Cogeneration has proven to save energy that was once thought to be waste. There is a caveat in cogeneration: whether or not to maximize power of the system or to make the system economically friendly. (pg. 247, Schmidt) (pg. 50 yellow book) Not only does cogeneration benefit an energy system, but some disadvantages exist as well. Various areas cogenerations affects are overall system efficiency, fuel types, dependability, and environmental modifications.

Overall system efficiency is affected by cogeneration since the system is made more self-sufficient. By using some of the waste energy generated in the cycle to power another mechanism, the money used to power the system decreases and pollution is eliminated. A major concern with cogeneration is whether or not to maximize the thermal efficiency of the system and decrease the amount of money saved, or to regulate the temperature of the waste steam to a value that is not too costly. Usually, equilibrium between cost and thermal efficiency for a cycle is calculated so all criteria are met.

**Used above paragraphs**

Cogeneration has the option of using various types of fuel as the working fluid of the system. Depending on the type of power cycle used, the working fuel could be a water vapor, refrigerant, or fuel mixture. By implementing cogeneration, fuel is conserved by being recycled through the system instead of released to the surroundings. The recycling process also saves energy in areas than the power cycle system.

Cogeneration also outputs a much more dependable amount of energy to the public. Cogeneration has proven to be much more efficient than the conventional fossil steam plant. Approximately 75% of the heat is utilized for power and heat for a cogeneration cycle with only about 25% exhaust steam. But in a fossil steam plant, only 35% of the energy from fuel is obtained as power; the exhaust gases from the condenser and boiler that end up being waste are 48% and 15%, respectively (Boyce, 2002). Not only do cogeneration cycles output more dependable power, but also if any kind of emergency such as natural disasters affected a power plant cogeneration would be a viable means of energy.

By using cogeneration, not only is energy recycled but also sources that are under constant worry of depletion such as fossil fuels and petroleum are conserved. Not only are these valuable resources preserved, but the energy required to transport and produce these resources are conserved. Also since waste energy is recycled in cogeneration power cycle, the vapor waste that was expelled from the system can longer harm the environment. Many power plants are under constant scrutiny from environmentalist groups about how waste adversely affects animal habitats and causes irreparable damage. Cogeneration power plant cycles eliminate unnecessary waste by utilizing it to actually improve system performance, which coincidentally helps the environment.