



## 2,800 KW (2.8 MW) CHP PLANT FEASIBILITY STUDY @ NATUREFRESH COMMERCIAL GREENHOUSE

### SUMMARY

Naturefresh, an owner and operator of large commercial greenhouses in Leamington, Ontario, was constructing an additional 130 acres of greenhouses to add to their existing 120 acres of operating greenhouses. To increase production of tomatoes within the new greenhouses, Naturefresh was studying the feasibility of installing grow lights to be powered by a new Combined Heat and Power (CHP) plant. This plant would provide electricity for the grow lights, hot water for greenhouse space heating, and CO<sub>2</sub> from the exhaust. The CO<sub>2</sub> would be stripped from the CHP plant exhaust and piped into the greenhouse to enhance plant growth.

### PROJECT HIGHLIGHTS

- Bryan Power worked with Naturefresh to identify potential CHP equipment for an initial 5.3 acre demonstration project with 2,700 one thousand Watt grow lights.
- Bryan Power identified equipment alternatives that included both new and pre-owned reciprocating engine generator options capable of generating the 2,800 kW required.
- Bryan Power developed initial heat balances, electrical one-line drawings, and general arrangement and process flow schematics.
- Bryan Power developed preliminary cost estimates for equipment, installation, and operations and maintenance, and these were used in a preliminary economic evaluation model developed by Bryan Power for the project. This model was shared with Naturefresh and used to evaluate between alternatives.

#### Client

- Nature Fresh Farms



#### Location

- Leamington, Ontario

#### Date

- July 2014

#### Equipment

- 2,800 kW gas turbine generators and reciprocating engine generators

#### Service

- Feasibility Study