Missouri American Water

- Provide water & wastewater services to about 1.5 million Missourians
- 100 years of service -- metro areas and rural communities
- Regulated by Missouri Public Service Commission, Missouri Department of Natural Resources and U.S. EPA.
St. Louis County and nearby systems

- Capacity to produce 400 million gallons of water per day at four plants
- 4,200 miles of pipe
- 34 water storage tanks
- 35,000 fire hydrants
The Water-Energy Nexus

2-4% of U.S. energy consumption is for moving & treating water and wastewater.

“Water-related energy consumption was 12.6% of national primary energy consumption in 2010.”

Energy extraction & generation require 4x more water than used by all U.S. residences.
Federal and State Roadmaps
How a River Water Treatment Plant Works

**Coagulation** – special compounds remove the dirt particles from the water.

**Sedimentation** – the dirt settles to the bottom and the water becomes cleaner.

**Filtration** -- water passes through filters to purify it further.

**Disinfection** -- kills the germs.

From the river to the plant....

From the water tank to your home!
Water Intakes – medium energy usage

Pumps

Water intake pumps from the river to the plant
Water treatment – lower energy usage

**Coagulation**—special compounds remove the dirt particles from the water

**Filtration**—water passes through filters to purify it further

**Sedimentation**—the dirt settles to the bottom and the water becomes cleaner

**Disinfection**—kills the germs
Pumping, Storage & Distribution – high energy

Storage
And pumping to the distribution system

A water main map is a street map!
Production & Energy Costs

Production cost per 1000 gallons is $0.523

Our power cost per 1000 gallons is $0.16 or about 31% of our budget
Opportunity: Pump Efficiency

If every U.S. water utility improved their water pump / motor efficiency from the existing average of 55% to the optimal efficiency of 80%, it would save enough electricity to light up Denver for 10 years.
Opportunity: Fix Leaking Pipes

Nationwide - 15 - 25% of treated water is unaccounted for due to leaks & other losses.

That's 3 trillion gallons annually or enough to supply all of New York City for 8 years.
Opportunity: Pump & Treat Less Water

- 15 - 25% losses
- Wide range of savings
- Up to 50% waste