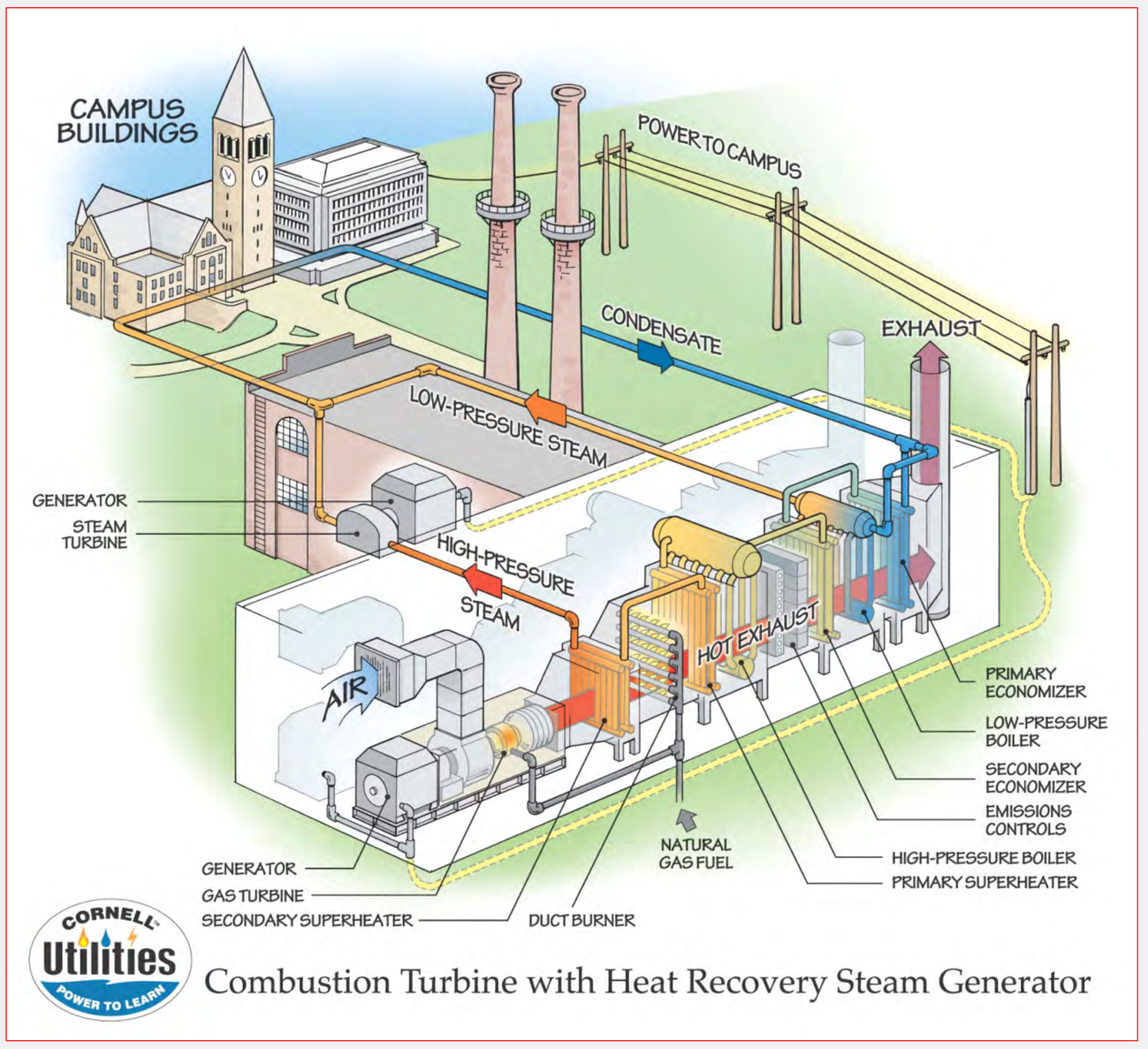
CORNELL COMBINED HEAT & POWER PROJECT

Combined heat and power (CHP) is the simultaneous production of electricity and the utilization of "waste" heat for campus heating requirements. In 2009 the Cornell Combined Heat and Power Project added two gas turbine generators at the current Central Energy Plant, totaling 30 megawatts of electrical output with heat recovery steam generators.



Combustion Turbine with Heat Recovery Steam Generator

Reasons for the project

Facility renewal Cornell's Central Heating Plant was in need of renewal. The project accomplished the necessary renewal in a highly energy efficient, cost effective, environmentally conscientious and reliable manner.

Load growth Even though Cornell has undertaken an aggressive energy conservation program, the heating demand continues to grow as Cornell continues to construct and renovate facilities. This project provided the additional steaming capacity needed at the Central Energy Plant.

Fuel flexibility This project provides Cornell with fuel flexibility, so annual energy costs can be managed more effectively. Having natural gas available as a significant energy source allowed Cornell to commit to a "beyond coal" no-coal future after 2011.

Emergency power This project allows Cornell to isolate from the grid during a regional outage and remain operational. In addition, it adds highly efficient electric generation capacity in the state.

Environmental stewardship Cornell is committed to cost effectively strive toward reducing CO2 emissions beyond a Kyoto goal to climate neutrality by 2050. This project complements the growing portfolio of sustainability initiatives being pursued by the university.

Anticipated emission savings

CHP systems are much more efficient than conventional methods to supply heat and electricity. It is anticipated that this project will accomplish greater than the following annual reductions due to the offset of on-site coal combustion and grid power:

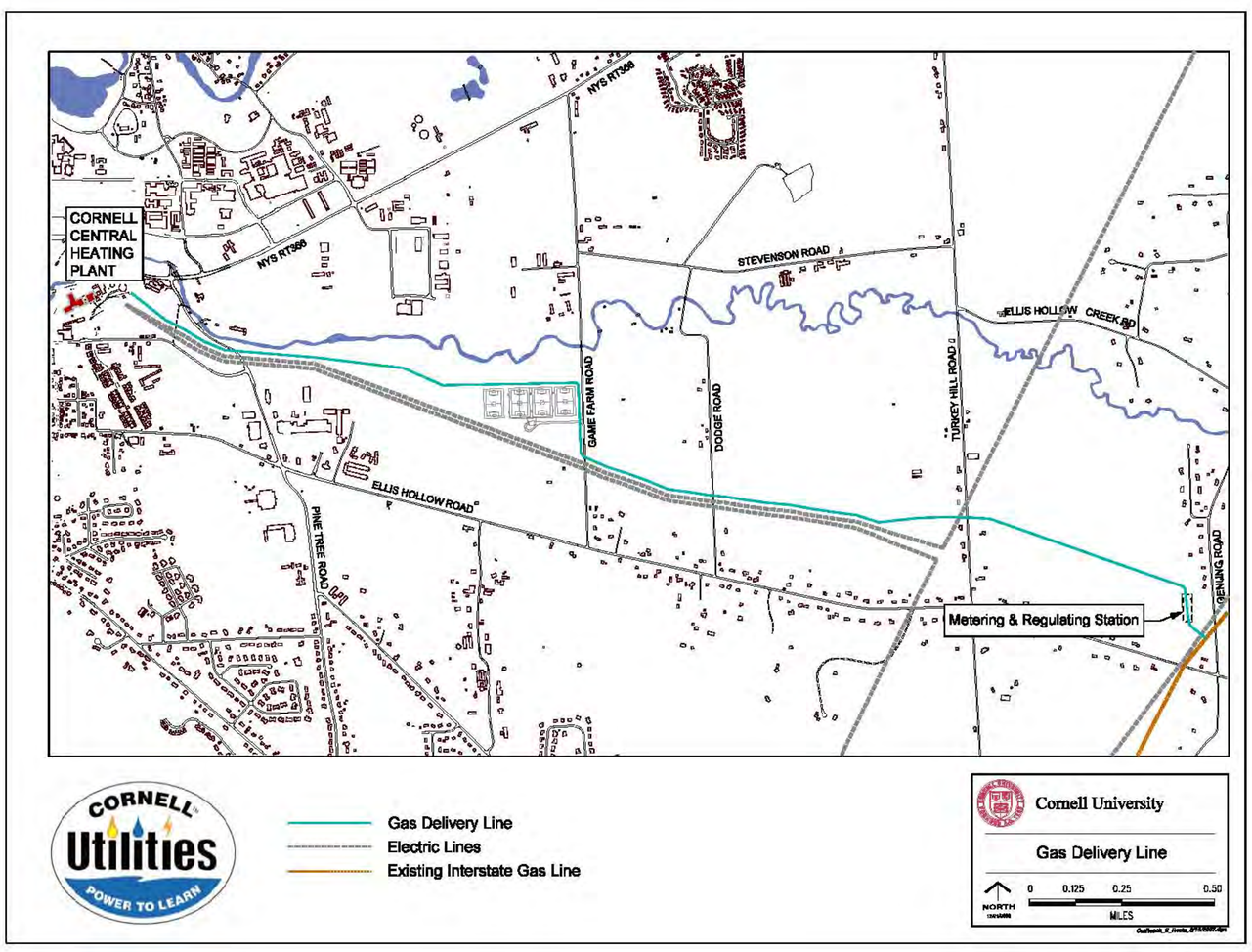
Central Energy Predicted Emission Reductions[1,2,3]

Pollutant	Annual Reduction	% Reduction
CO_2	89,000tons/yr	35%
NO_x	280 tons/yr	78%
SO_2	1100 tons/yr	96%

1 Emission reductions include both on-site (Central Energy Plant) and off-site (grid generated electricity) sources.

2 Emission reductions from off-site sources are calculated using the statewide average emission rates for grid power as provided by the NY Public Service Commission.

3 In February 2010 Cornell announced "Beyond Coal"-these reductions reflect both the CHP system and No Coal.



Fuel source

The existing natural gas distribution system could not support the needs for this project. A new gas delivery line connects Cornell with the interstate pipeline located in the Ellis Hollow area.

The gas delivery line is eight inches in diameter and approximately three miles in length. The route runs east from the Central Energy Plant and connects with the existing interstate gas pipeline.

The route is almost entirely on Cornell property and was subject to New York State Public Service Commission (PSC) review and approval. The approval process included opportunities for public input.

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