**Wind Energy**

- Goal: Provide 1/3 of lighting energy for first floor
- Required energy: 42,840 kWh
- Type: Vertical wind turbines

**Urban Green Energy 4kW 2nd Generation**
- Cost: $21,920 each
- Annual production: 4000 kWh
- Size: 9’ x 11’, 700 lbs
- 11 units required
- Breakeven point: 18 years

**Rainwater Harvesting**
- Chicago average precipitation: 38.01 in/year
- Roof area: 37,000 SF
- Rain water harvesting area: 18,700 SF
- Total amount of collected rainwater: 35,900 gal/month
- Saving 430,800 gallons of rainwater per yr
- 11 - 3000 gallon tanks required
- Total construction cost: $12,122

**Structural Information**
- Tributary width = 40FT
- For typical beams, floors 2-5, total superimposed load = 50 + 112.1 = 160 PSF
- Total loading = 160 PSF * 40 FT = 6400 PLF = 6.4 KLF
- From spancrete, select inverted spancrete T beam, 40” x 36”
- For 40’ span, max loading = 8.0 KLF
- For typical slab on floors 2-6, total superimposed load = 52.165 = 102.1 PSF
- From spancrete site, use 12” standard floor slab, 1.5” strand cover, no structural topping, series: 1.5D 12712
- Allowable superimposed load = 106PSF
- Dead load weight of slab = 86 PSF
- For first floor, use slab on grade, poured on site
- Use 24” x 24” columns for all columns, varying reinforcement

**Solar Power**
- Goal: Utilize the buildings south facade to offset electrical consumption
- Type: Photovoltaic panels
- SolarWorld SW 230, 230 Watt Monocrystalline Solar Panel
- Used as rainscreen cladding on south facade
- 20,265 square feet of solar panel area
- 230 watts peak per panel
- 1,125 panels required
- 424,996 kWh of power
- Total cost: $892,125

**Geothermal Energy**
- Goal: Utilize Earth’s energy to provide heating and cooling
- Type: Closed loop vertical system
- FloridA Heat Pump - ES Series R-410 A
- Approximately 430 ton capacity
- Central pumping system with decentralized heat pumps
- 75 units required
- 288 vertical boreholes @ 290’ deep
- 125” polyethylene pipes

**Energy Model**
- Typical building electrical use: 3,525,743 kWh
- IPRO 335 building electrical use: 2,355,839 kWh
- Typical building fuel consumption: 7,200.1 Mktu
- IPRO 335 building fuel consumption: 1,347.8 Mktu

**Leed**
- Required point total for LEED platinum: 80+
- IPRO 335 building point total: 110
- IPRO 335 building LEED rating: Platinum