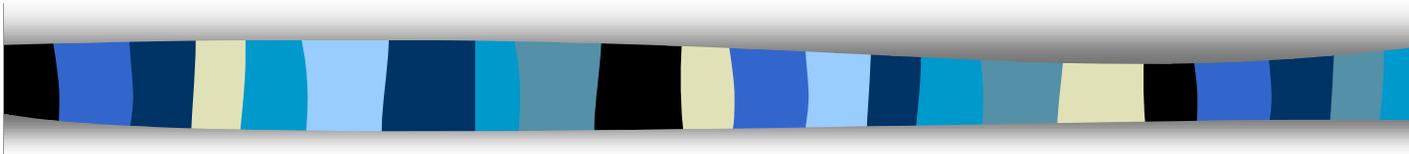


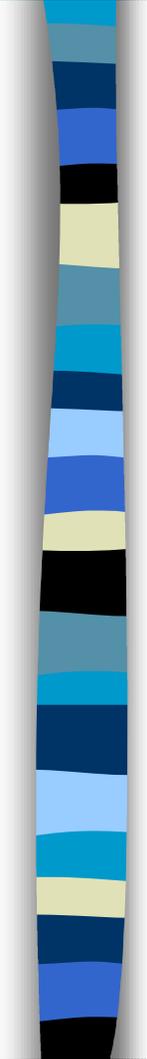
Water Cost/Tariff Model for the Jordan Valley Authority



Interim Meeting on the Model
and O&M Costs

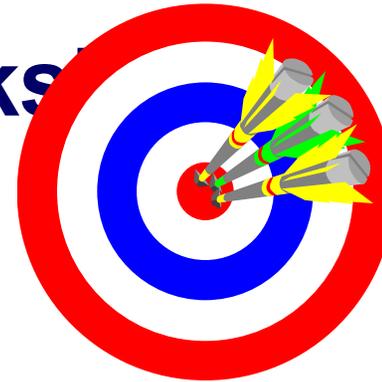
FORWARD/USAID

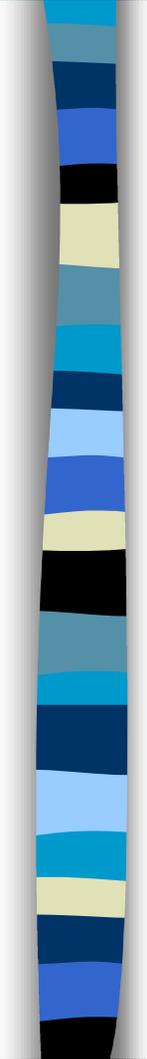
April 26, 1998



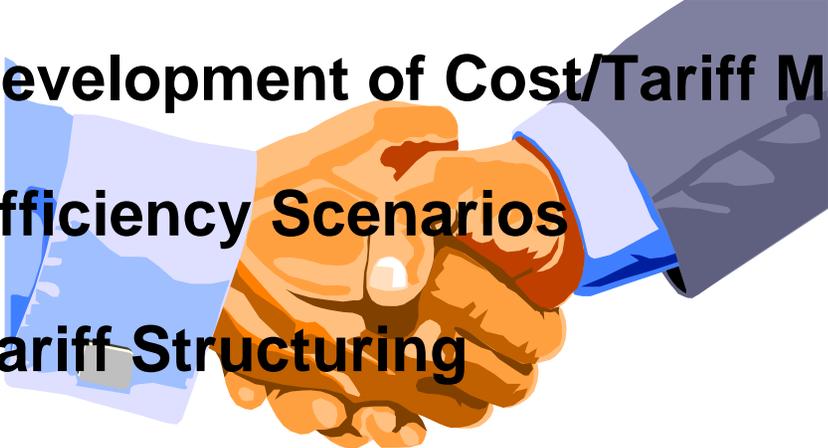
Goals of the Work

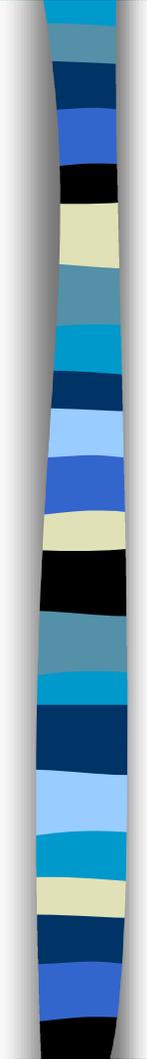
- ★ Review Prior Agreements
- ★ Identify Model Uses
- ★ Examine Model Structure
 - ✓ Financial
 - ✓ Planning
 - ✓ Cost
- ★ Review Current O&M Costs & Revenues
- ★ Review Costs at Deir Alla
- ★ Consider Performance Measures
- ★ Brief Status of Other JVA Efforts





Previous Agreements Concerning:

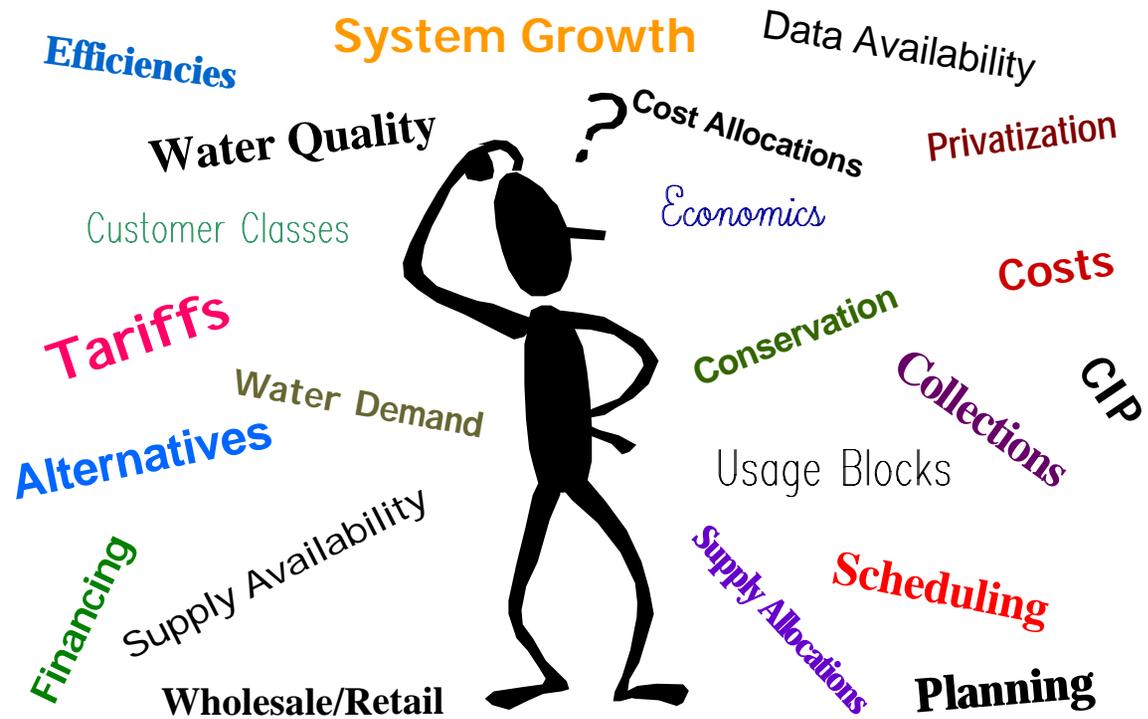
- ★ Cost Allocation Mapping
 - ★ Development of Cost/Tariff Model
 - ★ Efficiency Scenarios
 - ★ Tariff Structuring
 - ★ Model Design and Capabilities
- 



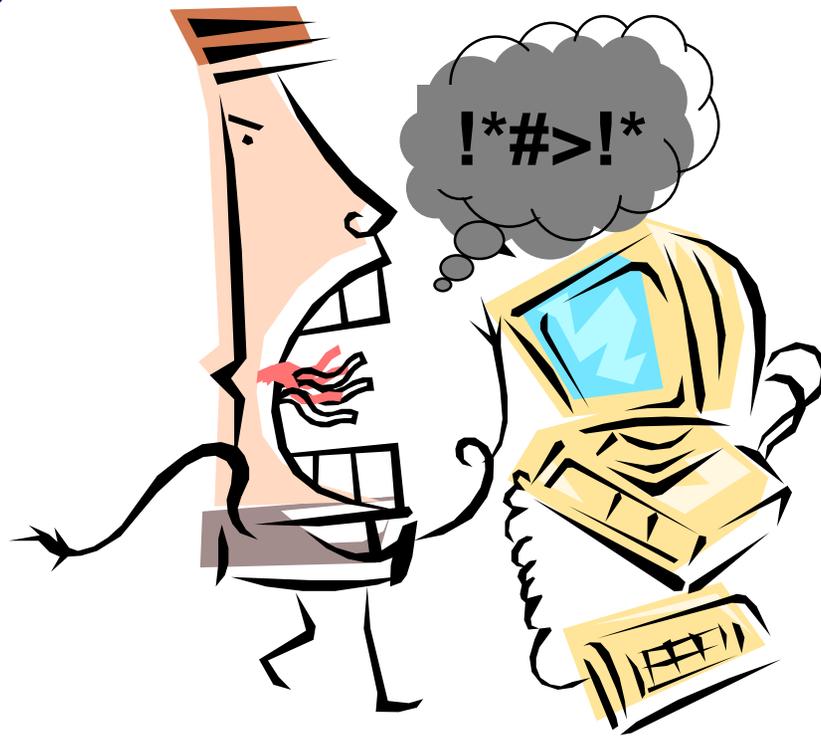
What would happen if?

- demand for water grew faster or slower?
- new water supplies were needed?
- system water losses were reduced?
- efficiency programs were implemented?
- on-farm conservation was improved?
- further farmer participation was pursued?
- water qualities were priced differently?

Having Trouble Making Sense of It All?

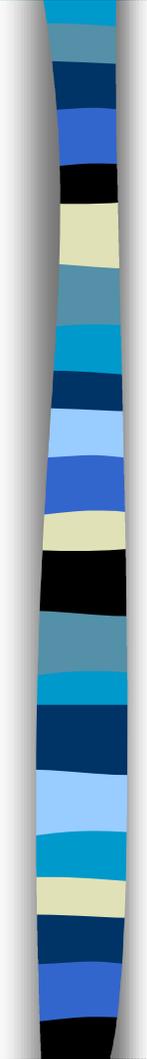


**Can't get the answers out
of your information
systems?**



The Integrated Planning and Financial Model (IPFM) is an effective way to put it all together

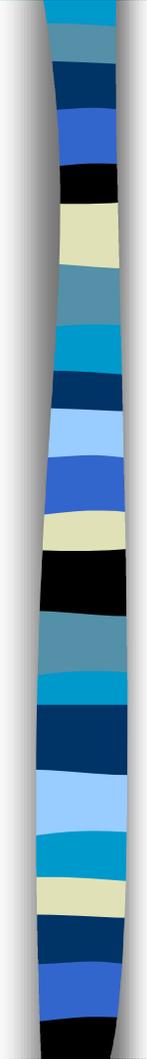




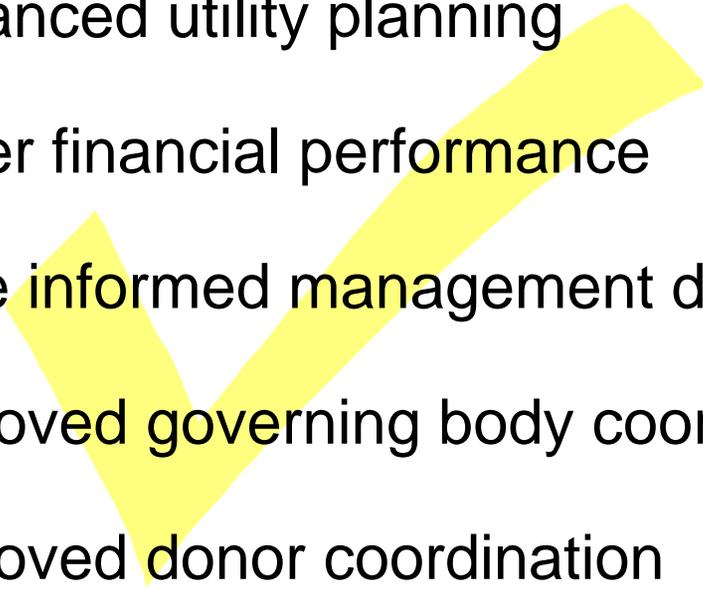
Features of the model

- ★ Provides for a coherent assessment of a wide range of utility planning & management scenarios.
- ★ Integrates many complex issues into a straightforward analysis that focuses on both the near- and longer-term.
- ★ Useful for utility planning, budgeting, and financing.

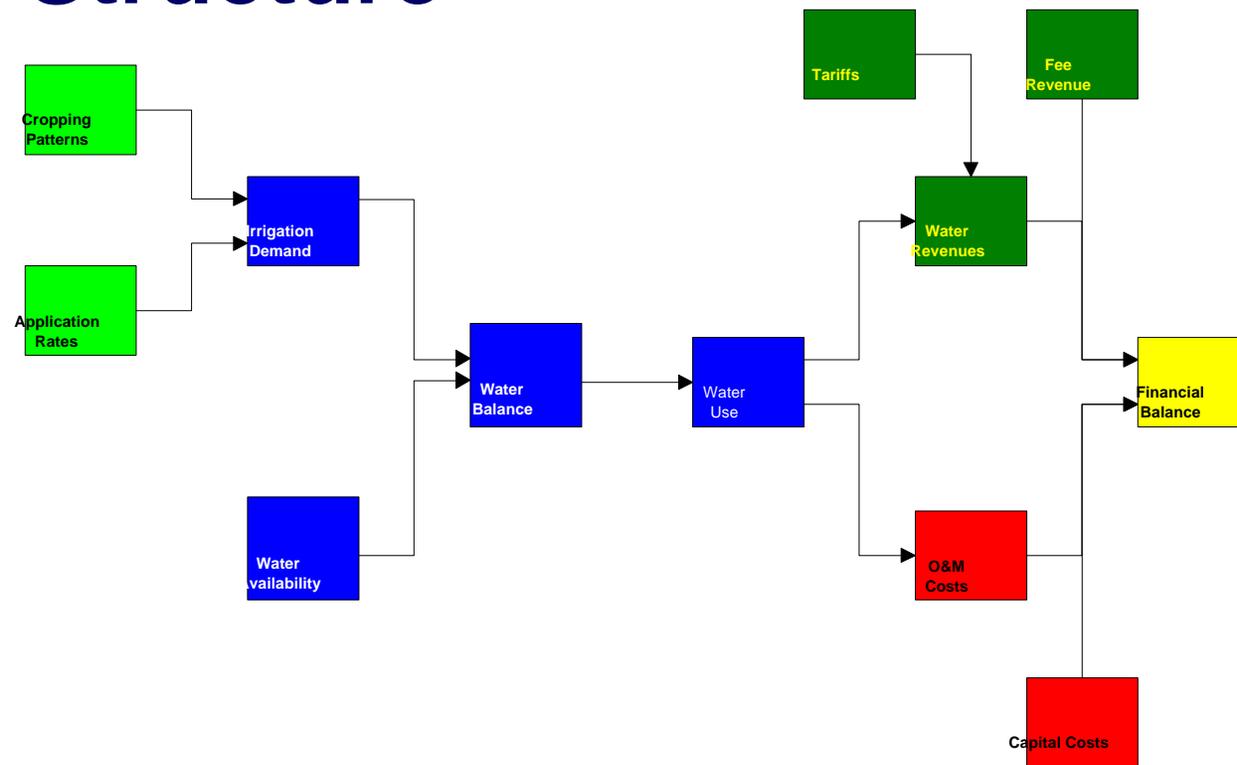


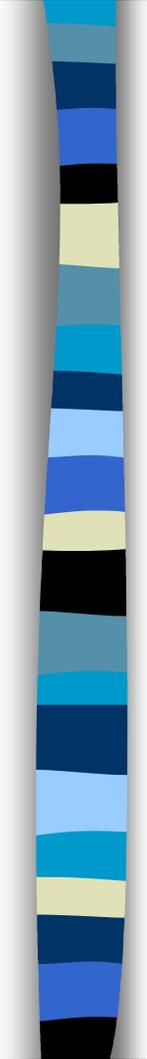


How can this help you?

- ★ Enhanced utility planning
 - ★ Better financial performance
 - ★ More informed management decisions
 - ★ Improved governing body coordination
 - ★ Improved donor coordination
- 

Simplified JVA Model Structure

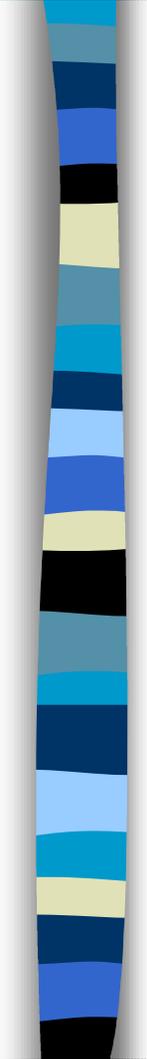




Planning and Policy Parameters

- ★ Demand & Water Balance
 - ✓ Cropping Patterns
 - ✓ Application Rates
 - ✓ # of Customer Classes
 - ✓ # & Size of Usage Blocks
 - ✓ Supply Availability
 - ✓ Demand Rationing
- ★ Cost and Inflation Parameters
 - ✓ Salaries
 - ✓ Electricity/Fuels
 - ✓ General Other





Planning and Policy Parameters

★ Efficiencies

- ✓ Staffing Levels
- ✓ Electrical Usage
- ✓ Un-accounted for
- ✓ Billing Collection Rates

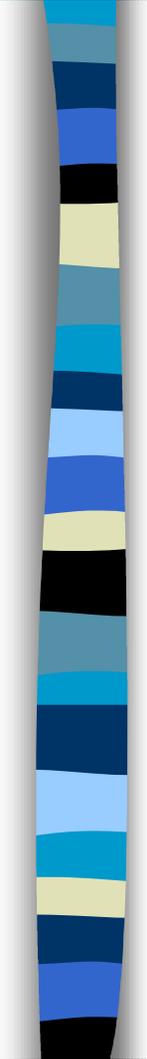
★ New Construction Projects

- ✓ Timing
- ✓ Sources of Funds
- ✓ Terms
- ✓ Effects

★ Tariff Considerations

- ✓ Tariff Setting
- ✓ Ability to Pay
- ✓ Water Quality
- ✓ Conservation Rates





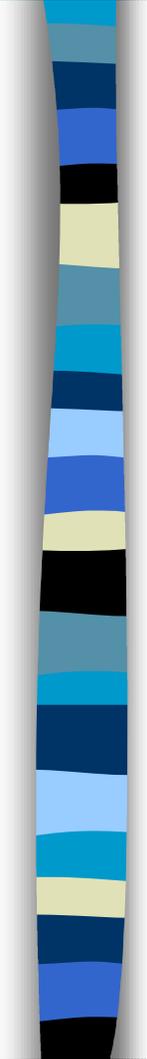
Revenue Centers

★ Tariffs

- ✓ Up to six usage blocks
- ✓ Up to two seasonal components
- ✓ Up to four water qualities
 - Quality 1 (Fresh)
 - Quality 2 (Mixed)
 - Quality 3 (KTR)
 - Quality 4 (below Karamah)
- ✓ WAJ-Deir Alla Tariff

★ Fees and Other Income





Cost Centers

★ Primary System

- ✓ Yarmuk
- ✓ North Conveyor
- ✓ Mukheiba
- ✓ Various Side Wadis
- ✓ Wadi Arab
- ✓ Ziglab
- ✓ Jurum
- ✓ Deir Alla
- ✓ KTR
- ✓ Karamah
- ✓ Shueib
- ✓ Kafrein-Hisban
- ✓ Hasa, etc.
- ✓ Wadi Araba

★ KAC

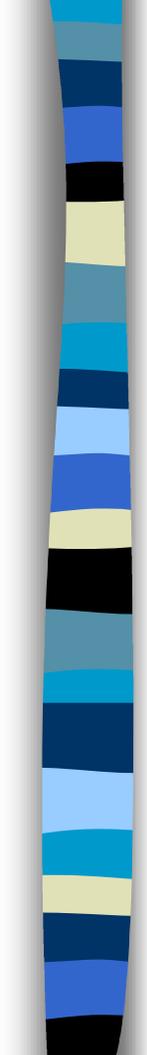
- ✓ North Directorate
- ✓ Middle Directorate
- ✓ South Directorate

★ Secondary System

- ✓ North Directorate
- ✓ Middle Directorate
- ✓ South Directorate
- ✓ S. Ghors Directorate

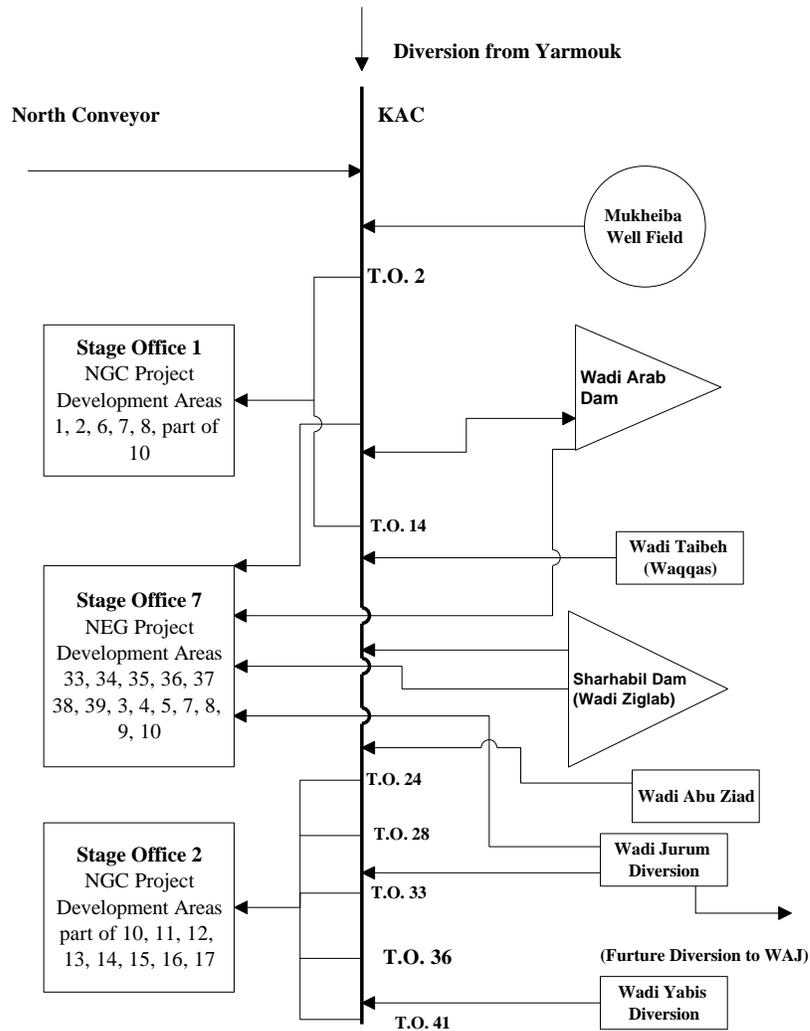
★ Pump Stations

- ✓ North Directorate
- ✓ Middle Directorate
- ✓ South Directorate
- ✓ S. Ghors Directorate

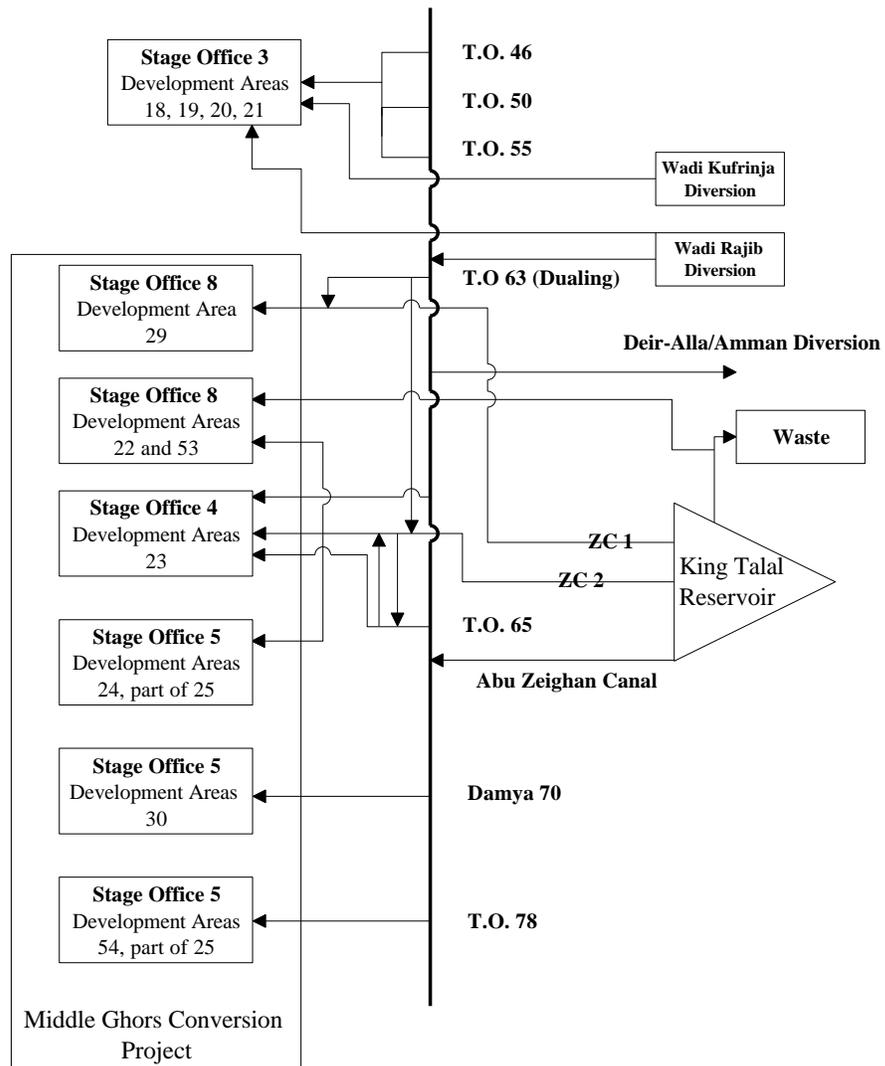


JVA System Schematic

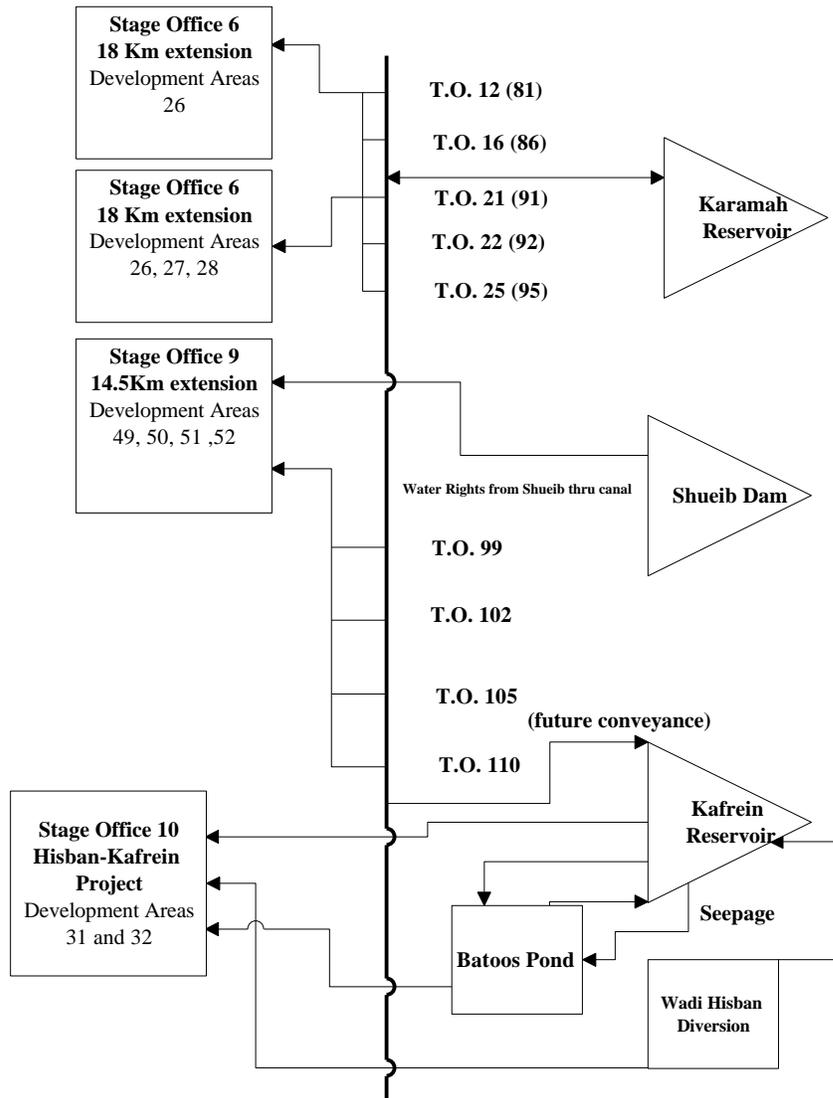
JVA System Schematic - North

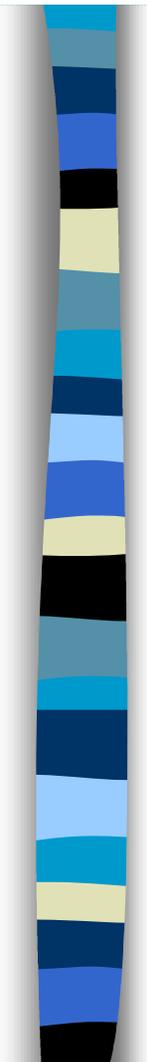


JVA System Schematic - Middle



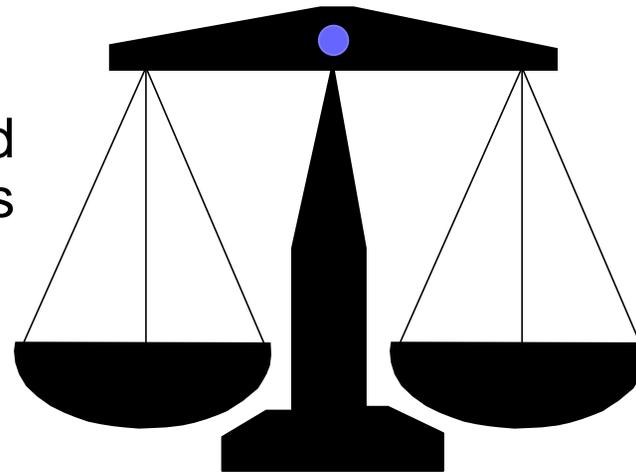
JVA System Schematic - South



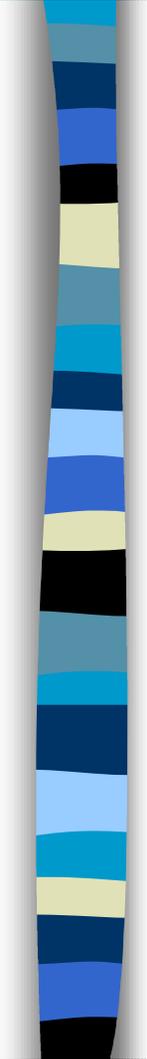


JVA Demands, Water Balance and Water Use

- ★ Start with desired demand for water
- ★ Demands compared to available supplies and allocation decisions are made
- ★ Water use by demand center determined
- ★ Water use by water quality determined



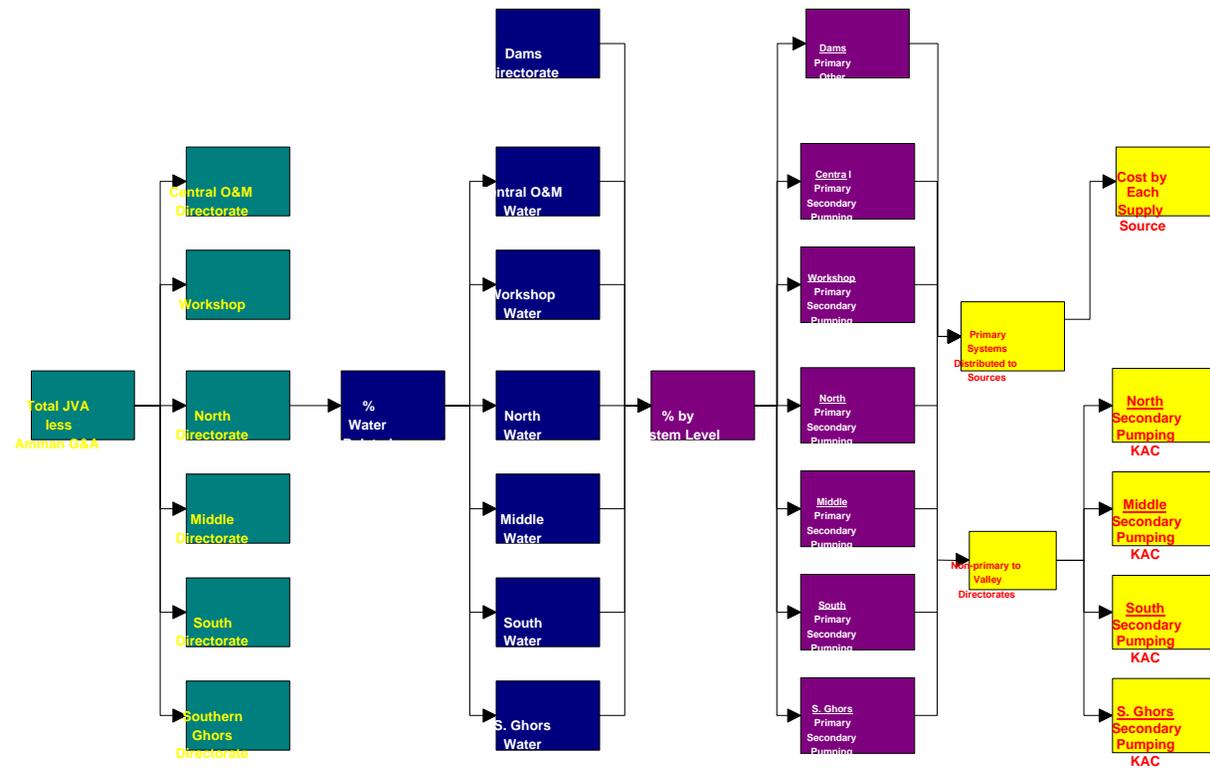
Go to the
Model

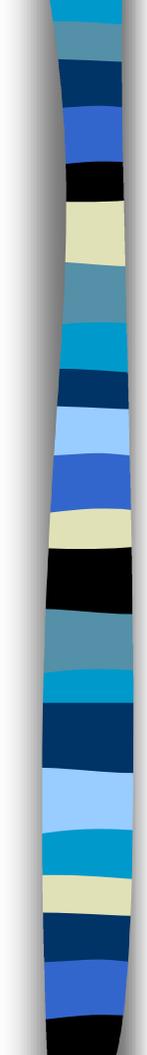


Cost Basis

- ★ Includes water-related costs for:
 - ✓ Valley Directorates & Southern Ghors
 - ✓ Dams Directorate
 - ✓ Central O&M Directorate
 - ✓ Workshop Directorate
- ★ Does not include costs for:
 - ✓ Non-water activities
 - ✓ General & Administrative - Amman
 - ✓ Dams - Research/Planning
 - ✓ Drainage Department
 - ✓ Lab Directorate

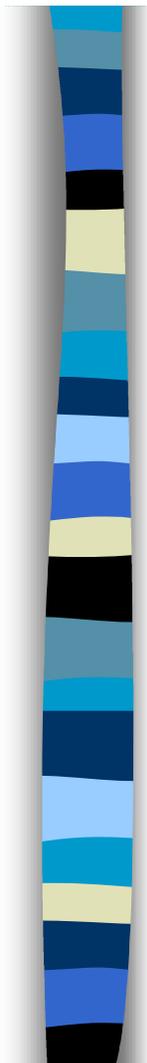
O&M Cost Allocation Method





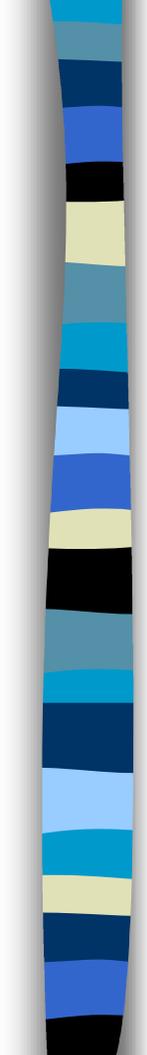
O&M Unit Costs

<u>Item</u>	<u>1996</u>	<u>1997</u>
O&M Costs (mill. JD)	5.334	5.276
Water Billed (mcm)	197.825	191.992
Unit Cost of Billed Water (fils/m ³)	27	31
Water Produced (mcm)	286.547	307.550
Unit Cost of Produced Water (fils/m ³)	19	19
Unaccounted-for water	31%	38%



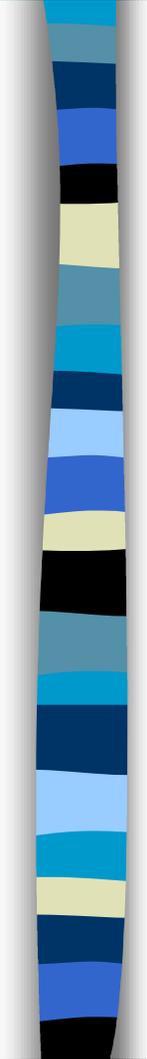
Unit Cost by Supply Sources (fils/m³)

<u>Source</u>	<u>1997</u>	<u>Source</u>	<u>1997</u>
Yarmuk	1	Karamah	3
N. Conveyor	15	Shueib	3
Mukheiba	1	Kafrein	6
Wadi Arab	18	Hasa, etc.	8
KTR	3	Wadi Araba	8



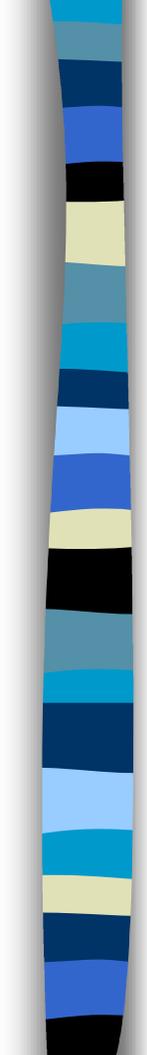
Cost by System Component

<u>Item</u>	<u>Cost (mill.JD)</u>	
	<u>1996</u>	<u>1997</u>
Sources	1.478	2.055
KAC	0.939	0.923
Pumping	0.807	0.729
<u>Secondary</u>	<u>1.840</u>	<u>2.269</u>
Total	5.334	5.976



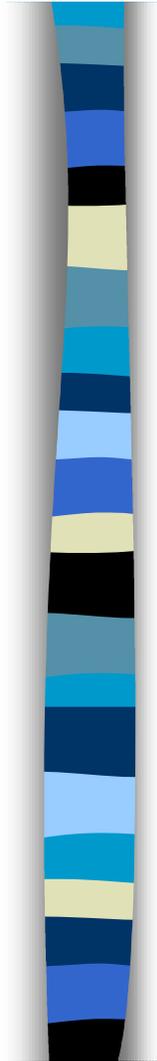
Cost to Deir Alla - Amman

Go to the Model



Costs, Revenue & Financial Performance

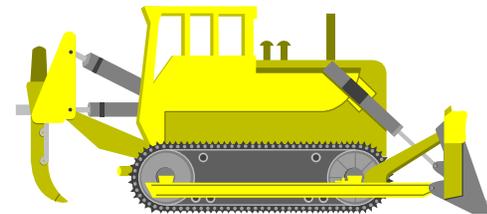
Go to the
Model

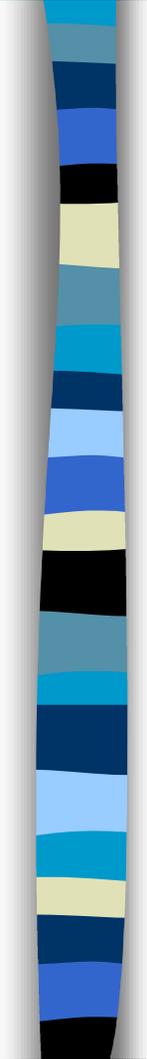


Questions & Answers

Forecasting Methods

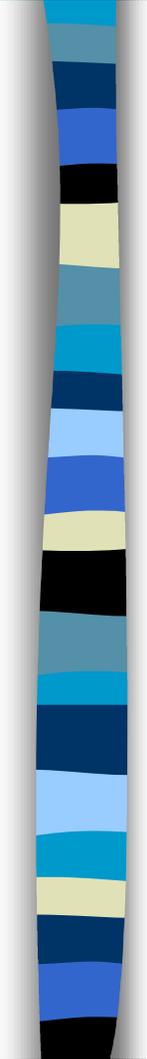
- ★ Staffing
 - ✓ Staff levels
 - ✓ Average salaries
- ★ Electricity
 - ✓ Pumping Efficiencies
 - ✓ Electricity Cost/kWh
- ★ Misc. Costs
 - ✓ Inflation Driven
- ★ Project Costs
 - ✓ Capital
 - ✓ Changed O&M





Suggested Planning Scenarios for Next Workshop

- ★ Impact of new supply sources
- ★ Impact of staff changes
- ★ Impact of other efficiency improvements
 - ✓ Unaccounted-for water
 - ✓ Collections
- ★ Wholesale tariff to secondary system



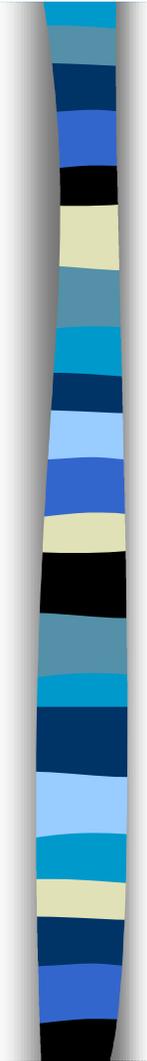
Possible Performance Measures

★ Operational Efficiency

- ✓ Unaccounted-for
- ✓ Water demand to water supplied ratio
- ✓ Staff per 1,000 subscribers
- ✓ Personnel costs to operating cost ratio

★ Financial Efficiency

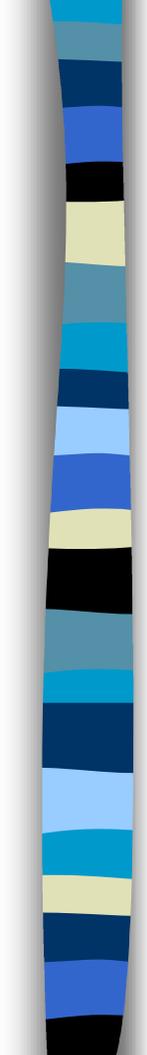
- ✓ Unit cost of water
- ✓ Unit revenue
- ✓ Unit profit/deficit
- ✓ Avg. cost per staff
- ✓ Revenue collection efficiency
- ✓ % of targeted revenue recovery
- ✓ Operating costs to operating revenues ratio



Upcoming Activities

- ★ Review Data and Costs
- ★ Next Workshop
 - ✓ O&M Forecasts
 - ✓ Current & Future Capital Costs
 - ✓ Total Unit Cost
 - ✓ Planning/Efficiency Scenarios
- ★ User Manual & Training
- ★ Status of other efforts
 - ✓ Water Quality Study
 - ✓ Irrigated Agriculture Benefits





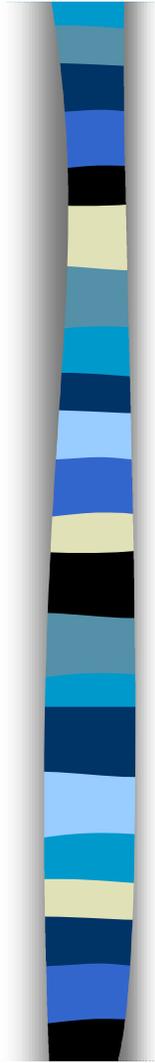
Proposed Improved JVA Financial Information System

★ Phases

- ✓ System design
- ✓ Data development
- ✓ Transition and Implementation

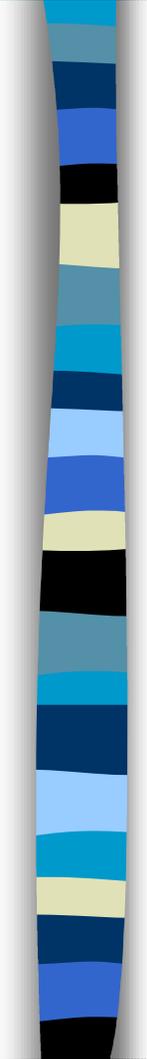
★ Benefits

- ✓ Integrated system
- ✓ More accurate data
- ✓ Costs by cost center
- ✓ Improved financial management



We are Adjourned!

Thanks for Coming
and Participating



Agenda for JVA Cost/Tariff Model Workshop

April 26, 1998

- ★ 8:30-8:45am Coffee/Introductions
- ★ 8:45-9:00am Goals of the Workshops and Review of Agreements
- ★ 9:00-10:00am Purpose, Uses, & Structure of the Model and Cost and Revenue Centers
- ★ 10:00-10:30am Water Demands and Supplies
- ★ 10:30-10:45am **Break**
- ★ 10:45-11:00am Cost Allocation Procedures
- ★ 11:00-12:00am Current O&M Costs and Revenues
- ★ 12:00-12:30am Costs to Deir Alla
- ★ 12:30-1:00pm Question & Answers/Discussion
- ★ 1:00-2:00pm **Lunch**
- ★ 2:00-2:15pm Forecasting Methods
- ★ 2:15-3:00pm Planning Scenarios and Possible Performance Measures
- ★ 3:00-3:15pm **Break**
- ★ 3:15-3:45pm Remaining Modeling Activities, Capital Costs, and Status of Other Efforts
- ★ 3:45-4:15pm Financial Accounting System
- ★ 4:15pm **Adjourn**