



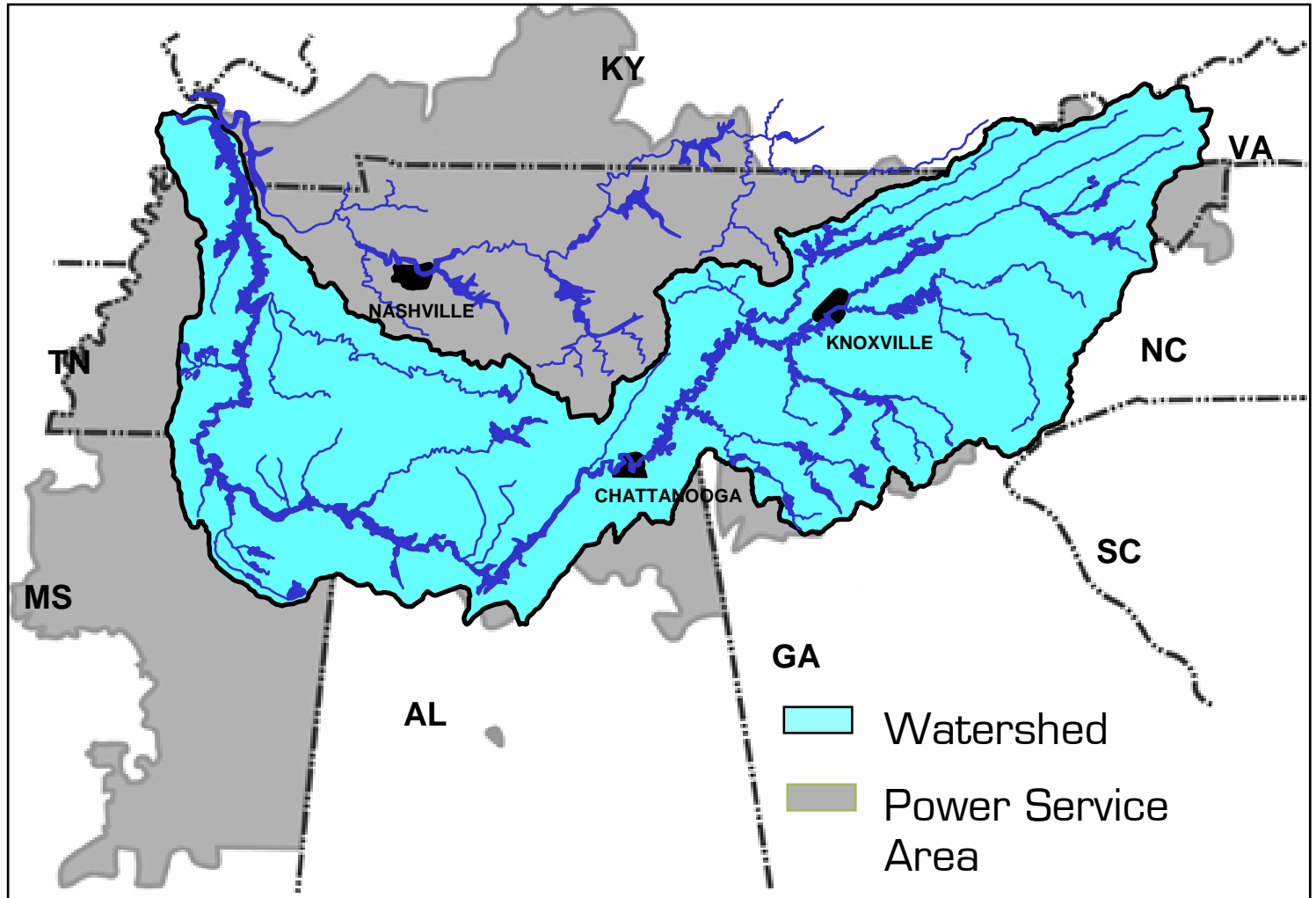
# Hydropower Management at TVA with RiverWare

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Tennessee Valley Authority





# TVA Region Covers 40,000 sq Miles





# TVA Owns and Operates 29 Hydro Plants





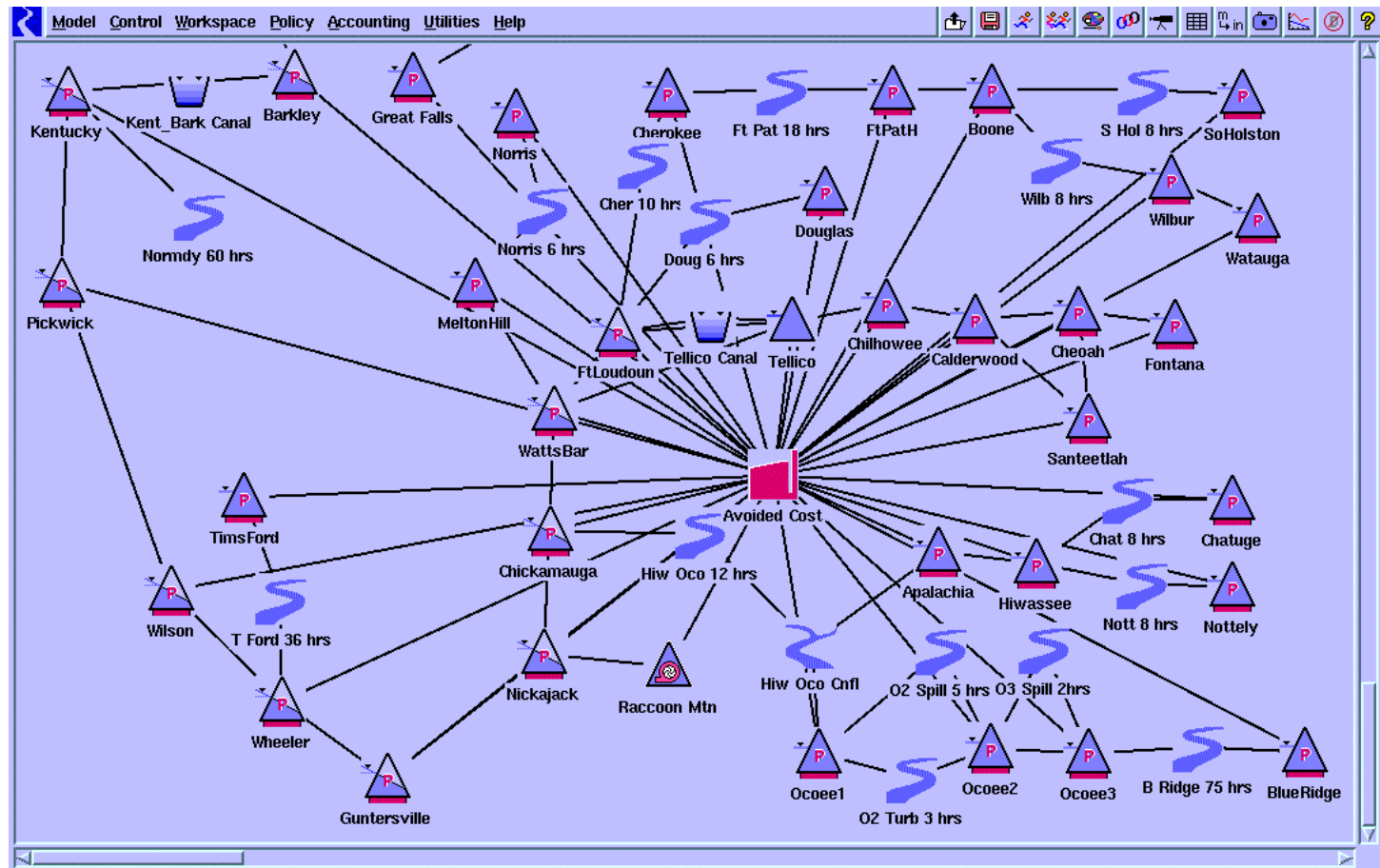
# Integrated Operation of the River System Provides Overall Value

- Year round commercial navigation
- Reduced risk of flooding
- Affordable and reliable electricity
- Improved water supply
- Improved water quality
- Recreation opportunities





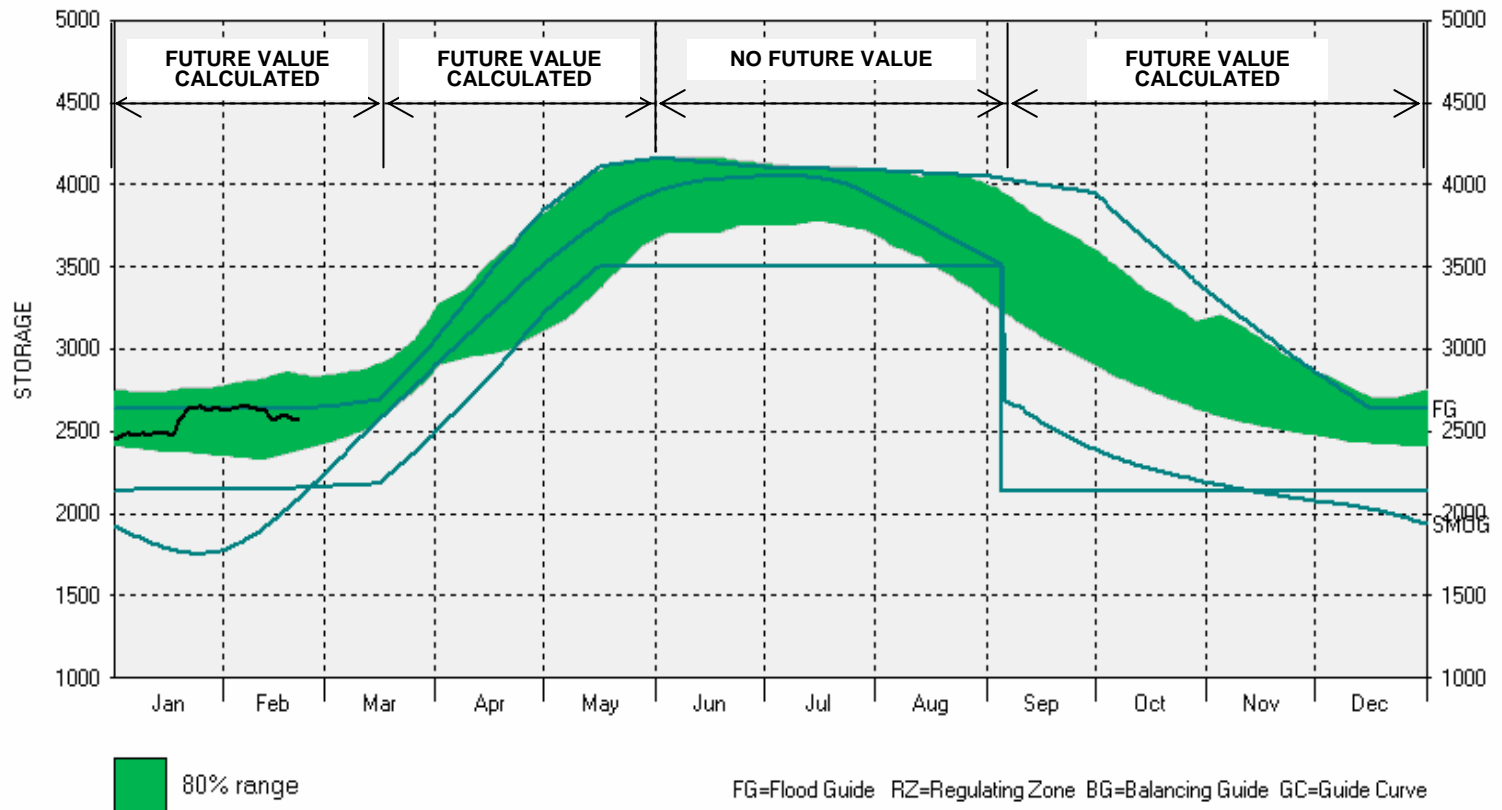
# RiverWare is Used For Scheduling Daily and Hourly Hydropower





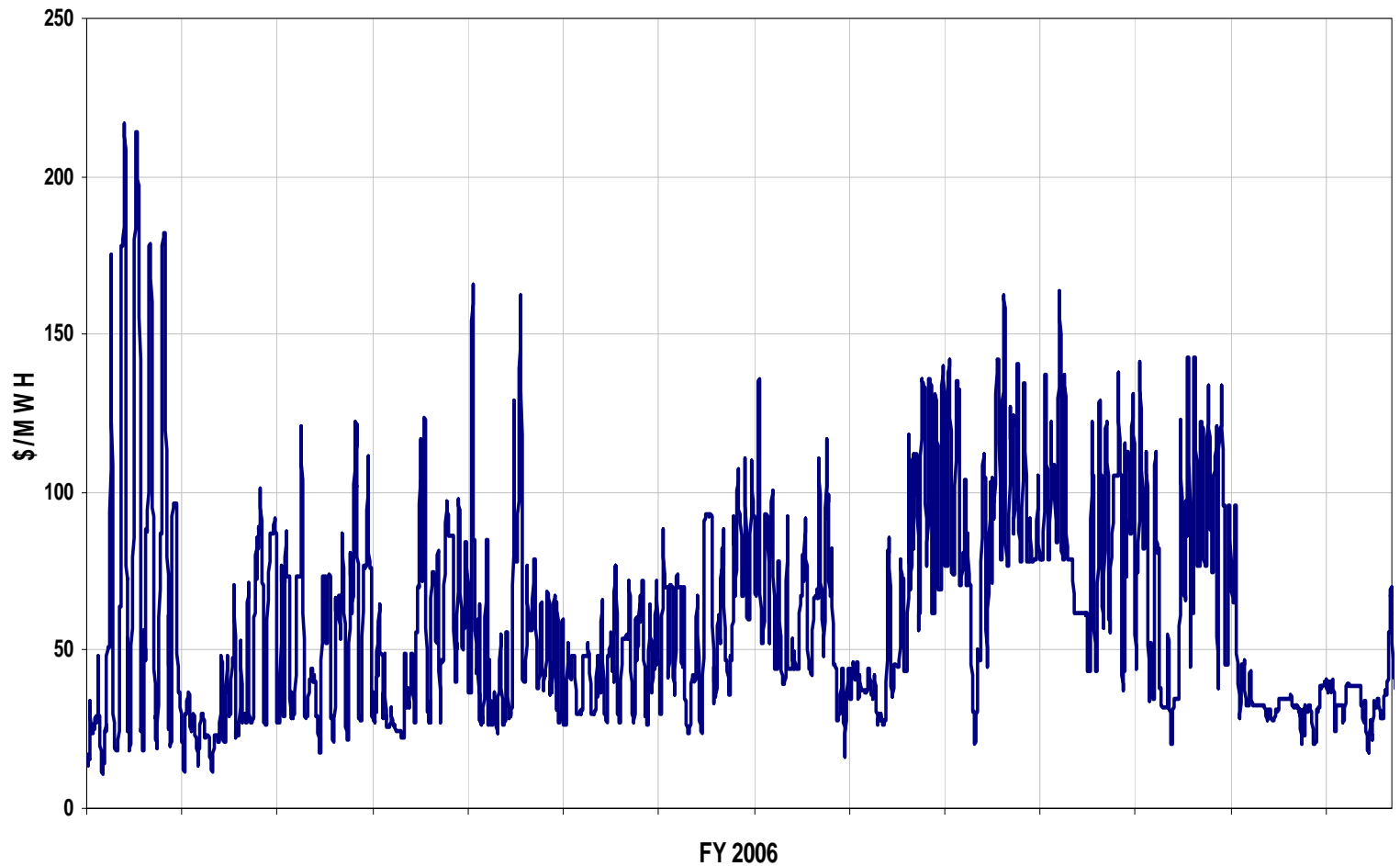
# During Summer, Water Allocation is Predetermined

Trib System Storage 2006





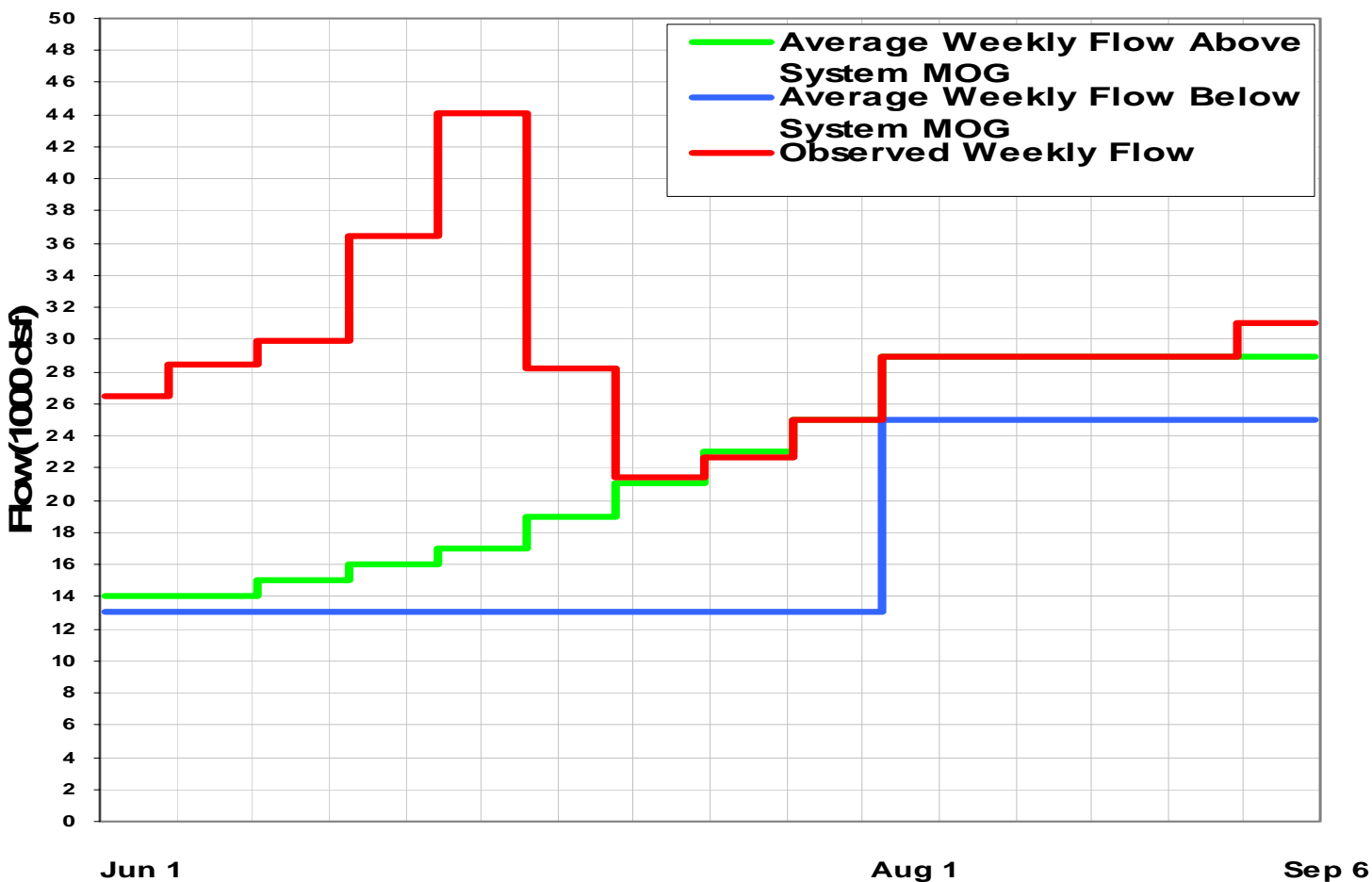
# Long Term Price Forecasts are Used For Water Allocation





# Depending On System Storage, Weekly Flows Vary In Summer

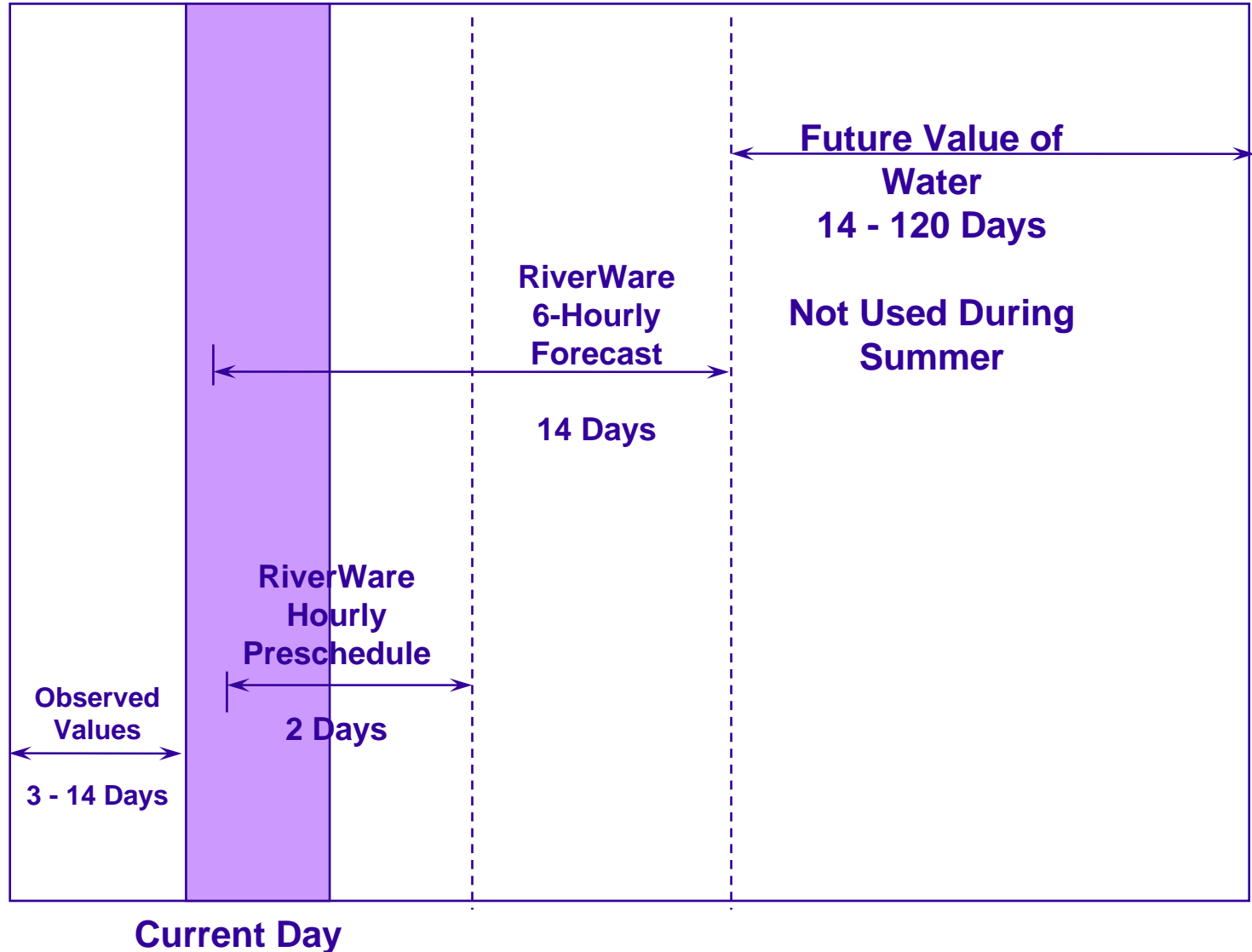
## Average Weekly Flow at Chickamauga







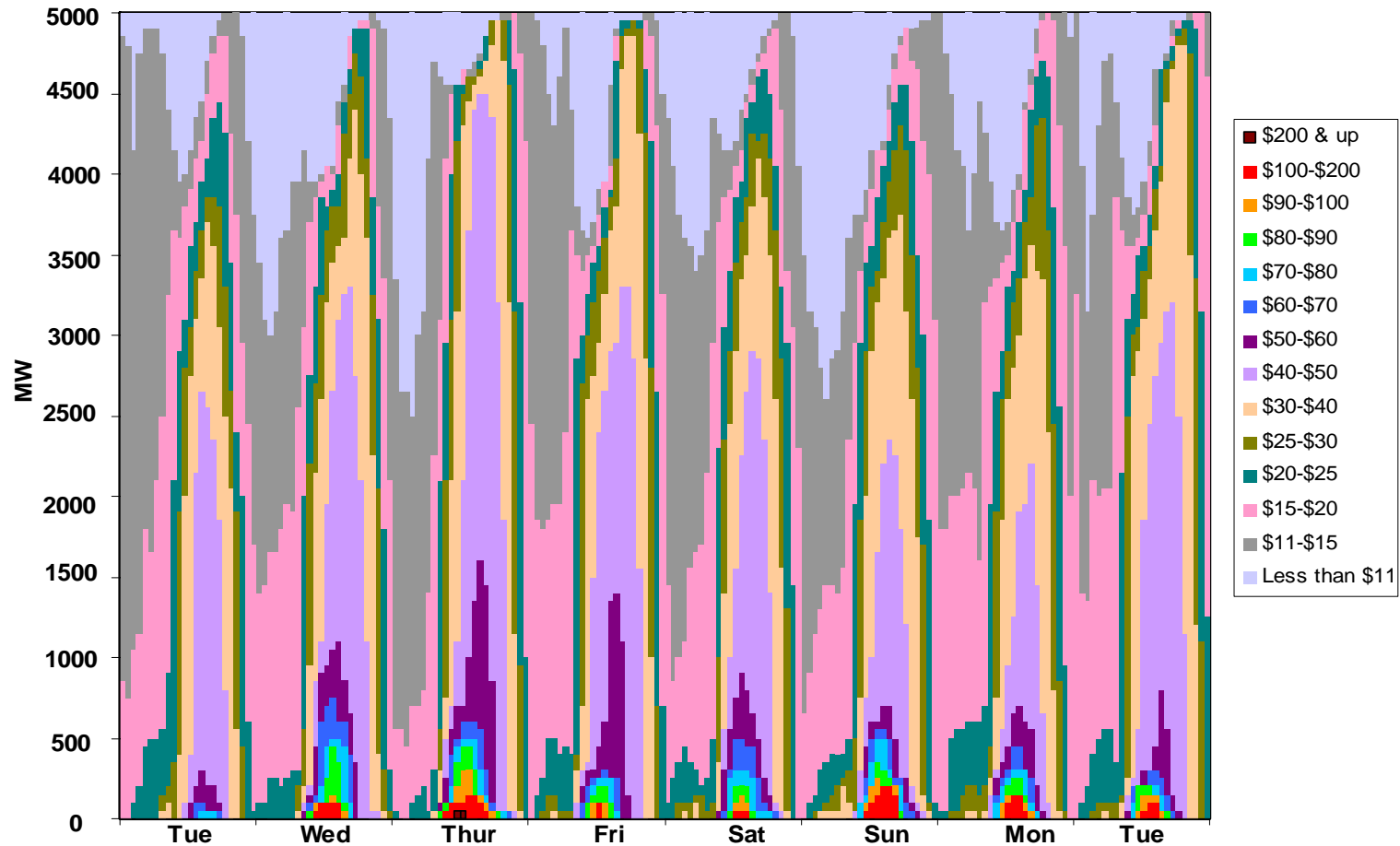
# Allocated Water is Optimized Over Short Term Using Block Costs





# Block Costs Show Depth of Market

Block Cost Data





# New Methods Were Developed and Implemented Last Year

- Slope storage calculations are a major change for TVA reservoir forecasting
  - Weighting coefficients method allows forecasting of elevations at key locations along the Tennessee River
  - This will aid in crest forecasting during floods
- Ancillary services scheduling may be on the horizon
  - Some development of load regulation scheduling has taken place in RiverWare
  - TVA currently does not participate in an ancillary services market
  - When/if this market develops, we want to be ready



# TVA Anticipates Additional Power Supply Planning Using RiverWare

- More frequent updates of mid-term plans (15-35 days) using RiverWare to replace old TVA model
- More tradeoff evaluation using RiverWare optimization
  - Hydrothermal models will be run side-by-side with RiverWare models this summer
  - Personnel can quickly evaluate cost of special flows to maintain hydrothermal compliance