

Clean Water Services At a Glance

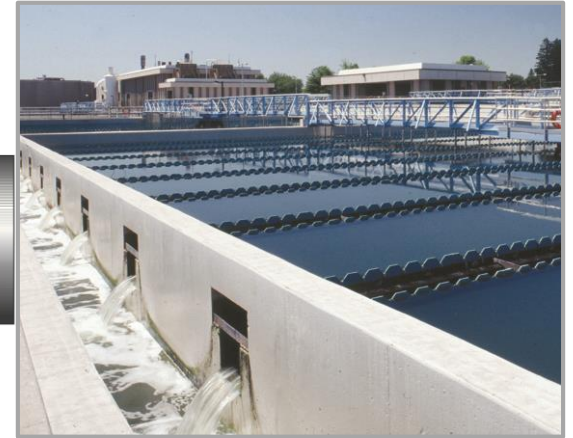
- Wastewater Collection and Treatment
- Surface Water Management
- River Flow Management
- Regional Water Supply Planning



Tualatin River Watershed



Pretreatment Program



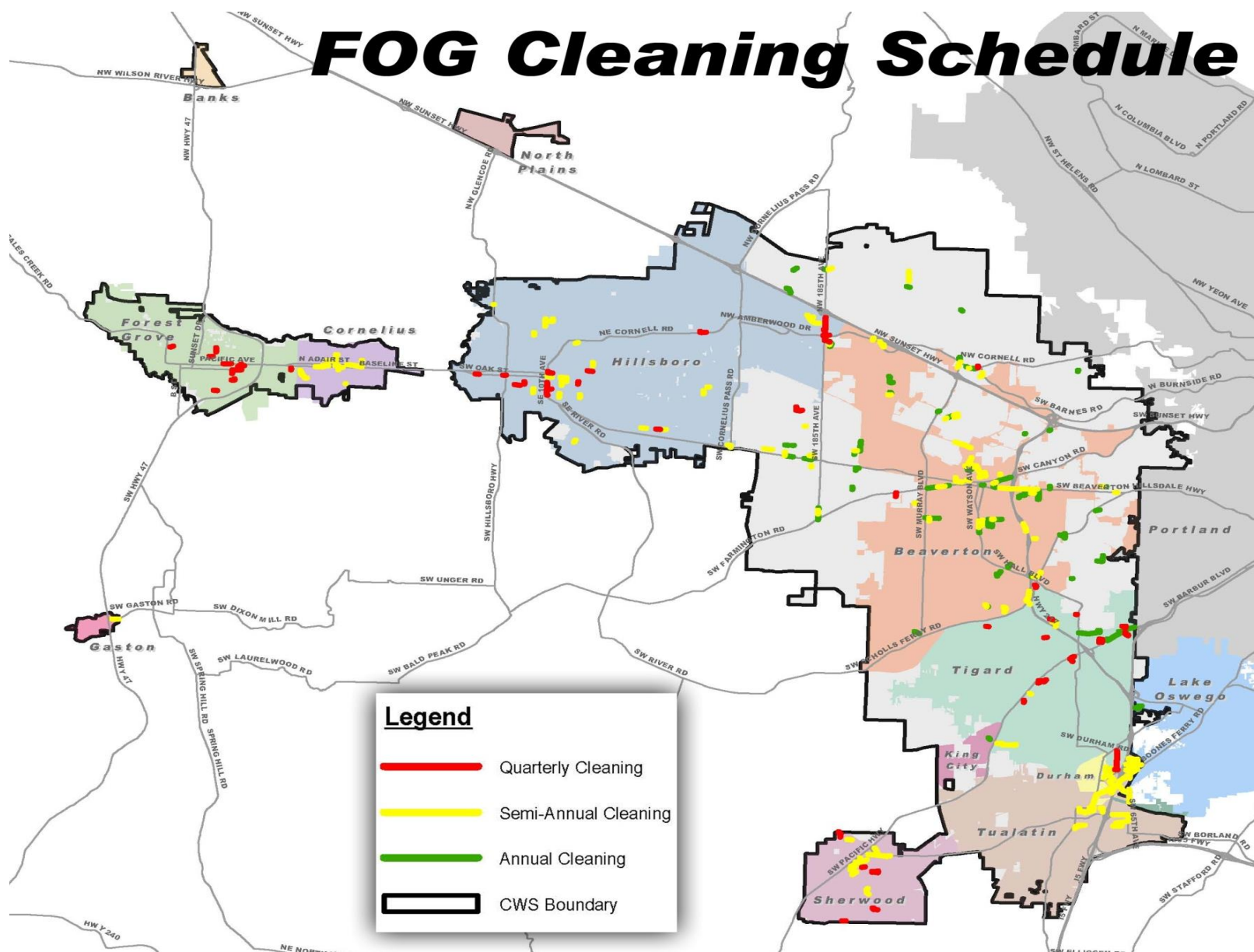
Why FOG?

- NPDES permit compliance
 - Sanitary Sewer Overflows from non-permitted outfalls are prohibited
 - Uncontrolled overflows are prohibited
- Infrastructure Maintenance
 - Cleaning lines / pump stations / POTW services
 - Infrastructure longevity
- Environmental (energy recovery)
- Reduce public costs & Preserve Capacity

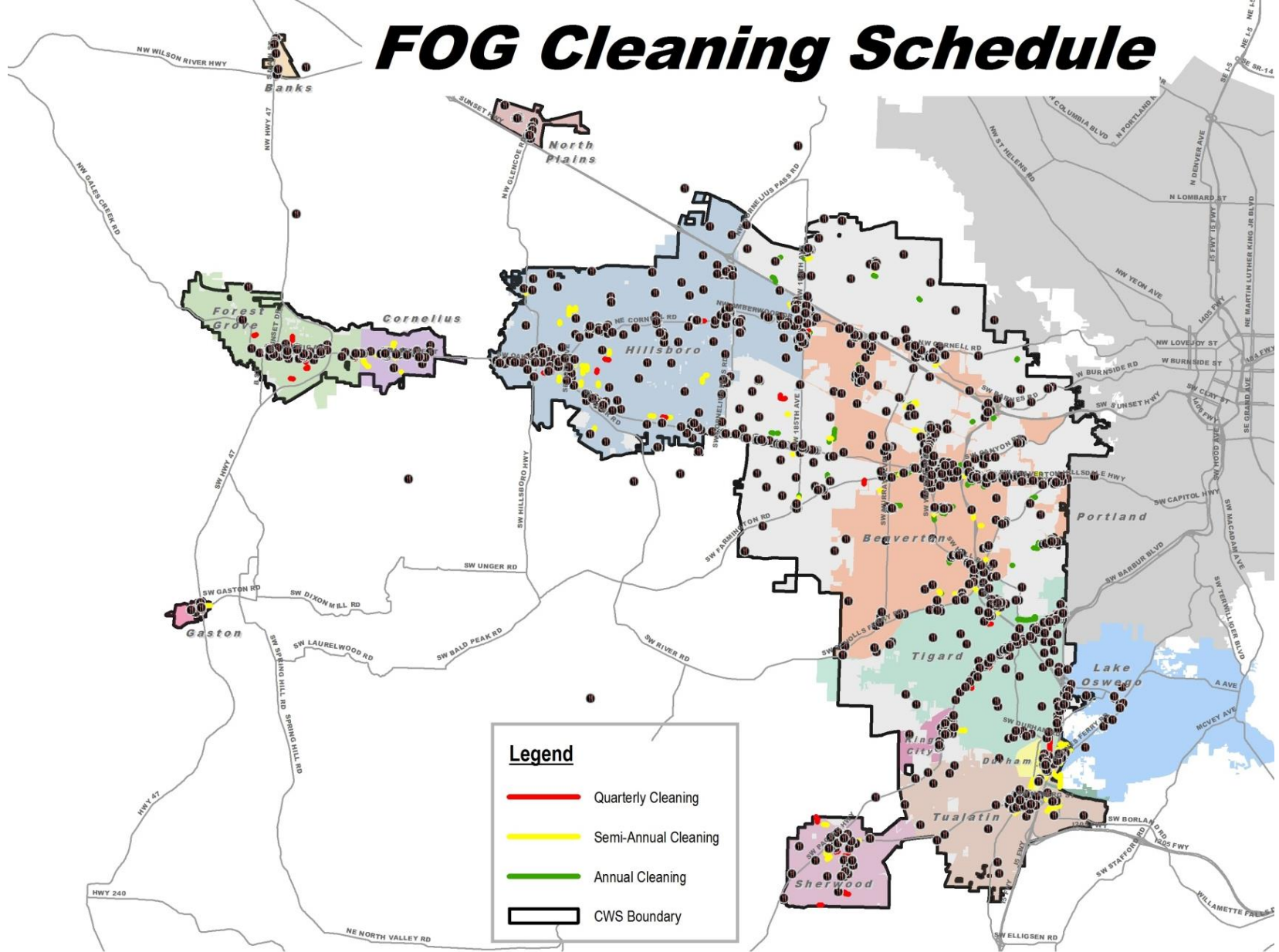
**Grease Caused
Sanitary Sewer Overflows
2008 - 2013**



FOG Cleaning Schedule



FOG Cleaning Schedule



\$4.2 M = Annual cost of FOG



Wastewater treatment

\$3,500,000

- Diminished treatment capacity
- Uses more energy and chemicals



Maintenance

\$ 371,000

- Collection system \$168,000 (includes cities)
- Pump Stations \$117,000
- Treatment plants \$ 86,000



FSE Oversight

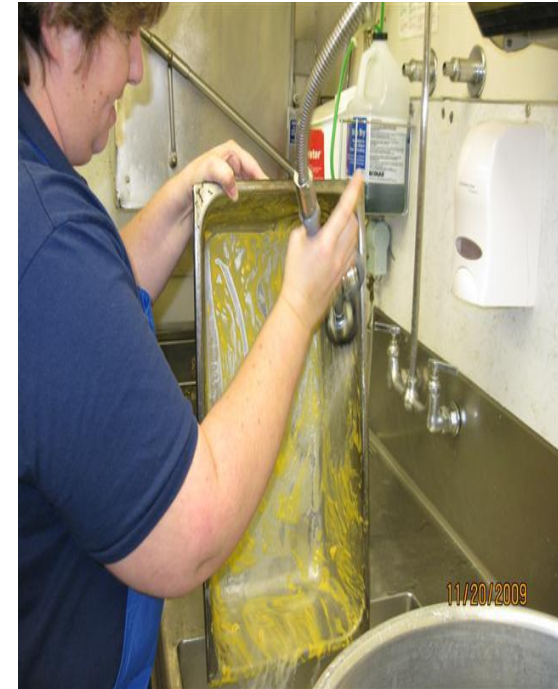
\$ 362,000

- Inspections \$252,000 (includes cities)
- Public Affairs \$ 16,000
- Administration \$ 94,000

Total \$ 4,233,000

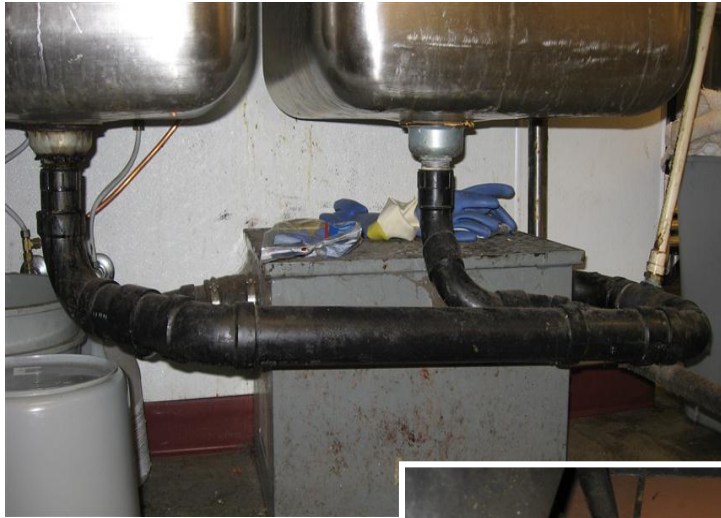
Field Evidence from Inspections

- **No GRDs**
- **FOG lines not connected to GRDs**
- **Poorly maintained GRDs**
- **Difficult access to clean and inspect GRDs**
- **Use of prohibited emulsifiers, chemicals**
- **Size vs. maintenance not cost effective**



FOG

INSPECTION PROBLEM



Look at the clues...

Case Studies #1 and #2

Status	GRD Size	Connections	Lbs FOG per year	Cleaning frequency	Cleaning cost/yr	More FOG captured
<i>Pub</i>						
Approved	HGI 20/40	3-comp sink	640	90 days	\$320	
Mfg Spec	HGI 20/40	All FOG	8,891	1.6 days	\$17,500	1290% - 8,251 lbs
Updated	GB 75	All FOG drains	8,891	14 days	\$3,315	1290% - 8,251 lbs
<i>Hospital</i>						
Approved	HGI 20/40	3-comp sink	1,920	30 days	Self	
Mfg Spec	HGI 20/40	All FOG	35,337	0.4 days	\$69,700	1740% - 33,417 lbs
Updated	3 GB 75	All FOG drains	35,337	73 days	\$3,300	1740% - 33,417 lbs

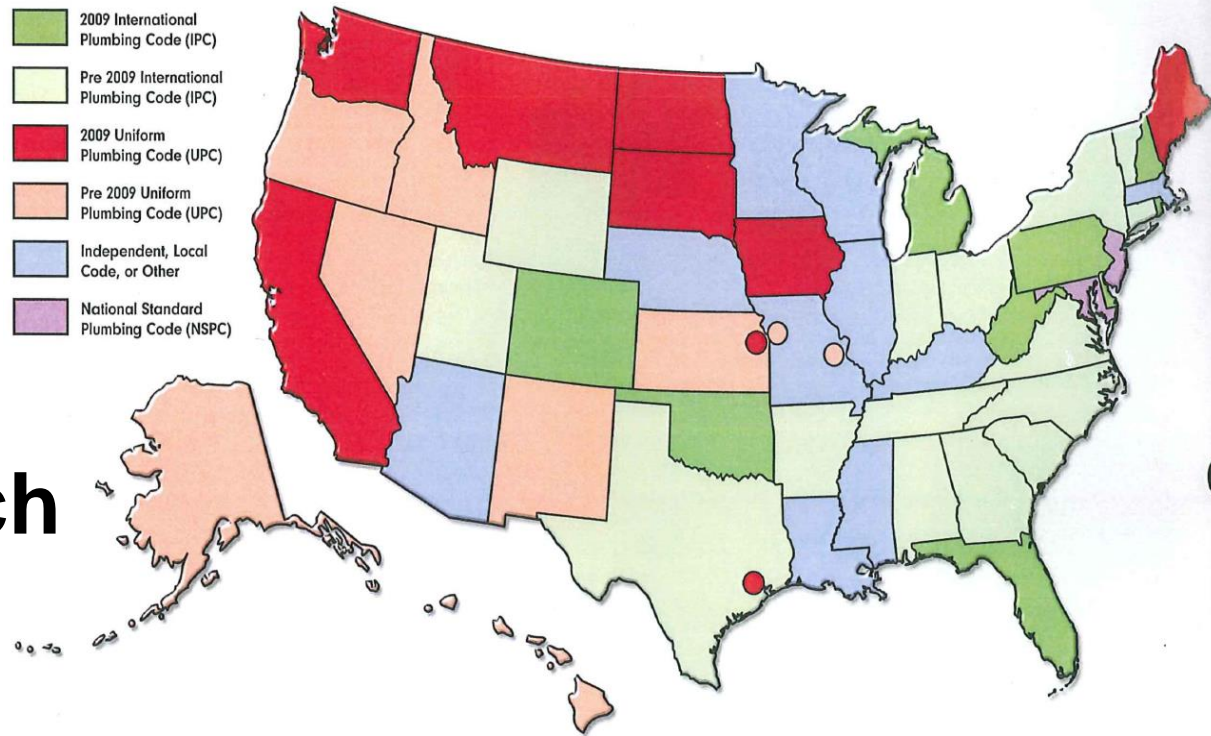
Case Studies #3 and #4

Status	GRD Size	Connections	Lbs FOG per year	Cleaning frequency	Cleaning cost/yr	More FOG captured
<i>Mexican</i>						
Approved	HGI 20/40	3-comp sink	1,920	30 days	Self	
Mfg Spec	HGI 20/40	All FOG	12,900	0.9 days	\$24,400	571% - 10,980 lbs
Updated	GB 259	All FOG drains	12,900	29 days	\$2,281	571% - 10,980 lbs
<i>Chinese</i>						
Approved	2 HGI 20/40	3-comp sink	3,840	30.5 days	Self	
Mfg Spec	2 HGI 20/40	All FOG	16,956	1.7 days	\$16,700	341% - 13,116 lbs
Updated	GB 250	All FOG drains	16,956	20 days	\$2,500	341% - 13,116 lbs

Maintenance Alone not Effective



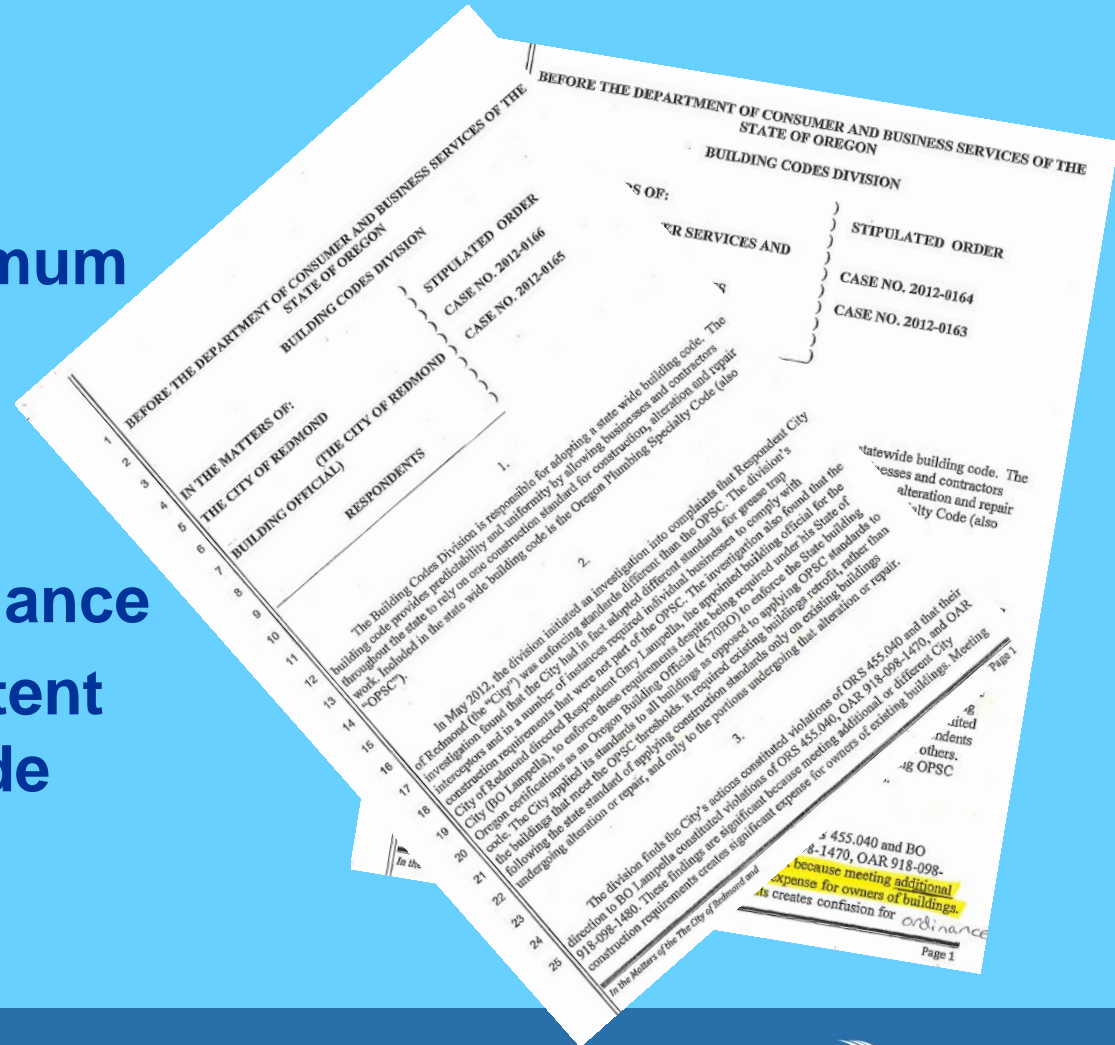
Oregon Approach



- State sets minimum requirements
- State or delegated building official is authority
- Local ordinance can not exceed State code
- 2009 UPC (or as updated)

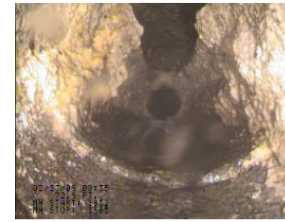
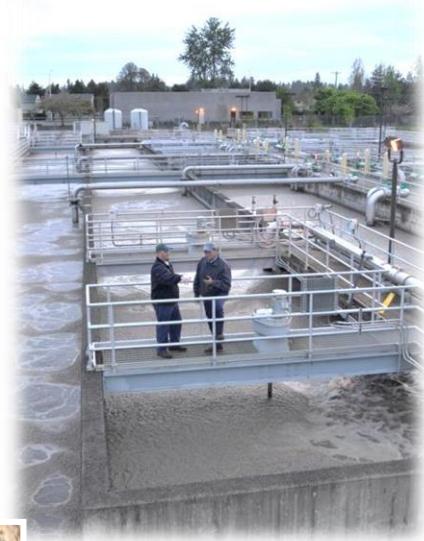
Compliance

- **Implementation not effective or efficient**
- **Minimum is the maximum**
- **Discretion does not capture FOG**
- **Impacting capacity, infrastructure, compliance**
- **Compliance inconsistent NPDES and State Code**



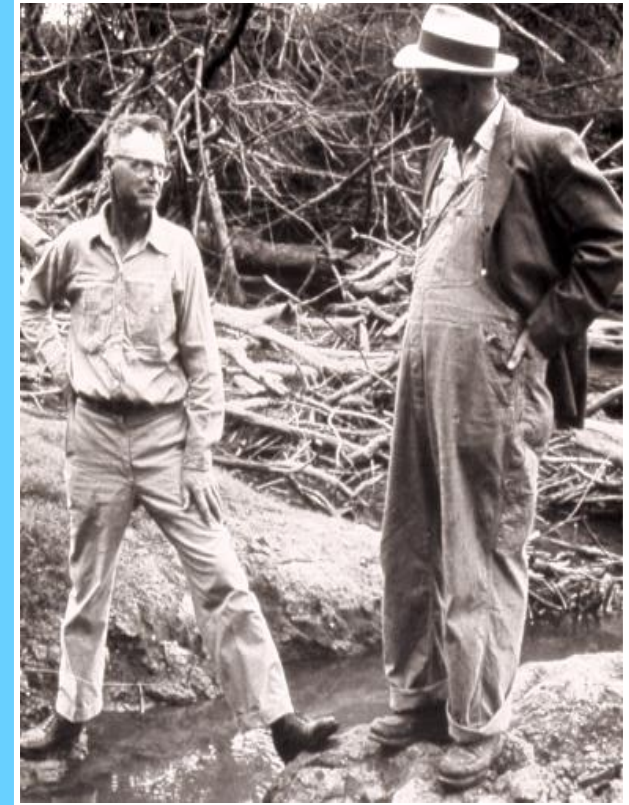
Challenges & Opportunities

- Regulatory complexity and lack of alignment
- Costs, Capacity and Compliance
- Retrofitting existing problems, costs and incentives
- Education and outreach
- Plan review and support
- Effective Sizing
- Energy Recovery



Goals

- **Protect public health and the environment**
- **Implement an resourceful, cost effective FOG Abatement program**
- **Collaborate with the different types of Food Service Establishments (FSEs)**
- **Comply with State and Federal Regulations**
- **Keep full capacity of conveyance system**
- **Extend out treatment capacity at plant**
- **Future residential, industrial growth**



Multiple Stakeholders

- Oregon Building Codes Division (BCD)
- Oregon Dept of Agriculture (ODA)
- Oregon Health Authority
- Local building officials
- Local plumbing inspectors
- Local health inspectors
- Environmental Protection Agency (EPA)
- Oregon Department of Environmental Quality (DEQ)
- Wastewater utilities
(conveyance, pretreatment, treatment)
- Food Service Establishments (FSEs)
- Oregon Restaurant & Lodging Assn.
- ACWA, League of Oregon Cities, Association of Oregon Counties, Special Districts Assn.
- Pumpers
- Contractors, builders, architects
- Landlords, property managers
- Multi-family residential
- Commercial food processors
- Ratepayers



Suggestions for Code Change

- Guidance and Plan review
- Protect all FOG Lines
- Locals have maintenance authority
- FSE broadly identified
- Retrofit requirements
- Ability to sample



Current Regulatory Status...



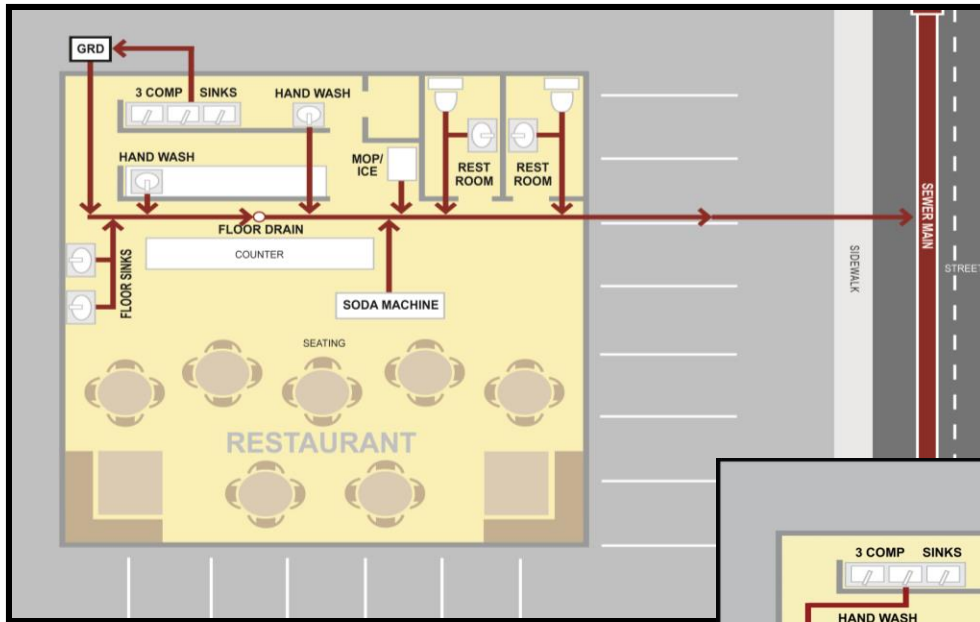
Rule Update:

-All FSE's
-All FOG Lines (exceptions)
-Includes Dishwashers
-Includes Garbage Disposal
-Local Governments Authority for Maintenance
- ... not required for private homes

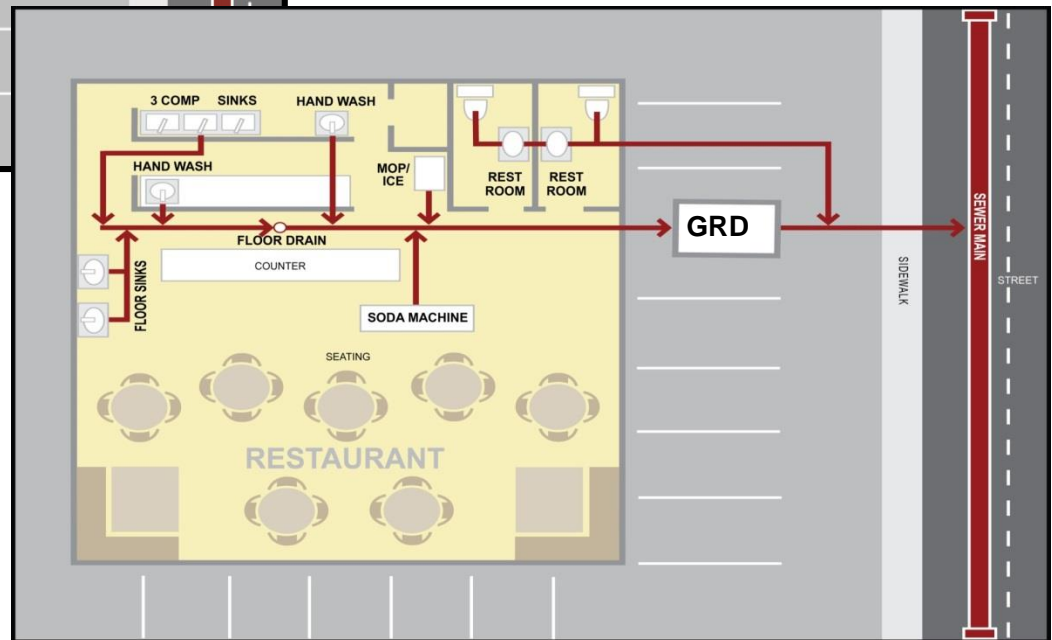
Does Not Address:

-Retrofit clarity
-No ability to sample
-No plan review or guidance
-No substantive change to sizing criteria

Plumbing Code / interpretation & implementation



Old Code



New Code

Public Outreach

Freeze the Grease
Outreach Campaign
Site Visits
Web Site
Technical Assistance
Voluntary Plan Review



Statewide Outreach to FSE

- Working with ACWA

- Consistent message on FOG awareness

- Agencies

- ORLA , Building/Plumbing, Wastewater

- Owners

- FSE, Property & management

- Vendors / Contractors

- Distributors, Plumbing, Excavations, Developers

- Engineering

- Kitchen Designers, Architects



Retrofits and Planning

Do it right the first time



Focused Effort (Triage)

- New construction voluntary plan review
- Inspection and follow-up
 - High and Very High FOG FSE
 - Contributor to grease lines\pump stations
 - Cause or contribute to SSO or illicit discharge
 - Priority specific by Jurisdiction
- Outreach efforts
 - Multi-family housing
 - Grease lines residential areas

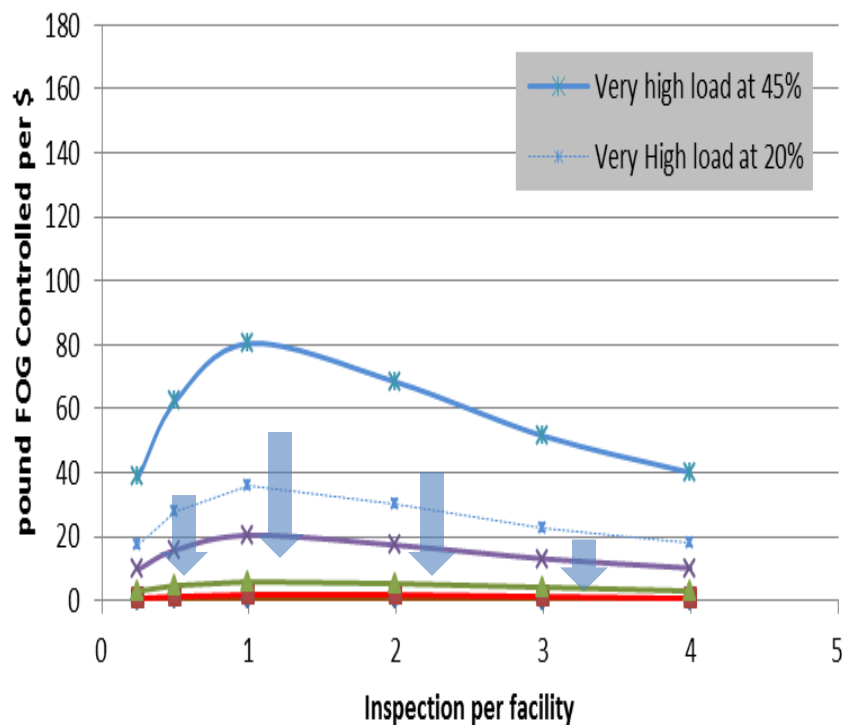


Cost Effective

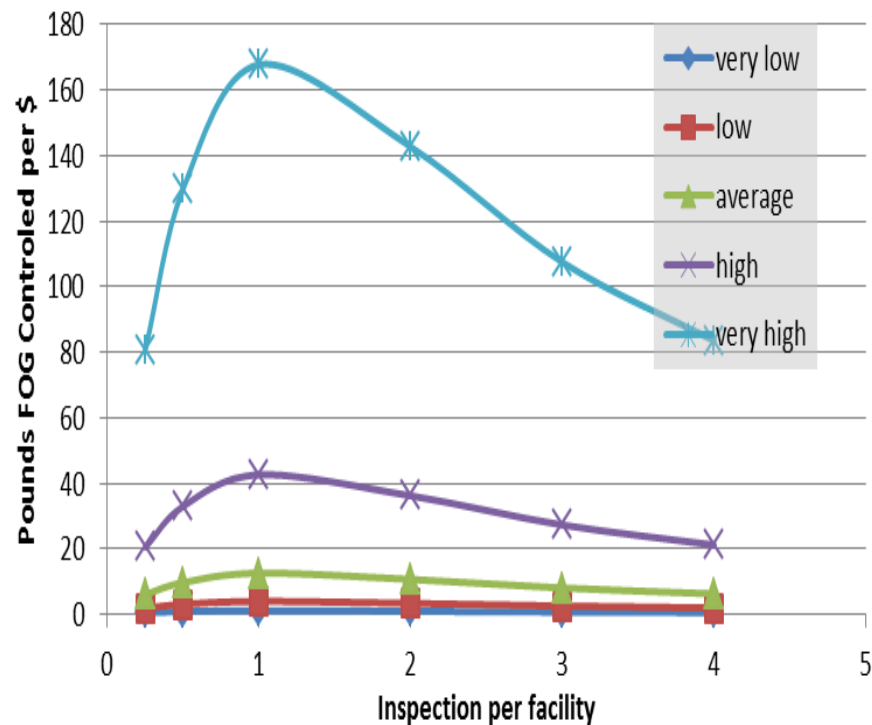
**Big producers / Before
BMPs & poor design
FOG abatement system**

**Big Producers / After
Properly designed
FOG abatement system**

Mass per unit effort by inspection and relative contribution, assumes 45% (20%) effective control



Mass per unit effort by inspection relative contribution, assumes 95% effective control



Plan Review Results

Efficient Design

Fixed Cost, 5-year period

Over 5 years cumulated FOG for \$ spent on plan review

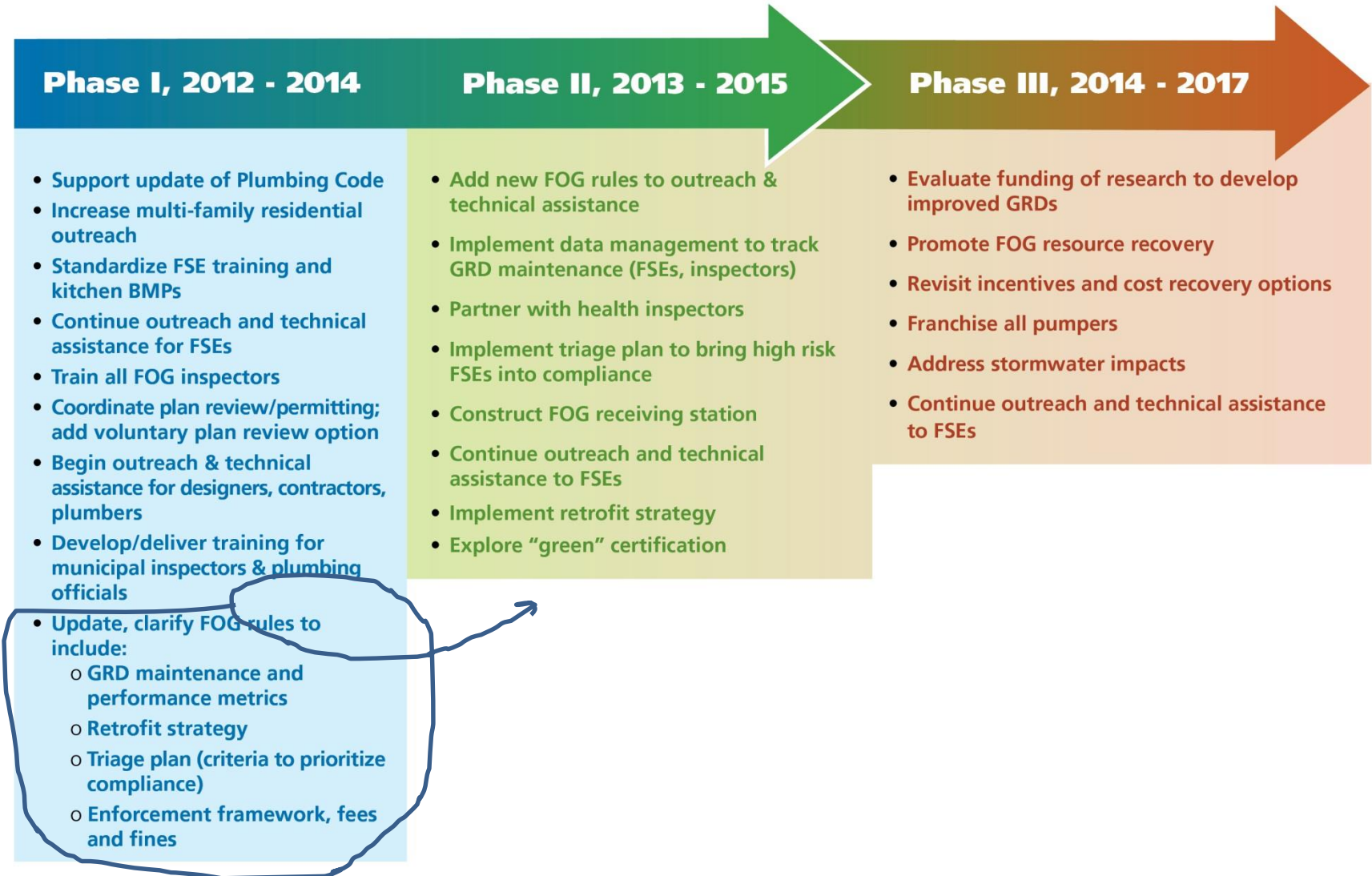
- Very High 300 - 400 lbs/\$
- High 70 - 100 lbs/\$
- Average 20 - 30 lbs/\$
- Low 7 - 10 lbs/\$
- Very low 2 - 3 lbs/\$

Annual FOG /\$

Range of 20-45% effective lbs. FOG \$ inspection)

- 35 - 80 lbs/\$
- 9 - 20 lbs/\$
- 3 - 6 lbs/\$
- <1 - 2 lbs/\$
- <1 <1 lbs/\$

FOG Program time line



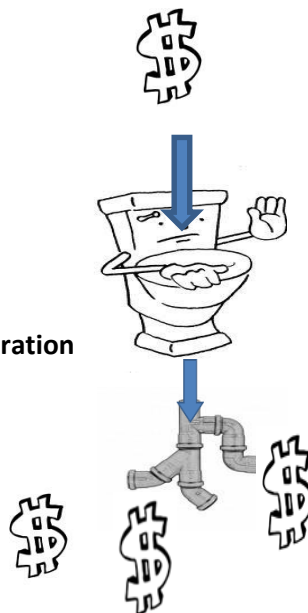
Expensive to

Convey, Maintain, Clean, Treat
Via Sewer lines & WWTP

- Pump
- Clean
- Deterioration

FOG in Sewer = Bad

FOG in Truck = Good



- Air
- Electricity
- Chemical



- Capacity

Reduce FOG

Loading @ WWTP

Extends life & treatment

Capacity (years) - feeding

FOG to digester lowers

Transport costs of Solids



FSE = Factory / waste product
want to do the Right thing
which can be Re-purposed
for Beneficial use

FOG can be
transported to
its most
Beneficial
Resource Recovery
endpoint

