

Abstract Submitted  
for the DPP15 Meeting of  
The American Physical Society

**Fusion Breeding for Sustainable, Mid Century, Carbon Free Power** WALLACE MANHEIMER, Retired — If ITER achieves  $Q \sim 10$ , it is still very far from useful fusion. The fusion power, and the driver power will allow only a small amount of power to be delivered,  $\lesssim 50$  MW for an ITER scale tokamak. It is unlikely, considering “conservative design rules” that tokamaks can ever be economical pure fusion power producers [1]. Considering the status of other magnetic fusion concepts, it is also very unlikely that any alternate concept will either. Laser fusion does not seem to be constrained by any conservative design rules, but considering the failure of NIF to achieve ignition, at this point it has many more obstacles to overcome than magnetic fusion. One way out of this dilemma is to use an ITER size tokamak, or a NIF size laser, as a fuel breeder for separate nuclear reactors. Hence ITER and NIF become ends in themselves, instead of steps to who knows what DEMO decades later. Such a tokamak can easily live within the constraints of conservative design rules. This has led the author to propose “The Energy Park”; a sustainable, carbon free, economical, and environmentally viable power source without proliferation risk. It is one fusion breeder fuels 5 conventional nuclear reactors, and one fast neutron reactor burns the actinide wastes.

[1] W. Manheimer, J. Fus. Energy, June, 210

Wallace Manheimer  
Retired

Date submitted: 07 Jul 2015

Electronic form version 1.4