Example 1: Potable Reuse vs. Other Supply Options

Aim: This example looks at effects of potable and non-potable recycled water use on water supply.

Game: Recycled wastewater is available for urban and suburban water users, located in lower Elbonia.

Begin entering the following values to **Table 2** in **Lower Basin**. You may also enter your own numbers.

Urban		Suburban	
Groundwater (GW)	5.5	Groundwater (GW)	30
Surface Water (SW)	30	Surface Water (SW)	12.5
Direct Potable Reuse (DPR)	1	Direct Potable Reuse (DPR)	1
Indirect Potable Reuse (IPR)	1	Indirect Potable Reuse (IPR)	3.5
Grey Water (GreyW)	0.5	Grey Water (GreyW)	1
Desalination (D)	2	Desalination (D)	2
Conservation (C)	0%	Conservation (C)	0%

Urban		Suburban	
Groundwater (GW)	6	Groundwater (GW)	30
Surface Water (SW)	25	Surface Water (SW)	10
Direct Potable Reuse (DPR)	4	Direct Potable Reuse (DPR)	5
Indirect Potable Reuse (IPR)	2.5	Indirect Potable Reuse (IPR)	2
Grey Water (GreyW)	0.5	Grey Water (GreyW)	1
Desalination (D)	2	Desalination (D)	2
Conservation (C)	0%	Conservation (C)	0%

Questions:

1- How does total cost change with increased direct potable reuse?

2- How does basinwide energy use change with increased indirect potable reuse?

3- Is direct potable or indirect potable reuse more energy intensive?

4- Can you meet urban and suburban demand with different numbers? How does reuse ratio change?

Findings & Discussion:

Example 2: Wet vs. Dry Conditions

Aim: This examples looks at how surface water availability affects water supply, and compares wet and dry year operations.

Game: Normally, Elbonia is a wet place, with enough surface and groundwater for all users. But, climate change is affecting Elbonia's hydrology and there is now less surface water, requiring Elbonian users to use more recycled water options and/or water conservation measures. Also, with dependencies on groundwater, its availability has decreased over the time.

Please enter following values to **Table 1** in **Upper and Lower Basins** and meet your objectives. Do not forget to **eliminate red cells**.

Upper Basin

Wet Conditions

Max. Water Availability (TAF)		Augmented
Groundwater	500	**0%**
Surface Water	300	**0%**

Dry Conditions

Max. Water Availability (TAF)		Augmented
Groundwater	100	**-80%**
Surface Water	60	**-80%**

Lower Basin

Max. Water Availability (TAF)		Augmented
Groundwater	500	**0%**
Surface Water	254	**0%**

Max. Water Availability (TAF)		Augmented
Groundwater	50	**-90%**
Surface Water	14	**0%**

Questions:

1- How does total cost change?

2- How do dry conditions affect groundwater overdraft? Can you eliminate it?

3- What sector is most affected from less water availability?

Findings & Discussion: