



COMBINED HEAT AND POWER

Generating electricity at the point of use has many advantages such as increased reliability and lower cost. But, to achieve the benefits new technology is needed that greatly increases efficiency by finding ways to use the excess heat produced in addition to integrating renewable energy resources as part of the process when possible.

THE POTENTIAL BENEFIT

Currently central electric generation is roughly 35% efficient. Combined Heat and Power Systems have the potential to at least double this.

HOW TO ACHIEVE THE BENEFIT

Use advanced technology that minimizes costs and maximizes efficiency.

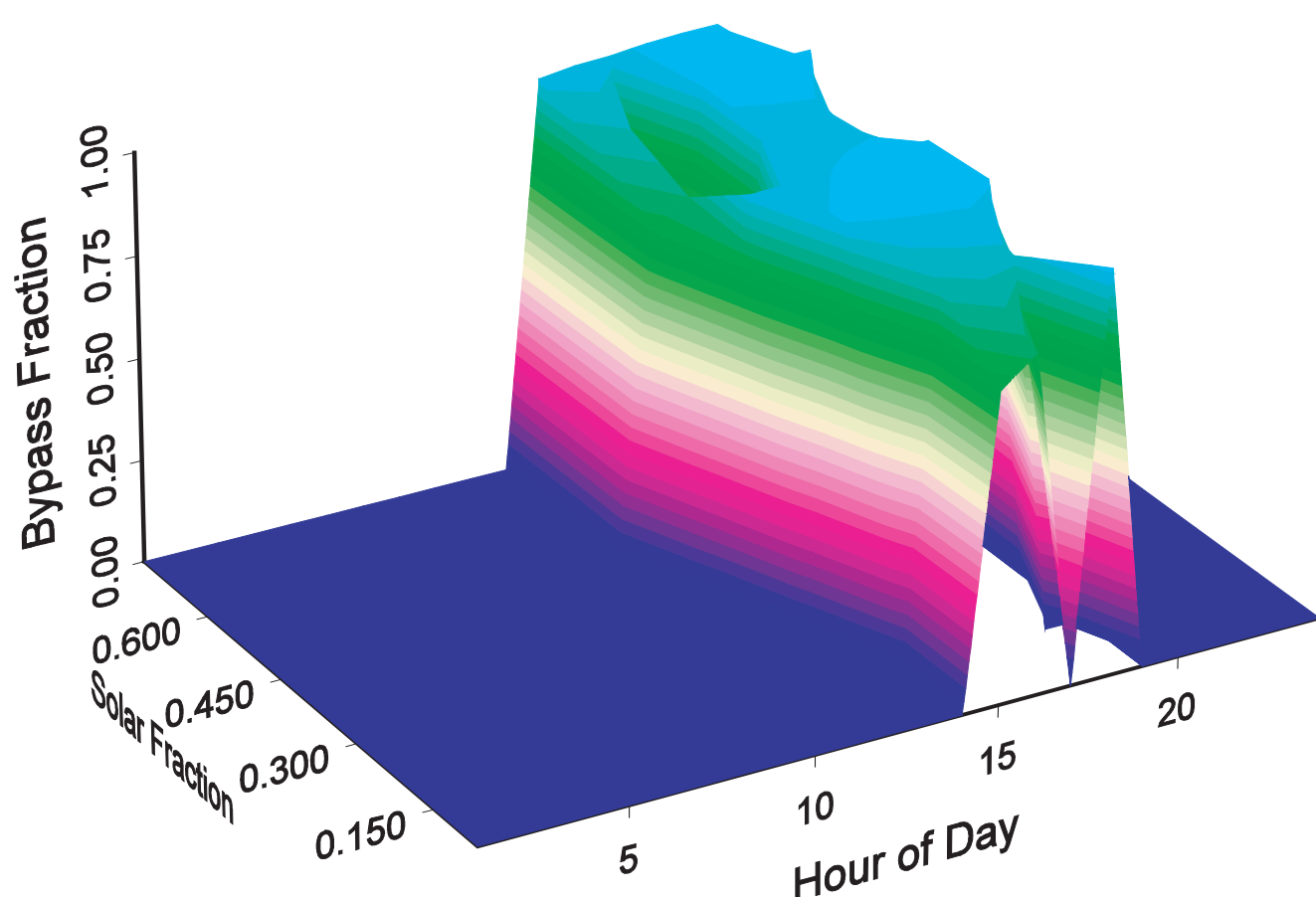
New design approaches and dynamic control schemes that minimize energy costs, including neural network and fuzzy logic technology.

$$IP = \frac{NGC + GEC + SEC + GEB}{\xi}$$

ξ = energy (electric and thermal), *NGC* = natural gas cost, *GEC* = grid electric cost, *SHC* = solar heat cost, *GEB* = grid electric backup cost, with other factors as constraints

DEVELOP WAYS TO EFFECTIVELY INCLUDE RENEWABLE ENERGY

Bypass Fraction vs Solar Fraction and Hour of Day
With Heat Storage



DEVELOP NEW WAYS TO OPERATE BUILDINGS THAT INCREASE EFFICIENCY

