At A Glance
Supply-Demand Planning

Overview
Water undertakers recognise the need to plan for the long-term in order to ensure that their supply capability will be sufficient to meet demand, both throughout the year and in peak periods. In order to find the best solutions in cases where deficits are projected, potential schemes to reduce demand or leakage, or increase supply should be identified and evaluated in relation to their associated costs, yields, risks, and constraints. As such, supply-demand plans must be robust in accounting for a range of uncertainties, including demand, climate change, environmental effects, and general construction risks. As environmental controls become ever tighter, new uncertainties are emerging, such as the possibility of non-renewal, or curtailment of abstraction licences.

In the UK, methodologies for clean water supply-demand planning have attracted notable attention from the water industry in the past decade. NERA has been a leader in this area, having produced key methodological reports for UK Water Industry Research, including “Demand Forecasting Methodology”, “The Economics of Demand Management”, “The Economics of Balancing Supply and Demand,” and “A Framework Methodology for Estimating the Impact of Household Metering on Consumption.” NERA has also helped individual water companies develop and apply methods for supply-demand planning.

While clean water supply-demand planning has consistently received significant consideration, the UK industry has given less attention to its approaches to wastewater planning. The issues surrounding wastewater planning are very similar to clean water planning, but are more complex in several respects, notably due to the more localised and multi-dimensional nature of the problems, as well as greater planning uncertainties. NERA experts are actively involved in the development of wastewater planning methodologies and optimisation modelling tools and can help companies prepare robust and defensible strategic business plans for Periodic Review 09 and beyond.

Key Areas of Expertise

Demand Estimation and Forecasting
NERA economists help clients forecast residential and non-residential water demands, taking into account the effects of demographic change, metering and pricing, climate change, economic growth, and technical change. We have experience designing water-use monitors to provide the data needed to estimate the water balance and demand responses, and thereby improve demand forecasts.

Identification of Options and Their Costs and Benefits
NERA helps clients identify and evaluate options for restoring the supply-demand balance by providing advice on the relevant costs and benefits to be taken into account. Regarding benefits, NERA helps clients develop and apply “non-market valuation” techniques to assess customers’ willingness to pay for improved service and quality standards. This includes advising on questionnaire design and surveying techniques, results validation, and statistical analysis.
Supply-Demand Optimisation Modelling
NERA helps water undertakers apply best practice techniques for supply-demand planning. Our analytical models identify the least-cost programme of resource development, leakage control, and demand management schemes that satisfy supply and demand constraints. Sometimes a simple model is sufficient, while in other cases, complex interactions and multiple risks must be represented. Our models can also be used to carry out the multiple runs necessary for the estimation of Long Run Marginal Cost.

Resource Development Support
NERA advises clients on the economic, regulatory, and financial aspects of major resource development proposals. We provide guidance in regulatory procedures, and carry out relevant supporting studies, as needed.

Regulatory Support
NERA experts provide analysis and support to help water companies prepare water resource plans and supply-demand sections of strategic business plans. We also help clients evaluate and prepare responses to opposed regulatory revisions to these plans.

Our Practice
NERA’s London-based Water Group draws on a detailed working knowledge of the water and wastewater sector to advise water companies on many aspects of the water supply-demand planning process. Our experts have been instrumental in the development of industry best practices in many key areas, including the economics of balancing supply and demand, understanding the impact of metering on consumption, calculating the economic level of leakage, and estimating and forecasting demand components.

Our advice is firmly rooted in the practical application of economic principles, and asks to help clients find solutions to complex commercial and regulatory problems. Our team combines rigorous economic thinking and the highest calibre of quantitative analysis with practical experience gained from working closely with clients in the water sector.

Client Experience
Thames Water: The Economics of Waste Least Cost Planning, 2005
Thames Water: Forecasting Household Meter Optants, 2004
Yorkshire Water: Leading Edge Asset Decisions Assessment (LEADA), 2004
Northumbrian Water: Non-Residential Demand Forecasts, 2003

Publications
UKWIR, A Framework Methodology for Estimating the Impact of Household Metering on Consumption—Further Analysis, UKWIR Report Ref. No. 04/WR/01/6, 2004
UKWIR, The Economics of Balancing Supply and Demand, UKWIR Report Ref. No. 02/WR27/3, 2002
UKWIR/NRA, Demand Forecasting Methodology, UKWIR Report Ref No, 95/WR/01/1, 1995

About NERA
NERA Economic Consulting (www.nera.com) is a global firm of experts dedicated to applying economic, finance, and quantitative principles to complex business and legal challenges. For over half a century, NERA’s economists have been creating strategies, studies, reports, expert testimony, and policy recommendations for government authorities and the world’s leading law firms and corporations. With its main office in New York City, NERA serves clients from more than 20 offices across North America, Europe, and Asia Pacific.

Contacts
Dr. William Baker
Director
Water Group Head
+44 20 7659 8520
bill.baker@nera.com