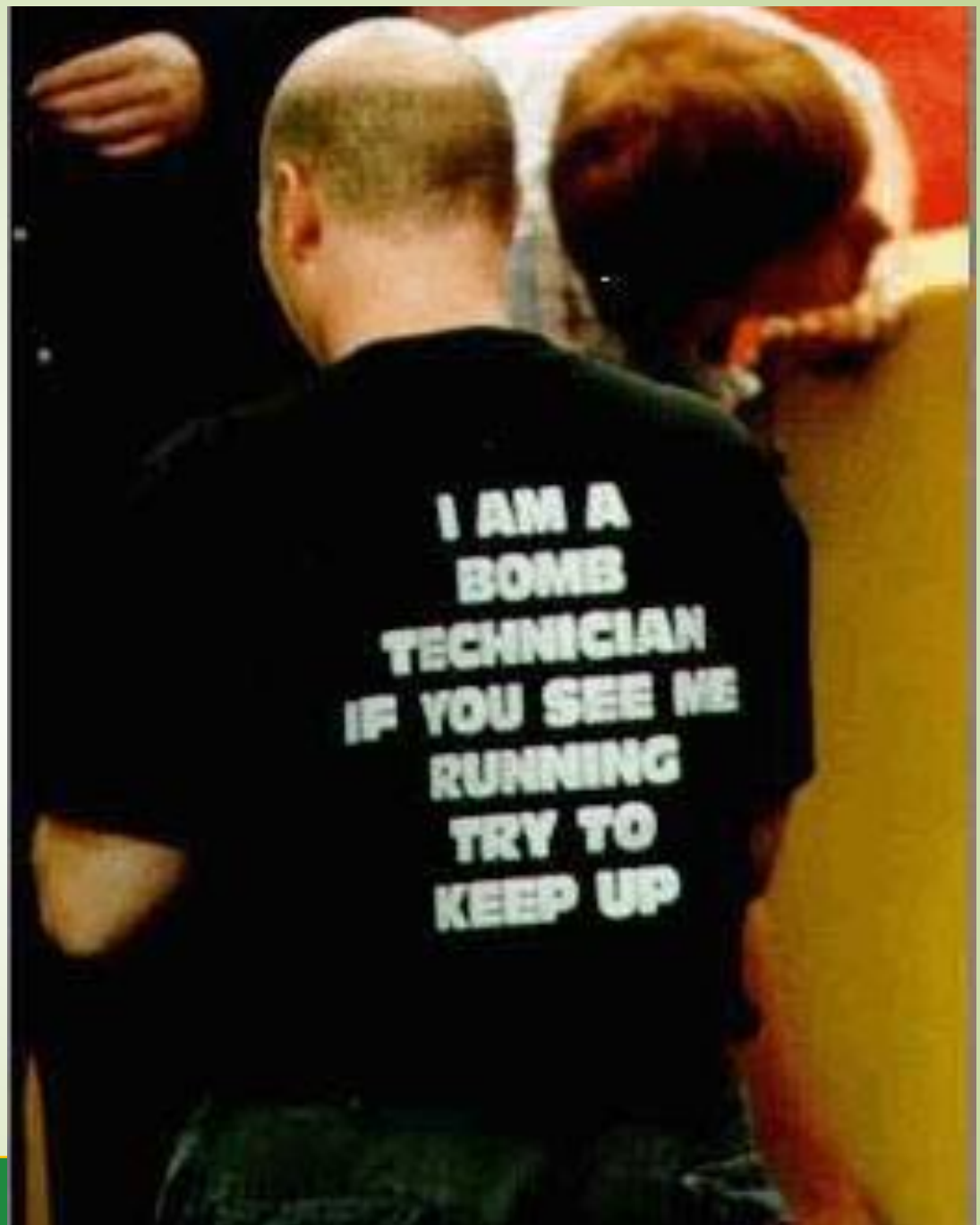


First you must know
why you are doing
this and it has to be
both emotionally
compelling and
logical!

Not just to you!

Are lots of
drivers for
action

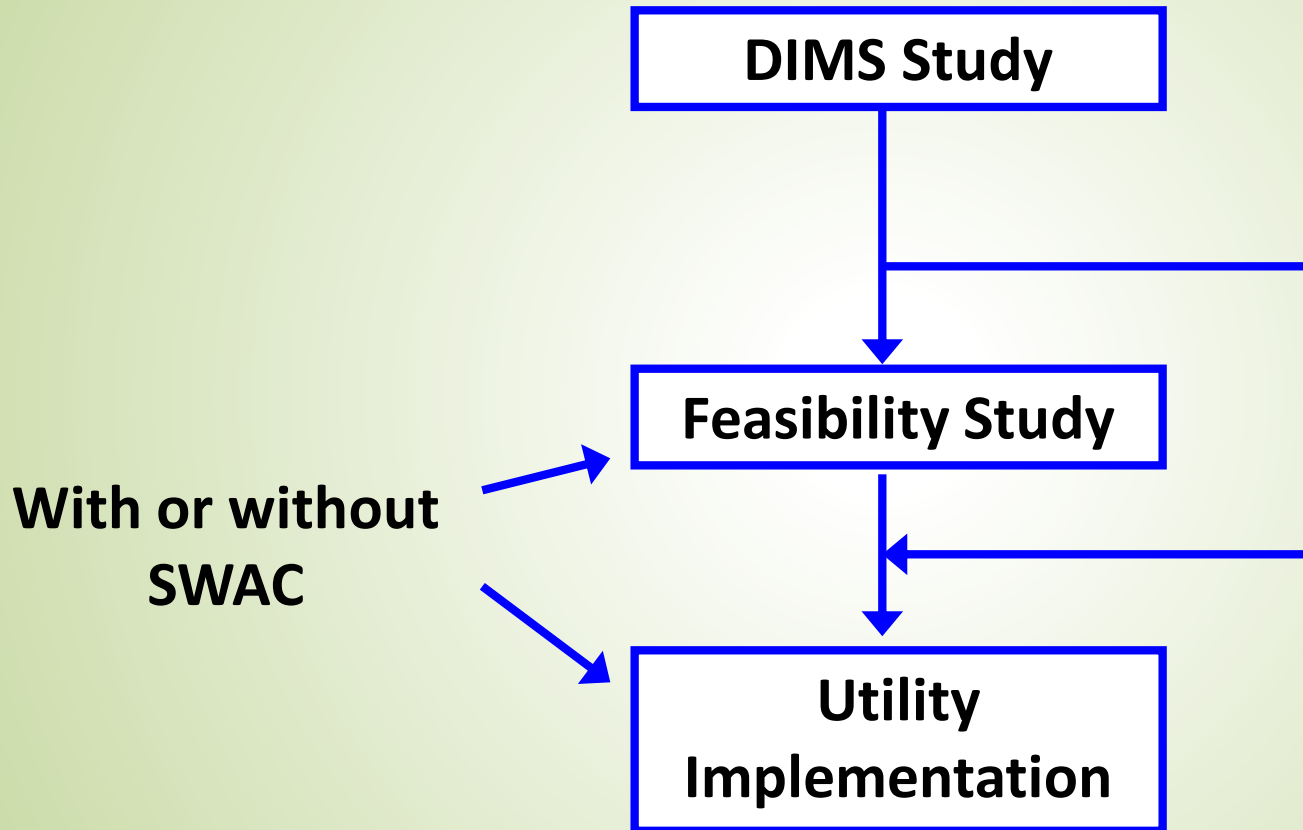
... but are they
compelling ?



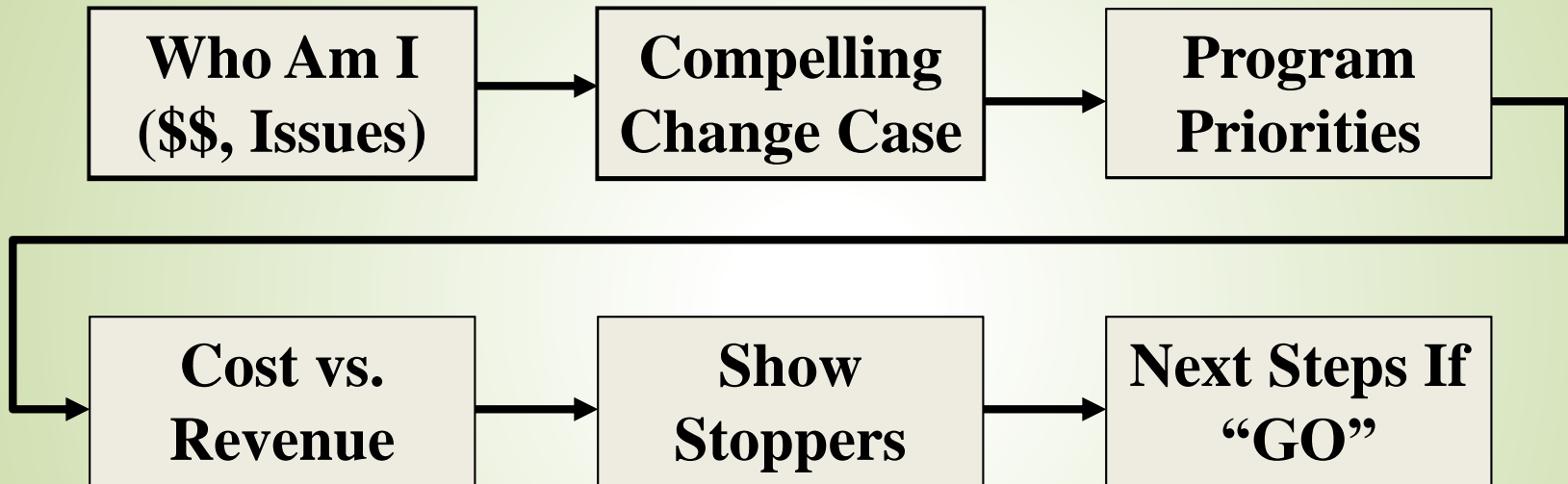
D*V*P Logic Flow

1. The problems are real, growing and unresolved
2. We can resolve them, we have a good plan
3. Government must lead, individual citizens cannot solve it
4. Benefits will result, it will be worth it
5. It will cost more than we are spending now
6. Among viable options a user fee is the best & most equitable to be the cornerstone of funding
7. If we ignore the problem... well... we'll be back soon.

2 or 3 Step Process



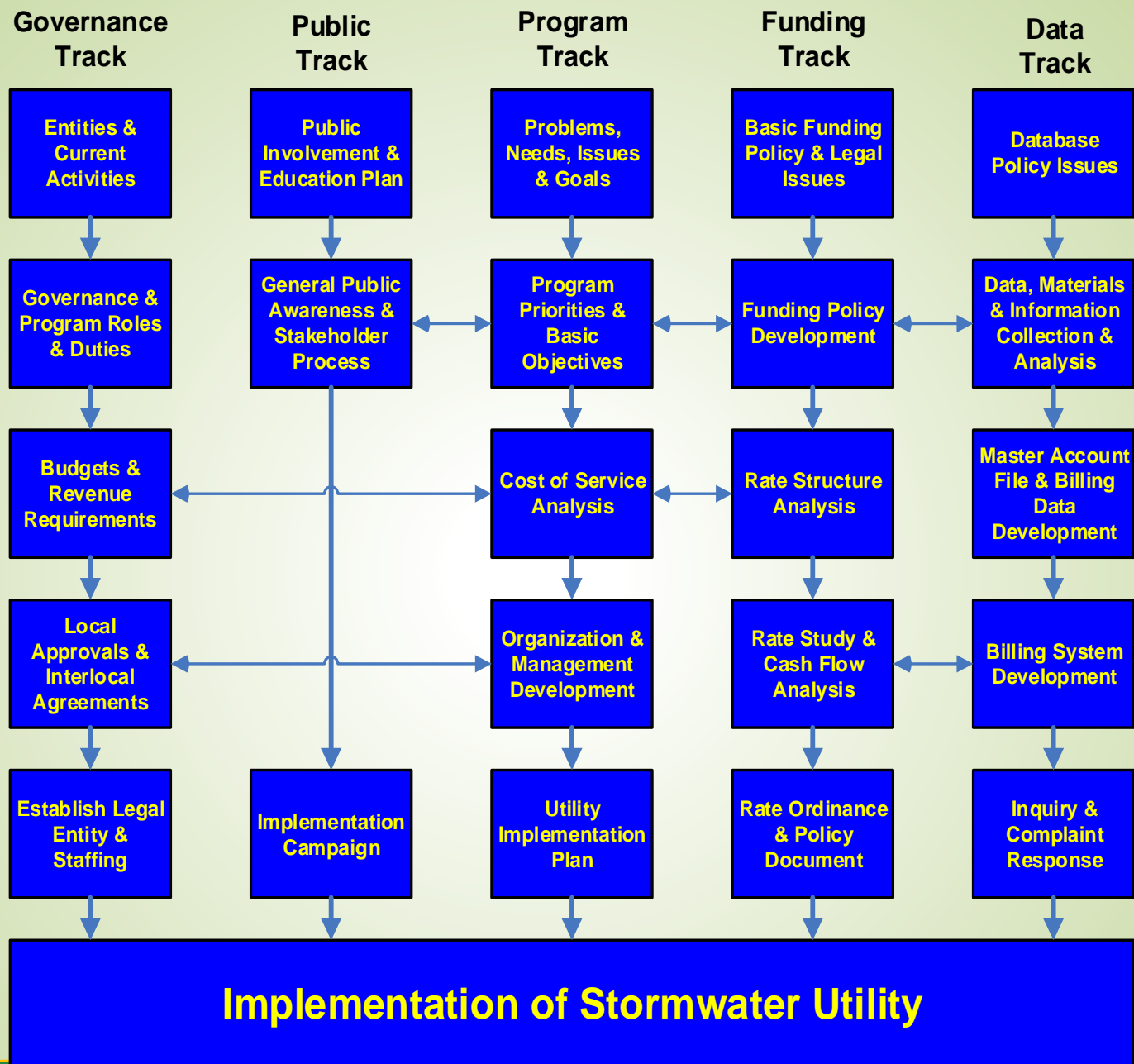
“Does It Make Sense”



We will be trying this out in Redlands later this month

Feasibility Study

A feasibility study takes a group of staff and citizens on a walk through all the key aspects of utility development without committing to utility development until all concerned agree it is the right way to go.



Coming out of this year's 2018 Stormwater Australia conference

- We should get “sort of” organized
- We should share emails
- We should begin the first steps

Jack Mullaly

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Question#1 – Where are you in your thinking about this?

Question #2 – If this were of interest what are some ways you might you get organized and started?

Question #3 – What are some options in how local/regional stormwater programs might be ultimately organized?

Thank You !!



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Feel free to contact me and ask hard questions !

And, (hint hint) I LOVE Australia !!