In November 2008, the Water Regenerative System racks were launched aboard Space Shuttle flight, STS-126 (ULF2) and installed and activated on the International Space Station (ISS). These racks, consisting of the Water Processor Assembly (WPA) and Urine Processor Assembly (UPA), completed the installation of the Regenerative (Regen) ECLSS systems which includes the Oxygen Generator Assembly (OGA) that was launched 2 years prior. With the onset of active water management on the US segment of the ISS, a new operational concept was required, that of "water balance". Even more recently, in 2010 the Sabatier system came online which converts H2 and CO2 into water and methane. The Regen ECLSS systems accept condensation from the atmosphere, urine from crew, and processes that fluid via various means into potable water which is used for crew drinking, building up skip-cycle water inventory, and water for electrolysis to produce oxygen. Specification rates of crew urine output, condensate output, O2 requirements, toilet flush water and drinking needs are well documented and used as a general plan when Regen ECLSS came online. Spec rates are useful in long term planning, however, daily or weekly rates are dependent on a number of variables. The constantly changing rates created a new challenge for the ECLSS flight controllers, who are responsible for operating the ECLSS systems onboard ISS. This paper will review the various inputs to rate changes and inputs to planning events, including but not limited to; crew personnel makeup, Regen ECLSS system operability, vehicle traffic, water containment availability, and Carbon Dioxide Removal Assembly (CDRA) capability. Along with the inputs that change the various rates, the paper will review the different systems, their constraints and finally the operational means by which flight controllers manage this new challenge of "water balance."